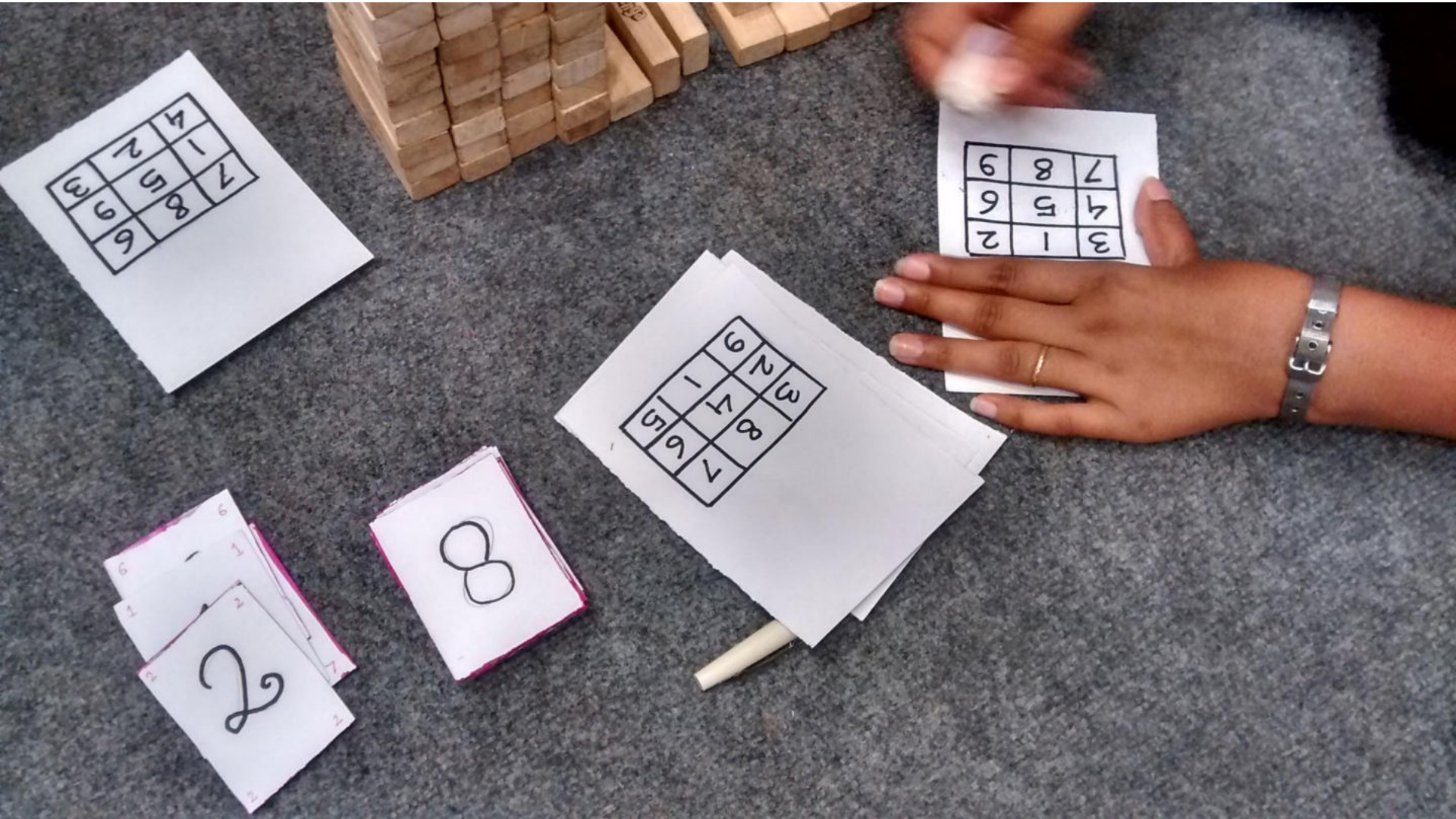
P1 PRESENTATION

Neha Alice Kerketta



TOPIC

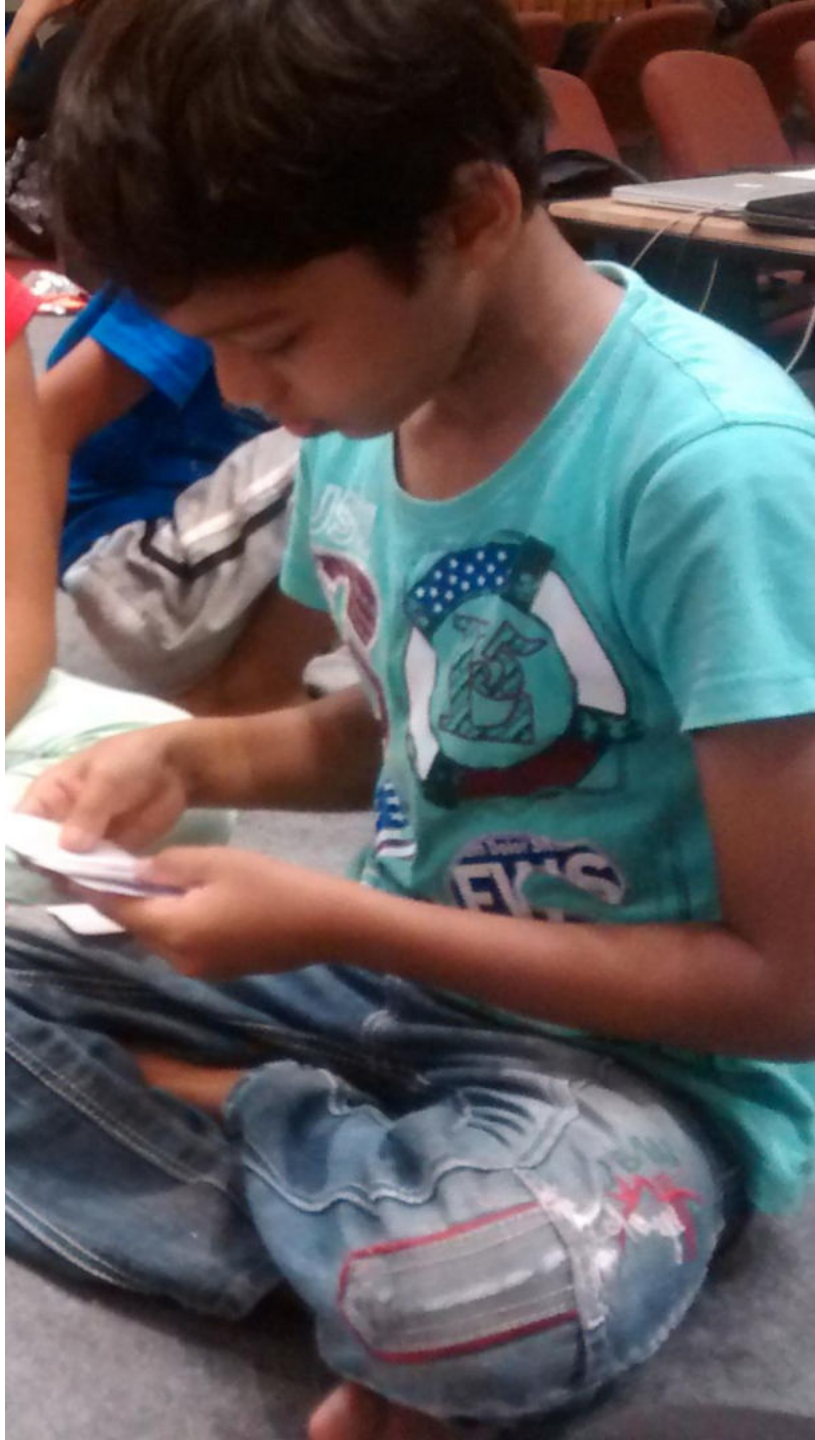
Process of developing board games and digital gamification to aid primary school learning.

ABOUT THE PROJECT

Gamification of education, an initiative by Madhya Pradesh Government to enhance education in government schools.

OBJECTIVE

Converting the maths and language syllabus of class 1 to 5 into games that help aid the understanding of concepts by engaging one in alternative thinking.



TIMELINE

- *Presentation by Prof. Athvankar to introduce game design.*
- Analysing existing games.
- Making a physical game to teach any given concept.
- Meeting with rsk team and their presentation on the what has already been incorporated in the project.

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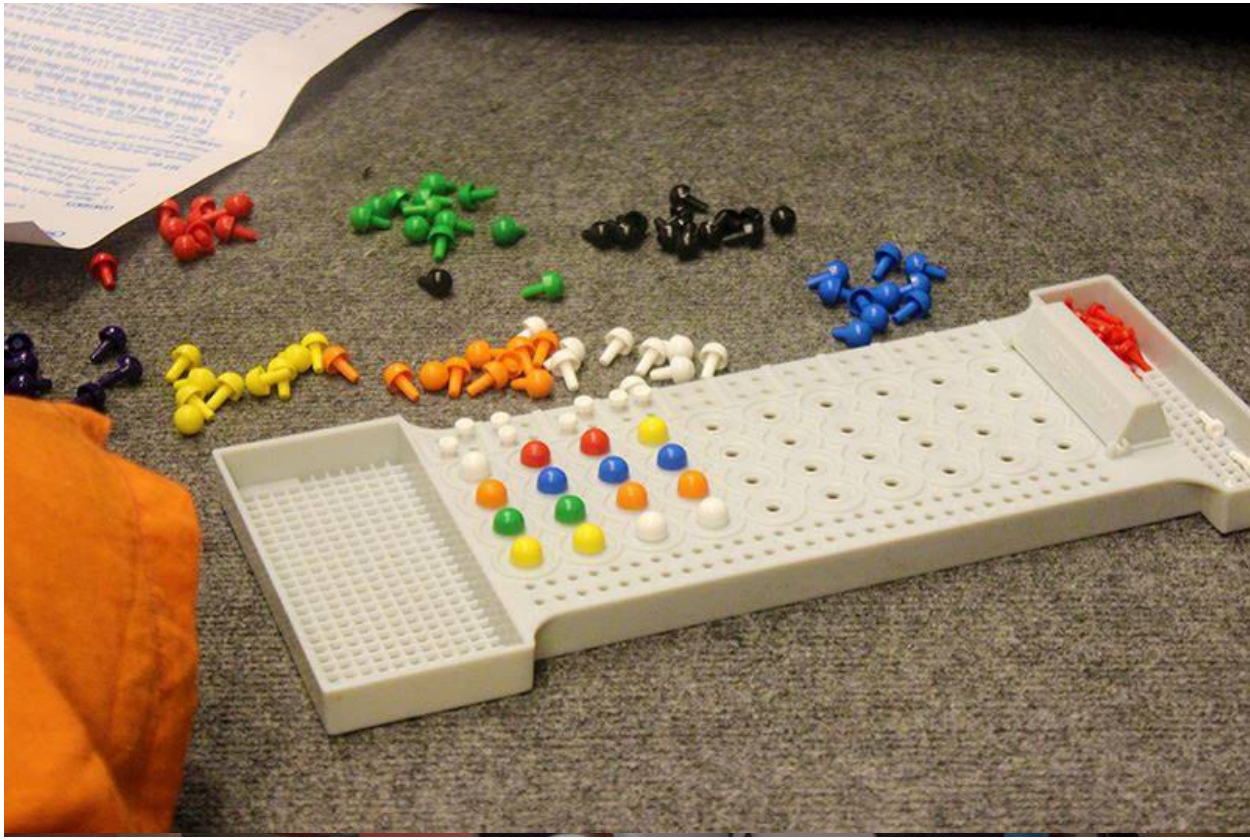

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- *Understanding the syllabus, topics designated.*
- Analysing and presenting our topic – number system.
- Discussing problem areas in learning with the RSK members.
- Game development begins, brainstorming and prototyping.

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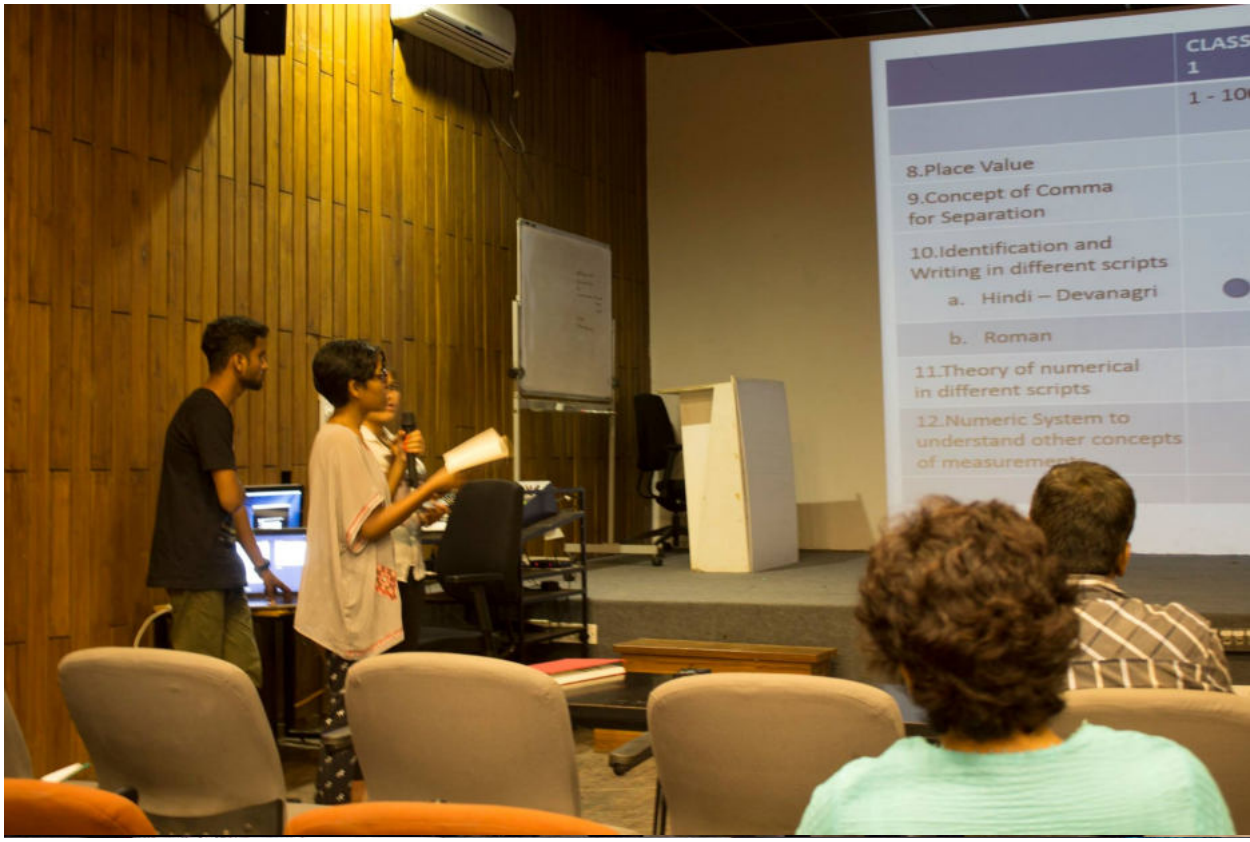

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- *Playtesting games with children.*
- Making iterations and evolving the games.
- Taking our games to playtest with children at daycare.
- Analysing outcomes, re-iterating and finalising.

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- *Presenting the final games and discussing feedback.*

- Production. Making the final hardware for the games to be taken to bhopal and tested.

- Digitisation phase: Talks, discussions and prototyping.

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NUMBER SYSTEM Class 1 to 5

BEGINNING

- Detailed study of the books.
- Understand the scope of the topic and syllabus.
- Detailed discussion on the syllabus and our observations and understanding.

	CLASS - 1	CLASS – 2	CLASS – 3	CLASS - 4	CLASS - 5
SYLLABUS	1 - 100	100 - 1000	1000 - 10000	10000 - 100000	10000 - 100000
1. Identification	●	●	●	●	●
2. Writing Practice (Pre Activity)	●				
3. Count and Write a. Number	●	●	●	●	●
b. Words		●	●	●	●
4. Knowing the value	●	●	●	●	●
5. Write and speak in hindi		●	●	●	
6. Sequence and Order					
a. Increasing and Decreasing		●	●	●	●
b. Even and Odd		●			
c. Relative Order			●		
7. Greater than and Lesser than	●	●	●	●	●

	CLASS - 1	CLASS – 2	CLASS – 3	CLASS - 4	CLASS - 5
SYLLABUS	1 - 100	100 - 1000	1000 - 10000	10000 - 100000	10000 - 100000
8. Place Value		●	●	●	●
9. Concept of Comma for Separation					●
10. Identification and Writing in different scripts a. Hindi – Devanagri	●				
b. Roman					●
11. Theory of numericals in different scripts				●	
12. Numeric System to understand other concepts of measurements				●	●
13. Number Lines			●	●	●

THE NEXT STEP

- Discussion on each topic and activities already in practice.
- Problem Identification and particular problem areas in learning for kids of different standards.

	CLASS - 1	CLASS – 2	CLASS – 3	CLASS - 4	CLASS - 5
PROBLEM AREAS	1 - 100	100 - 1000	1000 - 10000	10000 - 100000	
1. Place Value		●	●	●	●
2. Understanding expanded form of Place value			●	●	●
3. Greater than and Lesser than values and use of the symbols <,>,=				●	
4. Number sequence. Adjacent numbers, increasing and decreasing values.	●	●			
5. Factor and multiples L.C.M. and H. C. F.					●

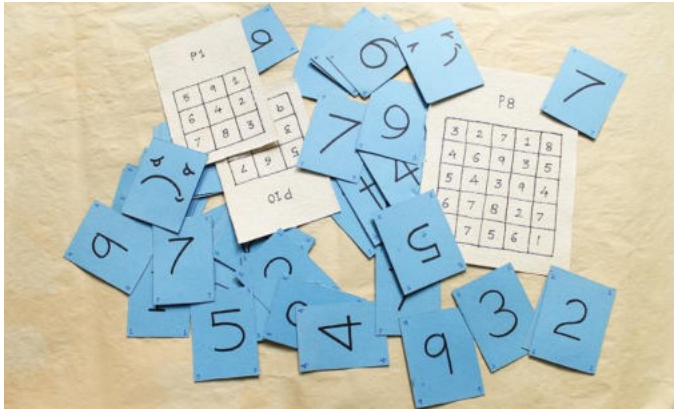
THE GAMES

- We picked up particular problem areas and started working on the games.
- Had several discussions about game play, format , concepts, learning and understanding a child’s mind.
- We designed some rough drafts and started experimenting.

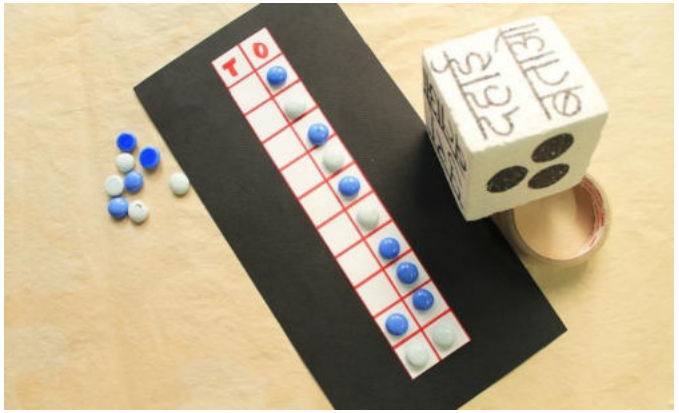
GAMES AND PROBLEM AREAS

Place value and expanded form

Less than, equal to, greater than



Number Sequence



Concept of tens

KAM JYAADA KAM

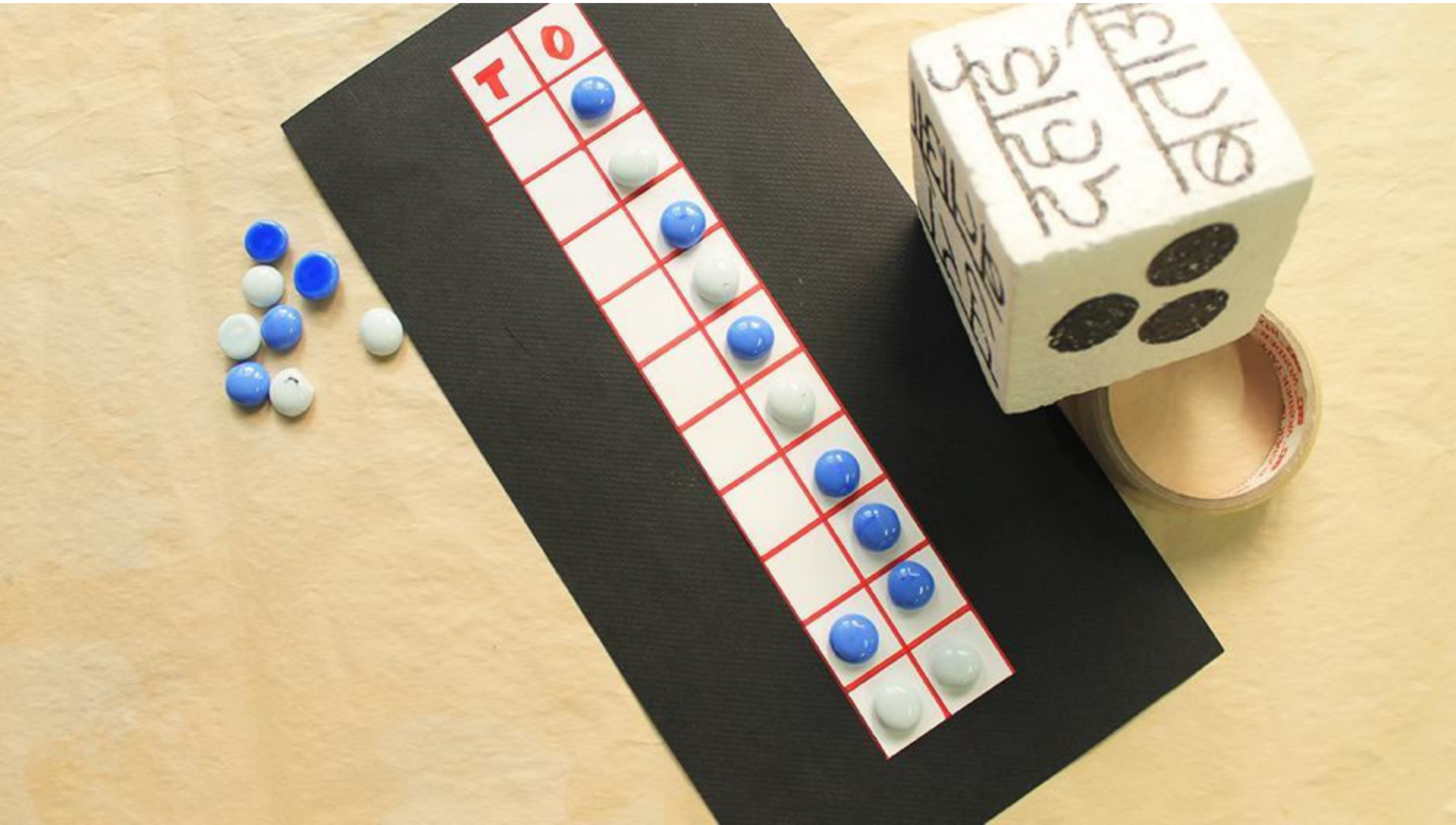
- Aims at explaining the concept of Greater than, equal to and greater than values in number system.
- Focuses on group work, understanding the use of the right symbols.

KAM JYAADA KAM

- The kids wear a number and align themselves with the signs on the floor to dodge elimination.
- We introduced singing in the game to liven the task and add interest.

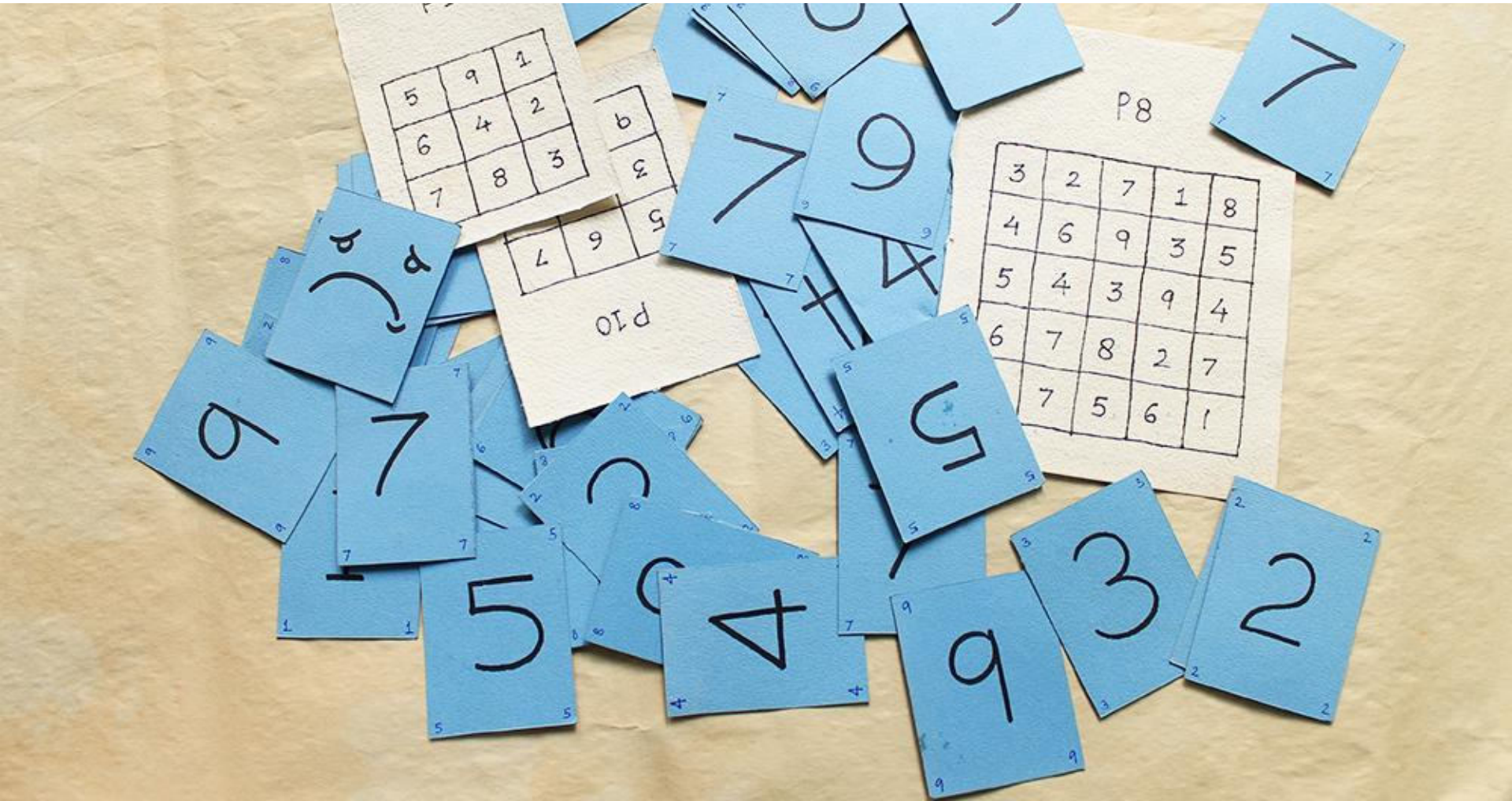
DASSI

- The game was designed to make the kids understand the concept of ones and tens.
- Two players place their color pegs on the row of ones according to dice turn. Player with maximum pegs in the row wins.



ORDER ORDER

- The game helps understanding and recognising number sequences, Increasing and decreasing order, counting from between and between numbers.
- Gameplay involves identifying number sequence from a puzzle grid and making that sequence with the cards.



ORDER ORDER

- Once done, they need to show and shout out loud, “Order Order!!” and display the cards.
- The game, after repeated gameplay shows increase in level of understanding the number system sequence.

DIGIT MONSTER

- The problem area was teaching place value and expanded word form for kids of third and fourth standard.
- Gameplay based on recognising four digit number system.

DIGIT MONSTER

Conception

- We first came up with couple of ideas which revolved around having cards that add up to a specific value of four digit counting
- Our first prototype was a 52 card game that had many different cards labelled 100's, 1000's, 10's and ones.
- The objective was to make a given four digit number by winning the right amount of cards.

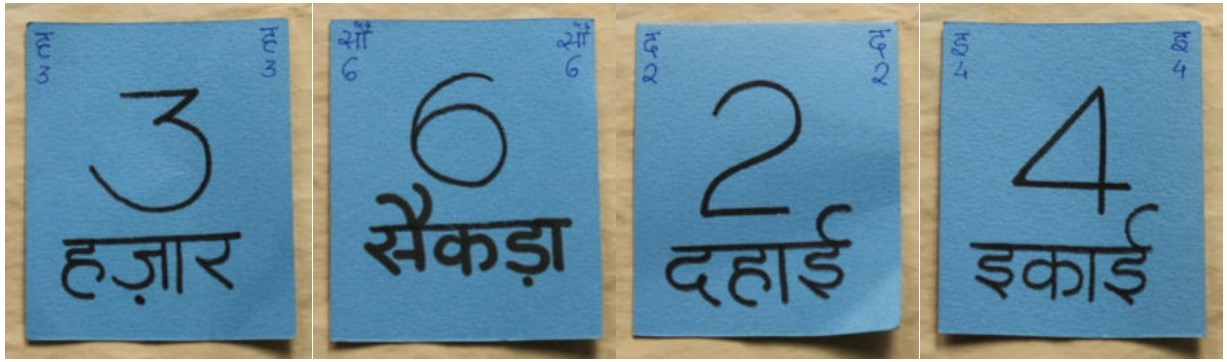
DIGIT MONSTER

Obstacles

- The game was not only lengthy, consisted lots of hardware, and the gameplay was getting too crowded with number of moves per player.
- limited possibilities with giving a four digit number to begin with.
- (it was tedious)….
- We were not sure if any learning is happening.

CARDS BEFORE

HARDWARE EVOLVED



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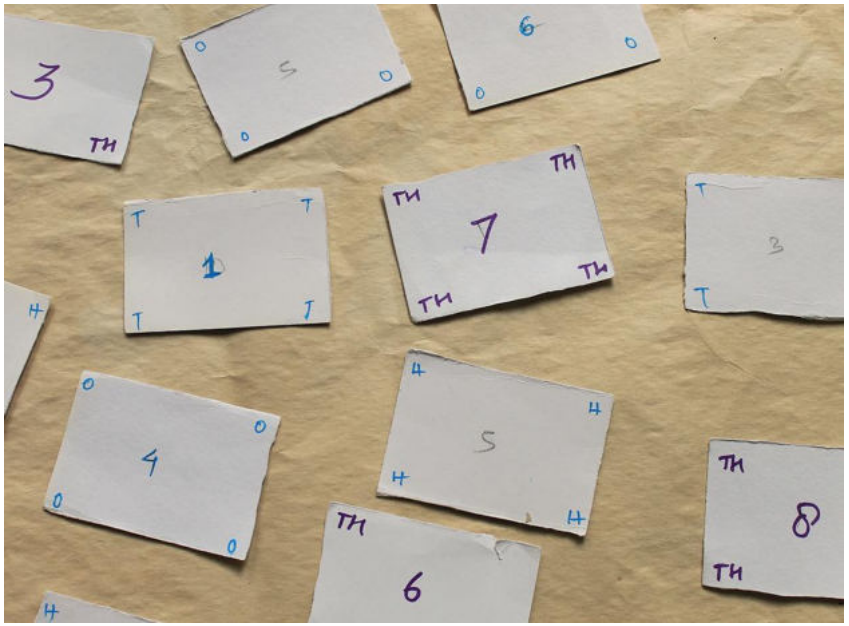

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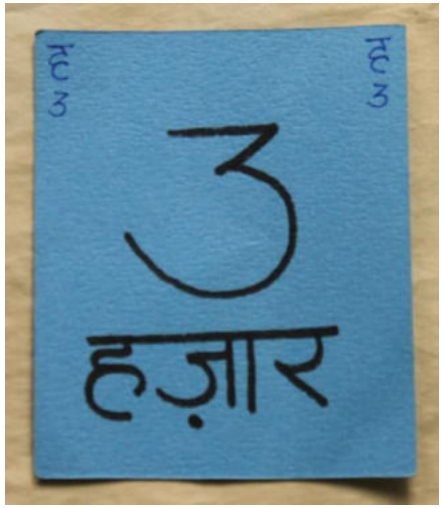
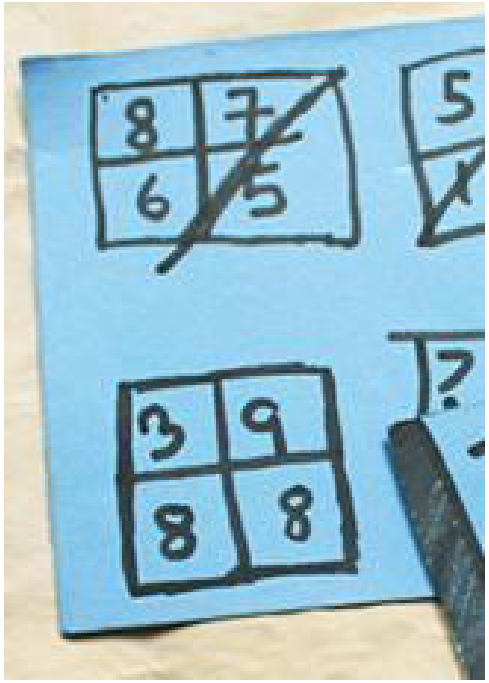




GAMEPLAY EVOLVED

- Increase uncertainty by using a two by two grid to write the numbers in.
- To ensure understanding of the concept we introduced that the player who wins has to announce the number they made in expanded form.

DIGIT MONSTER

Obstacles

- Learning was too obvious.
- Kids weren't dynamically changing their number sequences and were playing safe.
- Game becomes predictable very early and completely luck based.
- Kids started losing patience waiting for the card they wanted.

PLAYTEST AND ITERATIONS

- Several playtests were conducted to understand what to introduce to make the game more fun.
- Changes were actively made, we listened to the kids.

अंकासुर

- We derived the story of a monster who eats digits as the main villain of the game.
- The name “Ank” - Digits, “asur” - Monster = Ankasur/ Digit-monster
- Using the ankasur card alters the progress of the game. We gave it power.

GAME PRODUCTION

- Graphics introduced to the packaging describing the story of ankasur.
- Box was simple and resembled the shape of a matchbox.

GAME PRODUCTION

- Game was made completely in hindi with instruction manual too.
- Created illustrations in manual for better understanding.

GAME PRODUCTION

- The game is quite low cost since printed paper is the only hardware.
- Ergonomically the size of the cards are comfortable for kids to hold them and reduce paper consumption.

GAME PRODUCTION

- Action cards showed the actions to be conducted along with written instructions.
- Color coding the four houses cards apart from adding text helps kids interpret and play with ease.

अंकासुर

- We also made a tutorial video explaining the gameplay.
- Shows the progress of the game and how to use various cards.
- Collaboration with kids.

अंकासुर

Observations

- The game caught up pace and kids started looking forward to pick up the next card to find ankasur.
- Uncertainty increased and so did the interaction amongst players. Kids forgot they were actually learning math.
- Since action cards encouraged kids to control the progress of the game they started making dynamic decisions.

अंकासुर

Post multiple repeat play

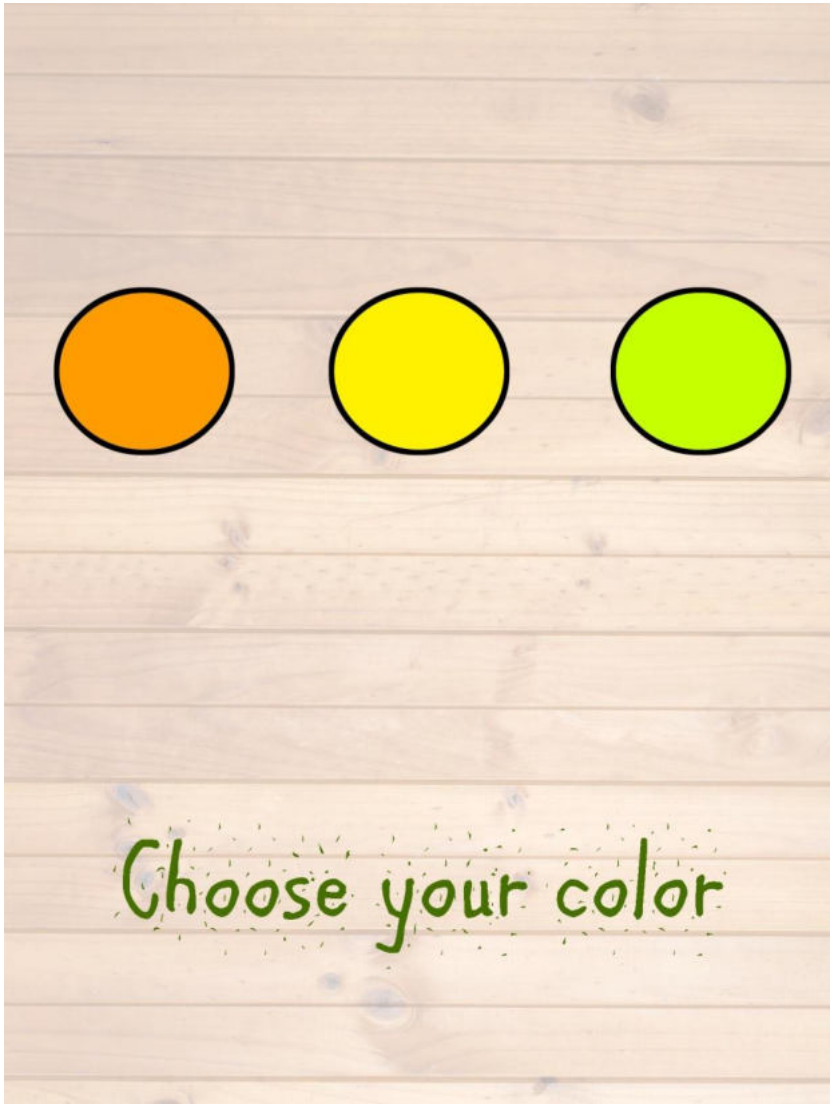
- Even the losing kid wasn’t too disappointed because they had fun using the monster cards to mess with their opponent's move.
- The Intricate gameplay kept the kids interested till the end.
- Most importantly, the game became FUN.

TEES MAAR KHAAN

conception

- Helps kids learn and practice the concept of greater than, lesser than and equal to values.
- Using the designated symbols '<' '>' and '='
- 2 player game, can be increased by introducing bluetooth connected devices.
- Different levels are introduced so the learning becomes thorough.
- Levels are based on different creatures. earthworm<crab<turtle<bee<bird<fly

GAME FLOW



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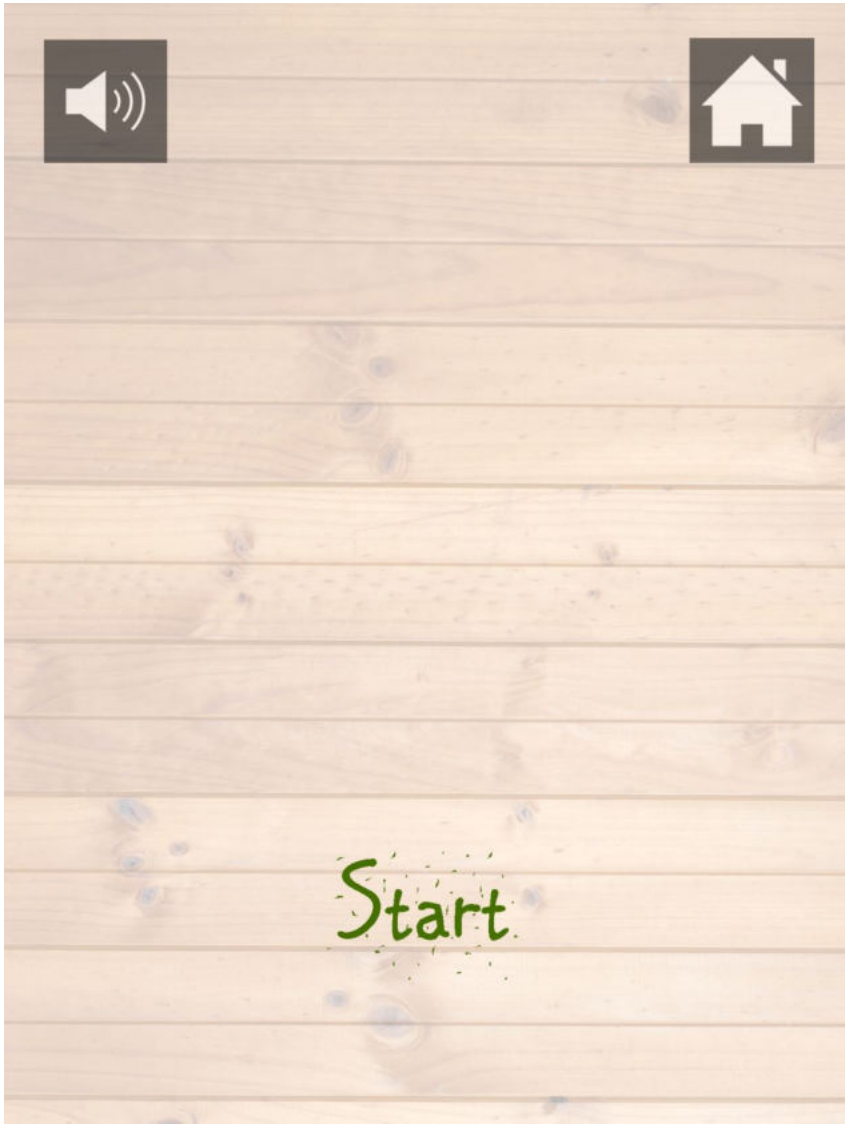

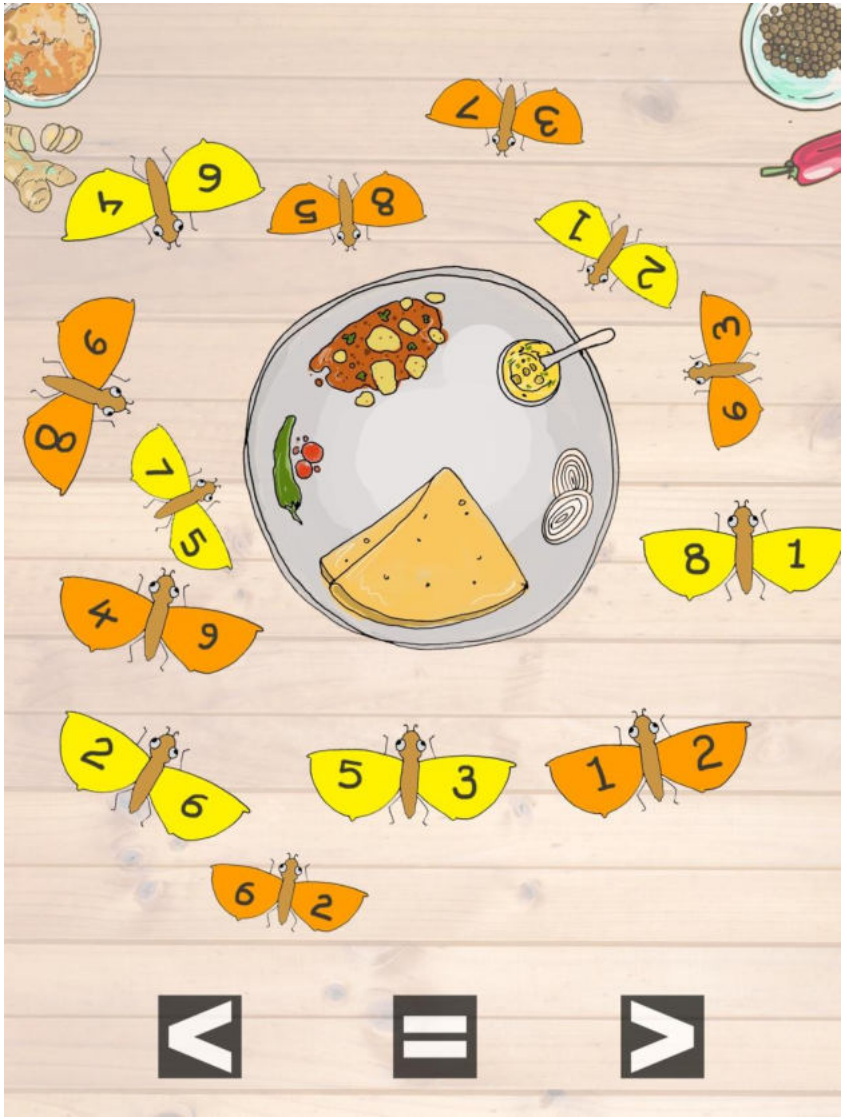

GAME FLOW

CONCLUSION

- Changing the method of learning enabled them to think alternatively.
- Strategy making let's kids understand the applications of their learnings.
- Player interactions and co-piloting audience creates a more supportive environment rather than sport related activities or toys to learn and apply group mechanics.

CONCLUSION

- By using elements from their own surrounding to play, we created relevance for kids to develop an interest in trying to understand even difficult concepts.
- The teacher can accurately understand if the kids are able to understand the concept right.
- Kids don't hold back with clarifying doubts unlike classrooms.
- The importance of playtesting and iterations to refine.

“Game is a process, not a product.”

- Prof. Uday Athvankar