To Design Games Enhancing Learning, Goals and Play for Kids of 5- 6yrs Age Group

SUBMISSION OF GRADUATION PROJECT REPORT

MASTERINDESIGN

IN

TRANSPORTATIONANDSERVICEDESIGN

Submission by

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Submitted to Supervisor named

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Declaration Form from Candidates

I, Vanshika Chauhan(2k22/mdtd/05), student of Master in Design, hereby declare that the Project Dissertation titled “To Design Games Enhancing Learning, Goals and Play for Kids of 5-6yrs Age Group” which is submitted by me to the Department of Design, Delhi Technological University, Delhi.

Place: New Delhi, Delhi

Date: 08/05/2024

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Internship Offer for Vanshika Chauhan

Dear Vanshika Chauhan,

I am pleased to confirm your internship at the Divine Lab, Department of Design Indian Institute of Technology Delhi (IIT, Delhi).

You will be working as a research intern. Your duties and assignments for this position will be to create interactive animations using 3D software. Additionally, you will be tasked with developing a narrative for the children's content within the CSC Bal Vidyalaya project.

The internship is scheduled to begin on 13th September 2023 and will end on 12th January 2023.

If you have any questions, please feel free to contact me.

Prof. Jyoti Kumar
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Dr. Jyoti Kumar
Associate Professor

Date: 21.02.2024

Internship Extension Letter

Dear Vanshika Chauhan,

It truly has been a pleasure working with you for the last couple of months. We're happy to see your growth as a research intern. We believe it would be valuable to your growth to gain more experience.

Accordingly, we would like to offer an extension of your internship. The end date of the internship is now being extended to May 15, 2024. This is NOT a new separate internship. This is an extension of an ongoing internship. The Extension offer simply changes the end date of the internship from January 12, 2024 to May 15, 2024.

Prof. Jyoti Kumar
Associate Professor
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ACKNOWLEDGEMENT

I extend my gratitude towards the UX lab, where I have received guidance and support have been the cornerstone of this project. I am profoundly thankful for the insights and expertise that have greatly enriched my Graduation Project.

Special thanks to my peers and colleagues who provided me with the necessary resources, and to all the participants who willingly took part in my study and shared their experiences. I am especially grateful to my mother for her moral support during the challenging times of academic endeavor.

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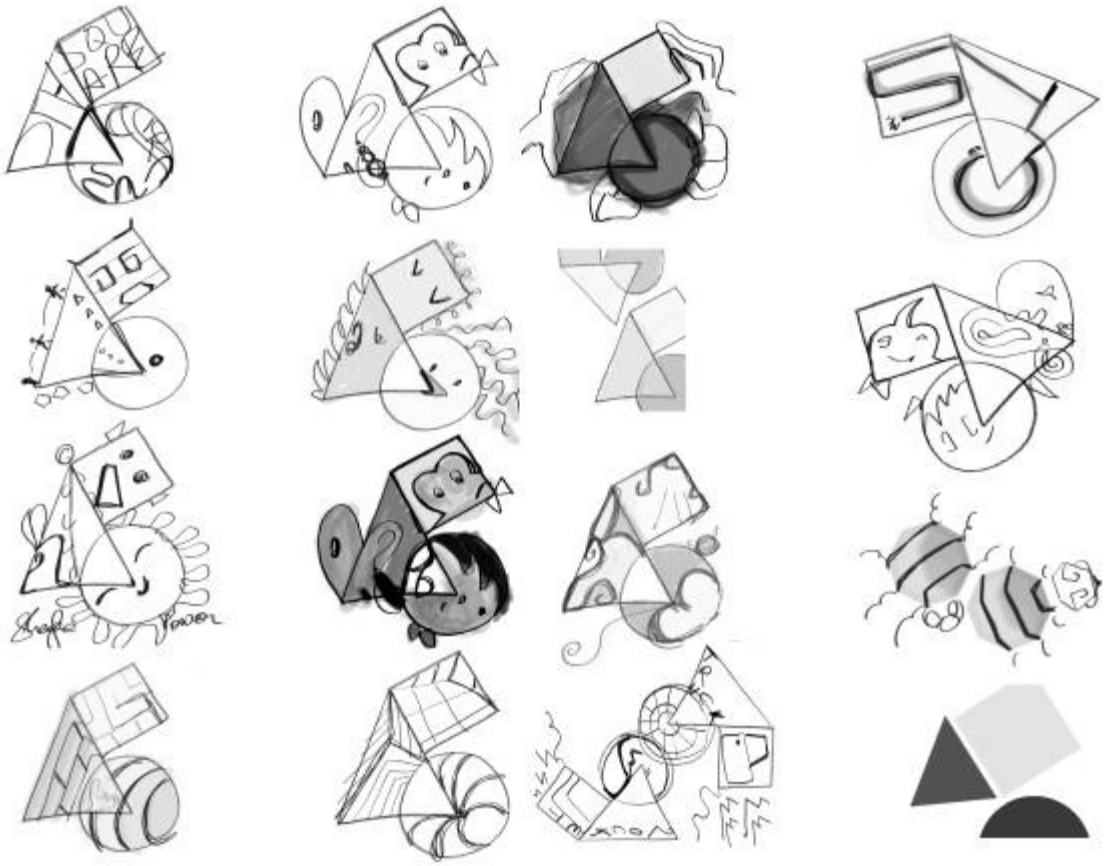
This project would not have been possible without the collective support and goodwill of all those mentioned above.

Vanshika Chauhan

ABSTRACT

This report presents a comprehensive exploration of "Game Design for Kids Learning," a project that I embarked upon during my internship. The research delves into the competencies needs of children aged 5-6 years, aiming to design games that cater to their learning curves and can be seamlessly integrated into diverse learning, from rural to urban schools. Methodologically, the study is grounded in both primary and secondary research, transcending conventional boundaries to gather rich, multifaceted data. This included the innovative 'Game Experience Quest,' where actual game-play was analyzed with existing as well conceptual game. The findings of this study have culminated in the creation of detailed user personas, reflecting the varied experiences of children, as well as the perspectives of their parents and teachers regarding learning of kids. Through an iterative process of ideation and refinement, three distinct game concepts have emerged, each promising to competencies targeting thoroughly. The discussion section of this report sheds light on the myriad benefits that thoughtfully designed games can offer, highlighting their potential to revolutionize learning for young children. Keywords: Game Design, Learning for Kids, Competencies

PEON IN 30 SHOES
BY WANSHIKO



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(All figures are illustrations made for the presentation of project)

1. Introduction

Games have a unique edge over the other ways of learning as they have a potential to make learning playful, self-paced and covert. (1)

In the dynamic intersection of research and playful innovation, my individual project, Game Design for Kids, stands as a testament to the profound impact of thoughtful design on early childhood development. The project has been assigned as part of my internship period of four months duration in UX Lab dedicated towards education and learning topic of design and research. This project is the culmination of my dedication to the craft of design and my deep-seated belief in the trans formative power of play for children aged 5-6 years. The brief as well belief of entire project reflects the idea of purposeful games resonates with the general design approach.

Achieving desirable purpose through something playful has a greater user acceptance. Inside of my internship experience, my mentors emphasized the importance of diving deep into user personas, not just as fictional characters, but as real individuals with distinct preferences, needs, and behaviors. The more I engaged with research, the more I appreciated its power. It was like having a compass that guided every stroke of creativity, determining the tactile experience of a product, research was the beacon that illuminated the path to design solutions that were both innovative and responsible. This internship was more than a learning curve; it was a trans formative experience that made me aware of the intrinsic link between research and impact full design. It taught me that to design for the future, one must understand the present in all its complexity. The insights and topics of research are filled in the report with a brief note of explanation and how I achieved to get the data in different forms. Other way to mention my research towards game and

learning specific to kids is. Recently, I had the opportunity to delve Tdeeper into this fascinating domain through a workshop dedicated to game design. This workshop was not just an event; it was a journey into the heart of interactive creativity. I found the workshop to be a treasure trove of insights. It was a space where like-minded individuals and seasoned professionals converged to share knowledge, challenge conventions, and foster innovation. The hands-on sessions, collaborative challenges, and expert-led discussions provided a comprehensive view of the game design landscape, from conceptualization to execution. This workshop has been instrumental in shaping my understanding of the intricate balance between play ability and challenges , especially for games.

Through rigorous research and a hands-on approach to game design i have sought to identify the design statement as well exploration that transcendence (experience that goes beyond normal limits or boundaries, or the ability to achieve such a state) my design process. My commitment to technology and user-centre design principles has guided every decision, from the selection of educational elements that foster cognitive growth and creativity. This report chronicles my journey of discovery and creation—an endeavor to blend scientific inquiry with the art of game design. As children learn from other players watching them play and discussing the game afterwards. where is game, there is a learning. Design for kids is an idea of purposeful games resonates with the general design approach by achieving desirable purpose through something playful has a greater user acceptance.

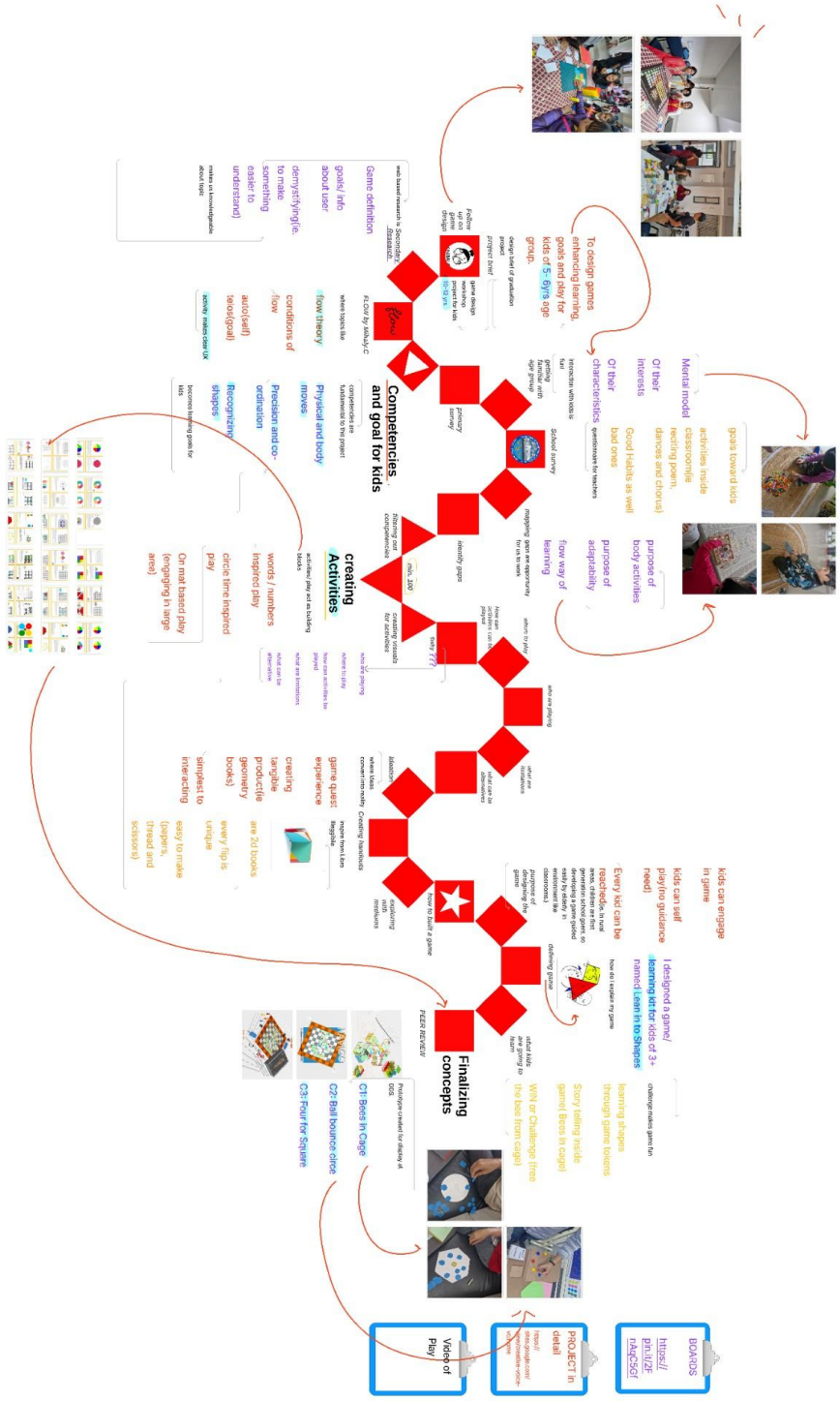
To design games enhancing learning, goals and play for kids of 5- 6yrs age group.
Mental model
Of their interests
Of their characteristics
goals toward kids
activities inside classroomlike reciting poem, dances and chorus)
Good habits as well bad ones
purpose of body activities
purpose of adaptability
flow way of learning
Competencies and goal for kids
Game definition
goals/ info about user
how theory
demystify/ingrle. to make something easier to understand)
conditions of flow
auto(self) teros(goal)
Physical and body moves
Precision and co-ordination
Recognize shapes
creating Activities
words / numbers inspired play
circle time inspired play
On mat based play (engaging in large area)
kids can engage in game
kids can self play/no guidance need)
I designed a game/ learning kit for kids of 3+ named Learn in to Shapes
Every kid can be reached/a. in rural areas as they generation school game, so directing a game/good ones by using in classrooms)
learning shapes through game boxes
Story telling inside game(Boss in cage)
WIN or Challenge (free the boss from cage)
Finalizing concepts
PEERS REVIEW
creating tangible productive geometry book's)
are 2d books
every flip is unique
simplest to interacting
easy to make (paper's, thread and scissors)
C1 Boss in Cage
C2 Ball bounce circe
C3 Four for Square
BOARDS
https://pin.it/2Fn4qC9Gf
PROJECT in detail
Video of Play

fig 1.1

2. Background Study

The landscape of game design is ever-evolving, with new technologies and methodologies constantly emerging to shape how we create and interact with games.

This background study serves as the foundation for my project, with specific literature review taken from designers, psychologists, and academics professionals in game design. The following highlights include Flow theory by Mihaly, Demystifying Board Game Design and interactive game theory from Chris Crawford. (1)

Flow is the state where individuals are so engrossed in an activity that nothing else seems to matter. It's often described as being 'in the zone,' where time seems to fly by, and one's actions and awareness merge.

2.1 Conditions for Flow:

Clear Goals, ie to achieve flow, it's crucial to know precisely what tasks we must accomplish moment by moment. Focusing on the steps along the way, rather than solely fixating on the ultimate outcome, enhances the quality of our experience during performance. A new word I explored during the studies of conditions is Autotelic (Auto is self, telos is goals) .

An autotelic experience refers to a self-contained activity—one that is done not with the expectation of some future benefit, but simply because the activity itself is intrinsically rewarding. There can be a lot of activities in daily lives, but an example of autotelic activity in daily can be, Solving Puzzles or Brain Teasers, ie it's a crossword puzzle, Sudoku, or a complex math problem, the challenge and focus create an autotelic experience. The satisfaction comes from the mental engagement, not from winning a prize.

2.2 Flow Activities/ Balance between skills and challenges:

Inside the theory of flow, includes the other psychologists who is Caillois's classification, ie to understand the multifaceted nature of play and its impact on human behavior and culture.

Caillois identified four fundamental types of play in his influential work "Man, Play and Games." (1)

The next question arise, that who are the people in flow, or how can some-one can experience flow through activities.

In context to game for kids, flow activities has something to relate with building activities that can be defined by themselves in terms of clear goals, autotelic practice, fundamentals of play full activities, intrinsic motivation (Flow activities are pursued for their own sake, not for external rewards), Effortless Action(Despite the challenge, flow feels effortless) and many more. The literature review have been combination of 10 traits on flow in different segments unlike body in flow, thoughts in flow, work in flow, and experiencing enjoyment in flow activities.

2.3 Chris Crawford on interactive storytelling

In the literature review of author, Crawford reflects on the history of game play and historical games, emphasizing the importance of understanding the evolution of games to inform modern design. The book and the context was not directly relatable to the aim and brief provided for the project, but on finding the definitions of game design have had made me come across the this book. The following points are the learning from the author statement in context of my project.

2.3.1 Defining Games:

This section of research has been defined in several ways and terms by people, which made me intrigue about it. According to the author, If no goals are associated with a plaything, it is a toy. From the diverse combination of terms and learning, I includes more to the statement of game definition prior to kids learning, ie Including challenges, in ways of conflicts, team play, or levels are must components of building any play/ or activity into a game.

2.3.2 Creativity and Storytelling:

The inclusion of creativity and the importance of storytelling in games are underscored as critical elements that enhance the gaming experience.

2.3.3 Challenge in Gameplay:

The necessity of challenge in gameplay is discussed, highlighting how it engages players and contributes to a game’s success.

2.4 Demystifying Board Game Design by Prof. Uday Athavankar

The course study made by IDC Bombay, which I have accessed through the internet has been a great way of researching as background study of my project. The course not only have had helped in understanding the terms, as well made my design process prior clear and effective in stages of research, mapping, and implementation.

2.4.1 Zero cost game:

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2.4.2 Games as Puzzle or race

Another term that has become popular recently is gamification. It's relationship with the concept of games is tenuous. It refers to using concepts and game elements in non-gaming activities and events.

2.4.3 Generating a good conflict:

Any current game state allows player A to exercise his freedom to carefully choose from the multitude of options to alter the game state. Larger the number of options, greater is the freedom to choose from. Such an event will have more uncertainty. Player A intentionally selects his action from the options available and attempts to create inequality to his advantage.


KIDS
people in flow
SCHOOLS
CLASS ROOM
flow and culture
PLAY GROUND
CONDITION OF FLOW
flow activities
GAMES
In the realm of minds where thoughts intertwine,
Lived a sage of the age, Csikszentmihalyi by line.
A psychologist of note, with insights so profound,
He charted the 'flow', where fulfillment is found. "Father of Flow," they hailed him with cheer,
For he taught us to seek what we hold dear.
To find in our tasks a joy so pure,
An optimal state, both rich and demure.
auto(self)
telos(goals)
ADAPTA
BILITY
personalities
In the flow, we're lost, yet more ourselves than ever,
Crafting experiences both floating and clever.
Csikszentmihalyi's legacy, like a river, does stream,
Through the valleys of thought and the mountains of dream
AUTO-TELIC ACTIVITIES
mind and body
movement
So let's ride the waves of our own inner sea,
And find our flow, as Mihaly decreed.
For in that space, we're truly alive,
Immersed in the moment, we naturally thrive.
FLOW THEORY
Mihaly Csikszentmihalyi
doodle at GoogleWatchBlog
ACTION AWARNESS
CHALLENGES
CLEAR GOALS
ELEMENTS OF ENJOYMENT
flow

fig2.1

3. Problem Identification/ Need of Study

I was provided with study material related to the NCF to work on throughout the project guideline. In this chapter of need of study, there is brief details of competencies, game tokens and challenge topics .

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3.1 Competencies: The NCF emphasizes eight key competencies that all children and young people should achieve. These competencies form the common core of achievement across various stages of schooling.These competencies go beyond subject-specific knowledge and focus on holistic development. They are essential for lifelong learning and success in various contexts. The key competencies include skills, values, and dispositions that learners need to develop. They are integral to the NCF's curricular goals and pedagogical approaches.

3.2 Competency-Based Education: The NCF promotes competency-based education, which shifts the focus from rote learning to deeper understanding and practical application. Competency-based education emphasizes the development of specific skills, attitudes, and values across different domains. It encourages teachers to design engaging learning experiences that help students acquire these competencies. Integration Across Subjects, Values and Dispositions,

Holistic Development

Among study of competencies and understanding the importance and values of them in early childhood, have gave clear view of identifying the design statement for the project. In further section, a brief detail on selection of age group, competencies and designing a solution for kids learning will be given

Foundational Stage (Ages 3-8):

Age category of 3-6 yrs kids is called the foundational stage. There can be certain goals and competencies achievement of this certain age group. They are as follows:

Focuses on multifaceted development including language, cognitive, socio-emotional, and physical aspects . Emphasizes play-based and activity-based learning to develop curiosity, creativity, and critical thinking. Illustrative learning outcomes are provided for each competency, recognizing that children develop at their own pace.

3.3 Age group selection:

Choosing the 5-6 year age group as the target audience for educational content is a strategic and informed decision, deeply rooted in the principles laid out by the National Curriculum Framework (NCF). As this is a Critical Period of Development, According to the NCF, the early years, particularly between 5-6 years, are a critical period for children's development1. This is when the brain develops most rapidly, laying the foundation for future learning and well being

For children aged 5-6 years, the learning goals are tailored to their stage of rapid development and readiness for more structured learning. Cognitive development is a priority, with a focus on

enhancing language skills, such as storytelling and word recognition, and building a foundational understanding of numeracy. Physical development goals include refining motor skills, enabling children to write their names and draw shapes, as well as fostering self-care abilities. Social and emotional milestones are also crucial, with an emphasis on cooperative play, sharing, emotional expression, and empathy. Creativity is nurtured through artistic activities and responding to music, while intellectual development is supported by encouraging problem-solving, critical thinking, and decision-making based on simple logic.

3.4 Primary competencies to focus:

I have to narrow to three competencies from the study table. Here is brief explain of selected competencies chosen for further study :

3.4.1 C1 In the context of the NCF, recognizing shapes and understanding basic geometry for 5-6-year-old children is a vital educational goal. It serves as an introduction to mathematical reasoning and spatial understanding, which are key competencies in the foundational stage of learning. This early engagement with geometry also aids in enhancing their observational skills, enabling them to describe and interact with their environment more effectively. By integrating basic geometry into the curriculum, the NCF aims to lay a strong foundation for children's future academic success and their ability to navigate and make sense of the physical world around them.

3.4.2 C2 The development of precision and control in working with hands and fingers is a critical aspect of a child's growth, particularly in the early years. This fine motor skill is essential for a

range of daily activities and tasks, such as writing, drawing, buttoning clothes, and using utensils. In the context of the National Curriculum Framework (NCF), fostering these skills in children, especially around the ages of 5-6, is emphasized as it lays the groundwork for academic success and functional independence. The ability to manipulate objects with accuracy not only aids in educational activities like handwriting and crafts but also in personal care tasks, contributing to a child's self-esteem and confidence. Moreover, the mastery of hand and finger control is a stepping stone to more complex learning and coordination tasks, making it a fundamental goal in early childhood education

3.4.3 C3 The coordination between sensory perceptions and body movements in various activities is a complex process that involves the integration of multiple systems. For children, especially, this coordination is crucial for their overall development and learning. Sensory perceptions, such as sight, sound, and touch, provide the brain with information about the environment. This information is then processed and used to guide body movements in a precise and purposeful manner. Activities that require this type of coordination, such as catching a ball or navigating through an obstacle course, help children develop their motor skills, spatial awareness, and cognitive abilities. As they grow, these coordinated actions become more refined, allowing for more complex physical activities and enhancing their ability to learn and interact with the world around them11. This coordination is not just about physical capabilities; it's also about the neurological connections that support cognitive functions like planning, decision-making, and problem-solving.

3.5 Game

During the initial study itself, research study on demystifying(making a difficult subject clearer and easier to understand) was the goal to be achieve. Demystifying game design, reveal the core educational values that games offer. They are not just tools for entertainment but are instrumental in creating a rich, engaging, and memorable learning landscape for children. As such, games are not only compatible with educational objectives but are also crucial in developing a well-rounded and interactive learning experience that resonates with the curious and exploration nature of children. Here are brief explain of topics related to game design in field of study:

3.5.1 Defining a Game: According to Chris Crawford's definition, a game is an interactive activity where competition is central. This competition can occur between players or between a player and a machine, and it involves a dynamic where each can influence the other's performance. In this context, games are seen as goal-oriented activities that are both playful and entertaining. To further elaborate, a game must possess certain characteristics to be recognized as such:

Fun: A game should be enjoyable and engaging, providing pleasure and amusement to the participants.

Uncertain: The outcome of a game should be unpredictable, adding an element of suspense and excitement.

Fictitious: They often involve a fictional scenario, allowing players to engage in activities that may not be possible in real life.

However, Crawford also suggests that the elements of play, rules, and competition alone do not fully capture the essence of what games are. This implies that games are complex cultural and

social constructs that cannot be easily defined by a set of characteristics. They are multifaceted experiences that can have different meanings and serve various purposes for different people. In essence, games are more than the sum of their parts, and their true nature might be elusive, shaped by the context in which they are played and the individuals who play them.

3.5.2 Kind of game:

Sports, on the other hand, are physical games that involve bodily coordination, teamwork, and competition in a real-world setting.Video games represent a digital frontier of interaction, where players engage with a virtual environment through a screen and input devices like controllers, keyboards, or touchscreens. Simulations are a form of game design that replicates real-world systems or experiences, often for training or educational purposes. These can range from flight simulators to business management games, where the interaction is designed to be as close to reality as possible, providing a safe and controlled environment for learning and experimentation.

3.5.3 Purpose of Game:

Every game to be designed has a purpose of solving a cause/ problem/ user need. Gamification way of learning, such as emerging learning with play rather than conflicting with each other. In rural areas, children are first generation school goers, so developing a game guided easily by elderly in environment like classrooms.In rural areas, where children are often the first in their families to attend school, the development of educational games that can be easily guided by the elderly within a classroom setting is of paramount importance. Drawing from the principles

outlined in “Demystifying Board Game Design,” such games should be designed with simplicity and inclusivity in mind. Games that are designed for individual play can be particularly engaging and beneficial. This aspect is especially relevant in India, where there is a significant shortage of teachers. Integrating self-motivating elements into games can foster independence and encourage children to take initiative in their learning process. By doing so, games not only serve as a source of entertainment but also become a valuable educational tool that can help mitigate the impact of teacher scarcity.

During the study, I came across the theory of challenges in games. Games involve a conflict between players, hoping that the players will be engaged in tackling the challenge to get a competitive edge. To overcoming these challenges requires a combination of creativity, adaptability, and effective communication within the game development team Game pillars are foundational concepts that serve as the bedrock of a game’s design and development. They are typically a set of three to five key ideas that a game seeks to explore and emphasize throughout its creation. These pillars guide every aspect of the game’s development, from game play mechanics and dynamics to the emotional experiences and themes it aims to convey. For instance, a game pillar could focus on fostering a sense of exploration, encouraging players to immerse themselves in the game’s world and discover its secrets. Another pillar might prioritize strategic thinking, challenging players to make decisions that have meaningful consequences within the game. By establishing clear game pillars, designers ensure that the game remains focused and cohesive, providing a consistent and engaging experience for players. These pillars also help teams to make informed design decisions, avoid common pitfalls, and align their work with the game’s core

vision. In essence, game pillars are not just guidelines but the essence of what the game is and what it offers to its players.

4. User Research

The section of research includes secondary and primary research, as well reason behind making activities and handouts during the process.

4.1 Primary: In the realm of game design, user research stands as a cornerstone, shaping the very foundation upon which engaging and impactful games are built. This project takes endeavor to heart, embarking on a comprehensive journey to gather insights directly from the core of our audience—schools, parents, teachers, and most importantly, the children themselves. An interaction with teachers provided a window into the educational synergies that the game can harness. Meanwhile, observations of children in their natural play environments aims to get insights into the unspoken language of their joys, challenges, and learning styles. This multi-faceted approach to user research is not merely a step in the design process; it is a commitment to creating a game that resonates with the heartbeat of its players, fostering a space where fun and learning coalesce seamlessly.

4.1.1 User Persona: Keshav is a 5-year-old boy full of energy and curiosity. He loves playing, especially with toys that let him run around or figure things out, like puzzles. He also likes games and stories about animals and the outdoors. When he uses games on a tablet or computer, he prefers ones that he can touch and interact with directly. Our game is being made to be fun and helpful for kids like Keshav, helping them learn and play at the same time.

As he steps into the first standard, he does so with the companionship of his older sister, who shares in his daily adventures. Keshav's world is colored by his love for dinosaurs and leopards, creatures that fuel his imagination and play. The color red, as vibrant as his spirit, is his favorite, and guavas are the fruit that delights his taste buds. Every aspect of his day, from his beloved animals to his chosen hues and flavors, is a reflection of the vivid tapestry of his young mind.

4.1.2 User Persona: Siya is a 5-year-old girl who loves to play with toys and recite poems. She has an older sister and lots of friends. At a dinner party, she wore a pretty pink dress and a pink hairpin. She's a happy child who enjoys sharing stories and playing with others. Her love for toys was evident as she animatedly chatted about her latest adventures with her dolls and action figures, each tale punctuated with giggles and expressive hand gestures.

4.1.3 Game Quest Experience: This is an observation method used during collection of data form user. The Game Quest Experience method stands as a valuable tool. Imagine stepping into the shoes of a curious observer, armed with a notepad and an attentive gaze. To understand how players interact with games—specifically, those they already know well.

4.1.4 Survey(School)

The following are question prepared before visiting school that further were modified during discussion and meet: what is fun you find in teaching elementary kids class? how many kids are in one class? how many of kids you interact within a day? how long you have been teaching kids of elementary age? what is schedule of day school? what time do kids start getting bored?

what are the problems you face, while interacting and teaching in class?
what are few good habits you see in them? what are bad habits that you
observe in kids currently? what gain you feel at end of the day as an
entire class?
are kids playing in groups and activities? what could
be the one change in classroom you wish? in your
views, what kids do enjoy the most in school?

I recently did a survey with teachers from the younger classes at SHPS school. It was a great experience. The teachers really care about their students and want to make learning fun and interesting. They shared their ideas and thoughts with me, which helped me understand what works well in their classes and what could be better. SHPS is a good school that focuses on helping kids learn in the best way possible. The survey helped me see how dedicated the teachers are and gave me good ideas on how to make the school even better.

After engaging with the teachers of 5-year-old children and employing the “Say, Think, Feel, Do” method, a comprehensive picture of the child’s perspective can be constructed. Teachers often observe what children say, which can range from expressions of joy and curiosity to moments of frustration or confusion. By analyzing what children think, one can infer their understanding and cognitive processes, often revealed through their imaginative play and problem-solving attempts. Understanding what children feel is crucial; their emotions can fluctuate rapidly, and these feelings

deeply influence their engagement and learning. Lastly, observing what children do—their actions and interactions—provides tangible evidence of their developmental progress and social skills.

This methodical approach of gathering insights is easy to fill as a designers perspective view as well gives clear way of briefing teachers point of view

5. Concept Development

5.1 Built activities : is first in concept development. In my design project, activities serve as the foundational elements, much like the building blocks that come together to create a Minecraft. Each activity is a carefully crafted piece of the larger puzzle, contributing to the overall structure of the product building. These activities are not just tasks; they are playful experiences designed to spark joy, laughter, and learning among children. As they engage in these mini-adventures, the kids not only have fun but also absorb new knowledge seamlessly. The kickoff of my internship involved devising these engaging activities, ensuring that each one is a stepping stone towards an enriching and enjoyable learning journey for the children. Following are activities based on simplest play like:

Crossword/ wordplay/ number play, Four squares/ niners/ sudoku, hopscotch/ play in circle/ pyramids

One can easily find the resemblance of existing games above mentioned as an inspiration while making activities for kids. I have named each activity as unique name, and small brief of how to play and WIN . Visuals of activities while presenting were taken in consider, making them color full and simple to grasp by anyone.

5.2 Handouts: The creation of activities sparked a rich dialogue on how to best engage children in the learning process. Central to this discussion was the role of tangible materials—printable books, toys, and blocks—which are instrumental in bringing each activity to life. These items serve

as physical touchpoints that children can interact with, enhancing their sensory experience and aiding in comprehension. In this context, the term “Handouts” emerged as a key concept.

Handouts refer to the materials provided to kids to facilitate their participation in the activities. They are not just tools; they are bridges that connect the child’s curiosity to the educational goals of the activity, ensuring a hands-on, immersive experience that is both enjoyable and instructive.

5.3 ‘5 why’

who are playing:, where to play, How can activities can be played, what are limitations, what can be alternatives

5.4 Finding Gaps through mapping: Finding gaps during the design process is of paramount importance as it directly influences the effectiveness and success of the final product. Gaps represent the discrepancies between the current state and the desired outcome, highlighting areas that are lacking or could be improved. By identifying these gaps, recognizing gaps fosters innovation, as designers are challenged to think creatively to fill these voids with functional and novel solutions. The process of finding gaps is a proactive measure that leads to a more refined, user-centric, and impact design. It is a crucial step that cannot be overlooked if one aims to deliver a product that truly resonates with the end-users and stands out in the competitive landscape of design.

I found an opportunity in the purpose of game, elementary learning, and flow in current games.

5.4.1 Purpose of physical and body development: The purpose of physical and body development in children is a cornerstone of their overall growth and well-being. It encompasses a wide range of benefits, from the enhancement of motor skills to the promotion of healthy lifestyle habits. For instance, engaging a child in activities like playing catch or jumping rope not only improves their hand-eye coordination and cardiovascular health but also instills a sense of rhythm and timing. These activities contribute to the development of gross motor skills, which are crucial for more complex movements as they grow older. Additionally, physical development plays a

significant role in social interactions; children learn to take turns, share, and collaborate through team sports or playground games. Such interactions are vital for emotional and social development, teaching children valuable life skills such as cooperation, perseverance, and sportsmanship. In essence, fostering physical development in children lays the foundation for a healthy, active, and socially engaged life.

5.4.2 Purpose of adaptability by kids: Adaptability in children is a vital aspect of their development, as it equips them with the resilience and flexibility needed to thrive in various social and educational settings. When children learn to adapt, they are better prepared to form meaningful relationships with peers and educators, which is essential for their emotional and social growth. For example, a child who adapts well to the classroom environment is more likely to engage actively in learning activities and collaborate effectively with classmates. This adaptability extends beyond interpersonal interactions; it also includes acclimating to the structured routines of school life, such as following schedules and adhering to classroom rules.

By fostering adaptability, we encourage children to embrace new experiences, overcome challenges, and develop a positive attitude towards learning and socialization, which are crucial skills for their future success.

5.4.3 Flow way of elementary learning: Elementary learning is most effective when it flows naturally, engaging children in a manner that feels more like play than work. This approach taps into their innate curiosity and desire for fun, making the acquisition of new concepts, like numbers and multiplication tables, an enjoyable experience. For instance, incorporating games that involve

counting objects or solving puzzles can help children learn numerical skills without the pressure of traditional rote memorization. Similarly, understanding scientific processes becomes less daunting when taught through hands-on activities and physical experiments. By creating a learning environment that is interactive and dynamic, educators can foster a love for learning that encourages children to explore, discover, and retain information in a way that feels effortless and exciting.

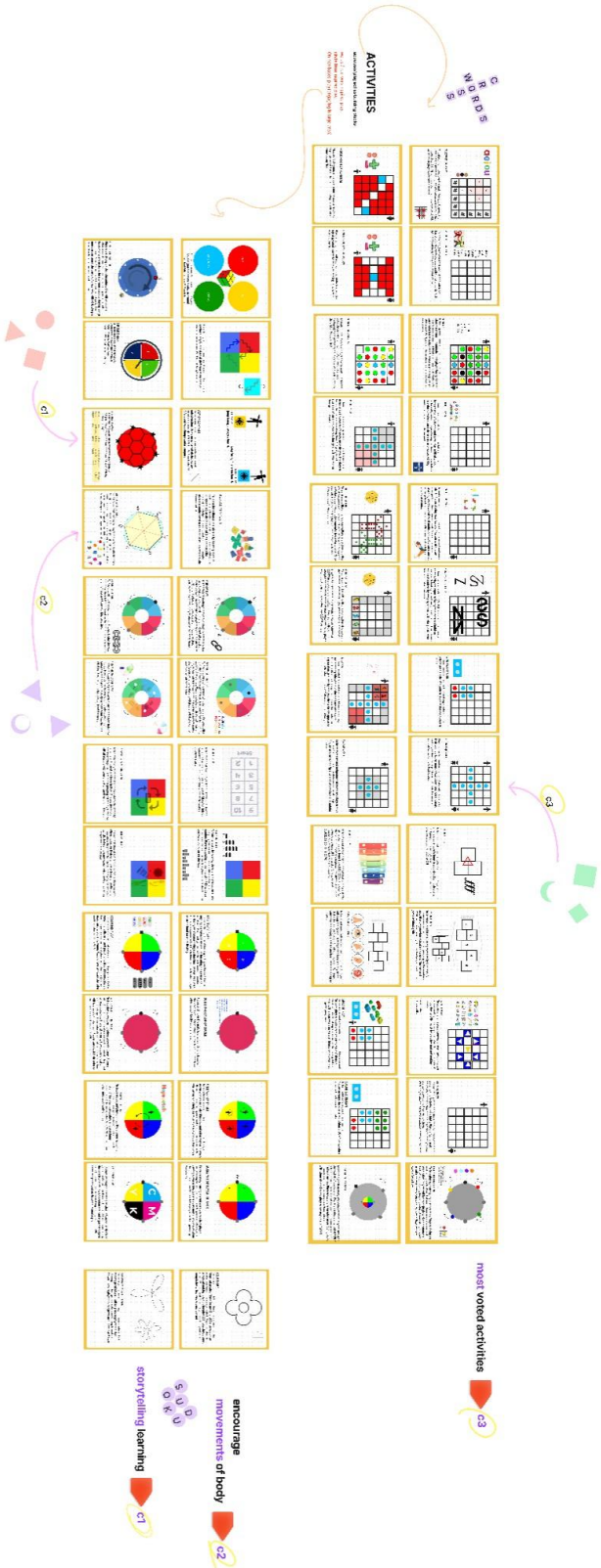
ACTIVITIES
most voted activities
c3
encourage
movements of body
c2
storytelling learning
c1

fig 5.1

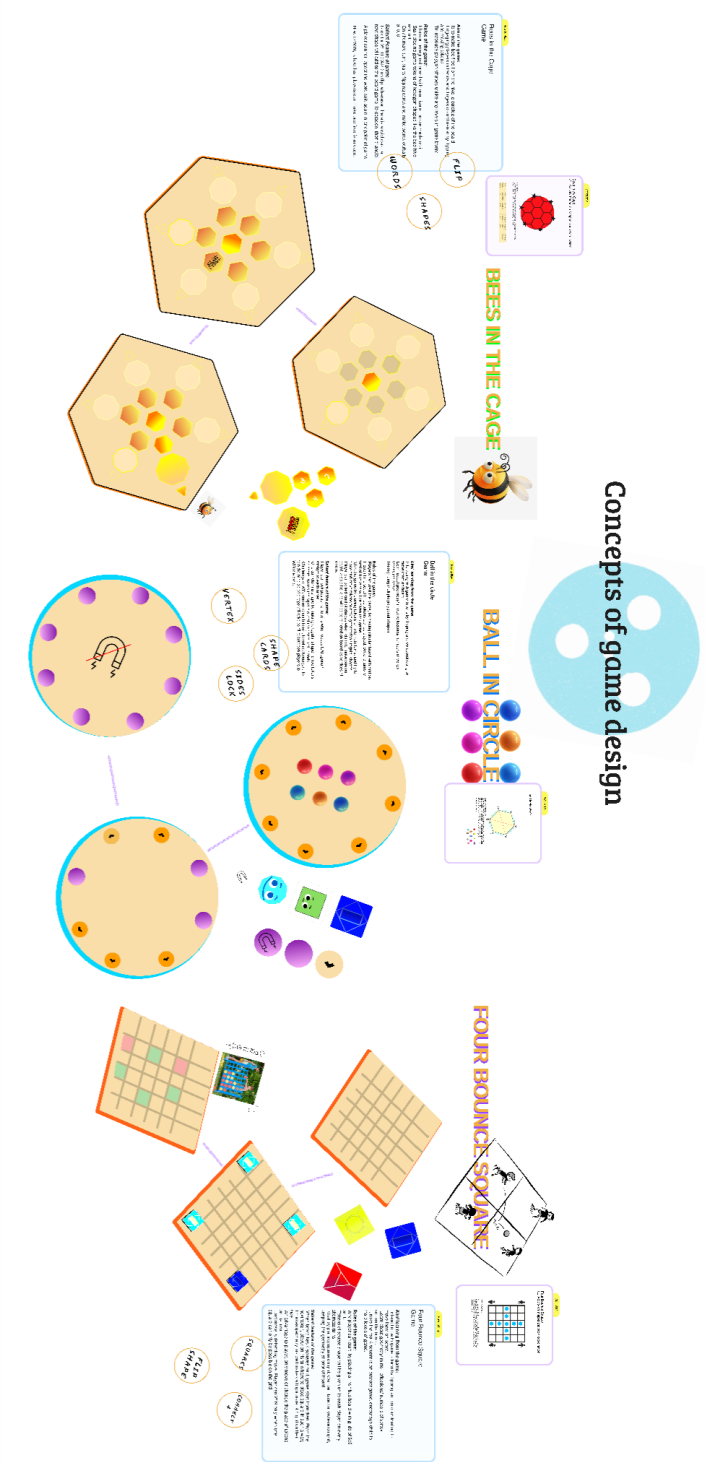
Concepts of game design
BEES IN THE CAGE
BALL IN CIRCLE
FOUR BOUNCE SQUARE

fig5.2

6. RESULTS

In conclusion, my graduation project was fundamentally a research endeavor, rich with diverse methodologies aimed at exploring solutions. The central thesis posited that designing a game could significantly enhance the learning experience of children aged 5 to 6 years old. Through meticulous research and creative design, the project sought to demonstrate that a well-crafted game has the potential to boost the cognitive development of young learners, making education both engaging and effective. This project stands as a testament to the power of design in transforming educational paradigms and enriching the learning journey of our youngest minds.

This project conclude on the stage of showcasing the project and collecting the feedback briefly explained:

6.1 About Exhibition:

The Department of Design proudly hosted the Design Degree Show on the 29th of April, marking a significant milestone for the final year design students. This event served as a platform for these emerging designers to present their final semester projects, which encapsulated their learning journey and creative exploration. The exhibition showcased a diverse array of projects, each reflecting the unique vision and innovative approach of the students. It was an opportunity for the students to demonstrate their design prowess and for the audience to witness the potential of the next generation of designers. The Design Degree Show not only celebrated the culmination of the students' academic endeavors but also set the stage for their future contributions to the world of design.

6.2 Game Quest Review:

The preparation of the design panel for the project was a meticulous process that set the stage for effective presentation and interaction during the exhibition. This panel served as a visual and informational anchor, guiding visitors through the project's concept, development, and final outcomes. Coupled with this, the feedback and gameplay experiences with visitors were instrumental in refining the design project. Engaging with the audience in real-time allowed for immediate insights into the user experience, revealing strengths and areas for improvement. This direct interaction fostered a deeper understanding of how the game was perceived and played, leading to iterative enhancements that fine-tuned the game mechanics, user interface, and overall design. The combination of a well-prepared design panel and active visitor participation created a dynamic environment that was conducive to the evolution of the design project, ultimately resulting in a more polished and user-responsive outcome.

The review panel for a design project, particularly one aimed at creating educational games for children, is a multifaceted entity that plays a crucial role in the refinement of the product. It typically comprises different segments, each with a distinct focus and method of evaluation During this phase, visuals and observational data are critical. They not only document user interactions but also capture non-verbal cues and behaviors that might not be expressed verbally. These insights are essential for making data-driven improvements to the game.

Moreover, the ability to explain the game and its rules effectively becomes an art form in itself. A well-articulated presentation can make the difference in how the game is perceived, highlighting its strengths and the thought process behind its design. Clear communication

ensures that the reviewers understand the game's purpose and mechanics, which is especially important when dealing with complex or innovative gameplay concepts.

6.3 Peer Review:

This involves fellow designers or individuals from similar creative disciplines engaging with the game. Unlike general user testing, where any age group might interact with the product, peer review is more about assessing the design from a professional and technical standpoint. Peers can provide insights into the design's aesthetics, functionality, and overall user experience.

6.4 CONCLUSION

6.4.1 Targeted User Interaction:

In the case of games designed for children aged 5-6 years, observing the interaction between the young users and the product is invaluable. Watching kids play and engage with the game offers direct feedback on the game's appeal and educational value.

It's an opportunity to see if the game is intuitive, enjoyable, and educational from the perspective of the target audience. This task is yet to be done with certain parameters of methods and testing

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8. APPENDICES

8.1 The goal is to make a fun interactive game for kids for their learning. The scope of the game is to reach every classroom ruling out location, access or guide of play.

The overarching goal is to create an interactive game that is not only enjoyable but also serves as an educational tool for children. The game is envisioned to be universally accessible, transcending barriers such as geographical location, availability of resources, or the need for specialized guidance.

Moreover, the game would be adaptable to various learning environments, whether it be a well-resourced urban classroom or a remote area with limited educational infrastructure. This could be facilitated through a scale able design that allows for offline play or through platforms that are commonly available in schools.

8.2 Competencies form the foundational elements, it's essential to integrate a broad spectrum of competencies that promote the physical development of children. By doing so, the game can support a holistic growth model that not only entertains but also educates.

To encompass a wider range of physical competencies, the game could include activities that encourage movement, coordination, and spatial awareness. For instance, tasks that require jumping, balancing, or navigating through spaces can be incorporated. These activities can be designed to be scaled in complexity to match the varying levels of physical abilities among children, ensuring that every child finds the game engaging and appropriately challenging. In an open field, the game could take advantage of the larger space to include running, team-based activities, or obstacle courses that foster gross motor skills. In contrast, within the confines of a classroom, the game could focus on activities that develop fine motor skills, such as manipulating objects, drawing, or performing actions that require precision.

8.3 During the internship period, a lot of emphasize has been on user center research(UX) and AR in UI part of implementation.

By focusing on UX, the design process becomes deeply rooted in understanding the needs, behaviors, and experiences of the end-users, which in this case, are children. This ensures that

the game is not only engaging and educational but also intuitive and accessible for its young audience.

Incorporating AR into the UI elevates the interactive experience by overlaying digital information onto the real world, making the learning process more immersive. AR can bring abstract concepts to life, allowing children to visualize and interact with 3D objects and environments that would otherwise be beyond the scope of traditional learning methods

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