

Play and Learn Communication Device for Preschool online education

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Introduction

Background

Preschool provides an environment and a learning space to offer early childhood education before the kids start their regular schooling

Due to COVID-19 pandemic most of the institutions have moved to online modes of education. Conducting online classes for preschool kids who are around the age of 3-5 is challenging for both parents and teachers.

Introduction

Pre-Primary Research

Small interaction with 2 Pre-schooler's parents to get to know how online classes are being conducted



Introduction

Objective

- To make online learning fun for preschoolers through activities, engaging with their parents thereby creating a peer learning environment at home.
- Reducing the digital screen time exposure to the kid
- Learning using simple objects and materials present at home

Primary Research

Teachers

- No eye to eye contact with the kids which is pretty much essential for them to get to know the kids and understand them so that they can assess the kids and help them learn and grow.
- Some parents don't show much interest in the online classes
- An imbalance between the parents and teachers
- Focus time for the kids which is basically their age+5 mins and so they mostly make sure that when they teach a new topic , it's within that focus time.
- More interest towards stories and rhymes
- Every kid is different from each other where some kids learn through their peers while some don't.

Primary Research

Online class

- The parents were helping out the kids to answer the questions or riddles
- kids were excited to answer the questions as they were in the class, the same shouting was present in the online class also.
- If the class progresses without any questions from the teachers the kids seem to be losing focus or distracting from the class.
- A small class of 5-6 kids helps the teacher to focus individually on each and every kid in the class.

Secondary Research

Preschool curriculums

Basic skills that are being developed in preschool

The curriculum that is being followed

Singapore Preschool education system

NEL Framework

Homeschooling

Secondary Research

Phases of learning

- **Observation** - Kids will act as spectators where they do not talk or interact, instead they observe what the teacher is teaching about the topic.
- **Participation** - Kids then will take part in learning the topic where the teacher will act as a guidance
- **Practice** - Kids will practice their learning through opportunities created by the teacher
- **Performance** - Kids feel confident and try to independently apply what they have learnt in the topic in various occasions

Persona

Thara - 4yr old , Female

Thara is in Lower Kindergarten and a very active kid. She is starting to read cvc words and some sight words and practice writing. Her homework is mostly completing activity sheets in her work book.

She completes her homeworks with the help of her mom.

Swathi - 33yr old, Female. Mother of Thara.

Swathi is a software engineer who is working from home and also caters to the needs of her family. She is a mother of 2.

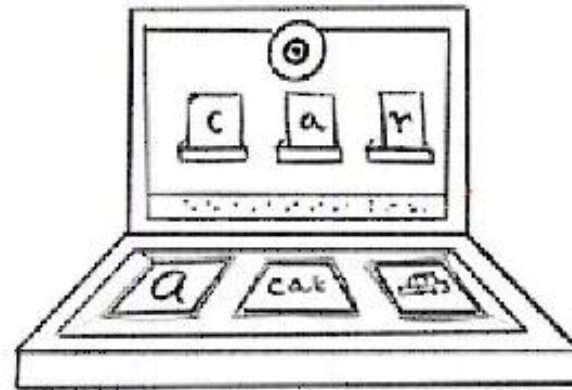
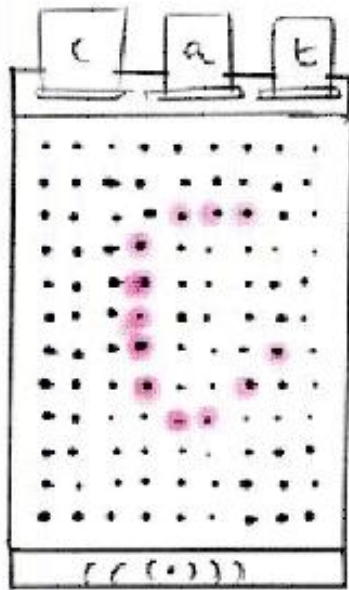
On the education front she wants an educational aid that helps her engage with her 4 yr kid while she is learning and also wants to allow the kid to learn on her own.

Vidya - 35yr old Preschool teacher with 8 yrs of experience

Vidya is a Kindergarten teacher. Vidya has started her new batch of LKG kids. She finds it difficult to conduct online classes

..She is not happy with the results on online education as she couldn't keep a better track of the kids progress. She wants an educational aid that helps her keep track of the kids progress on their learnings and makes learning fun for the kids

Initial Ideas



Redefining the project

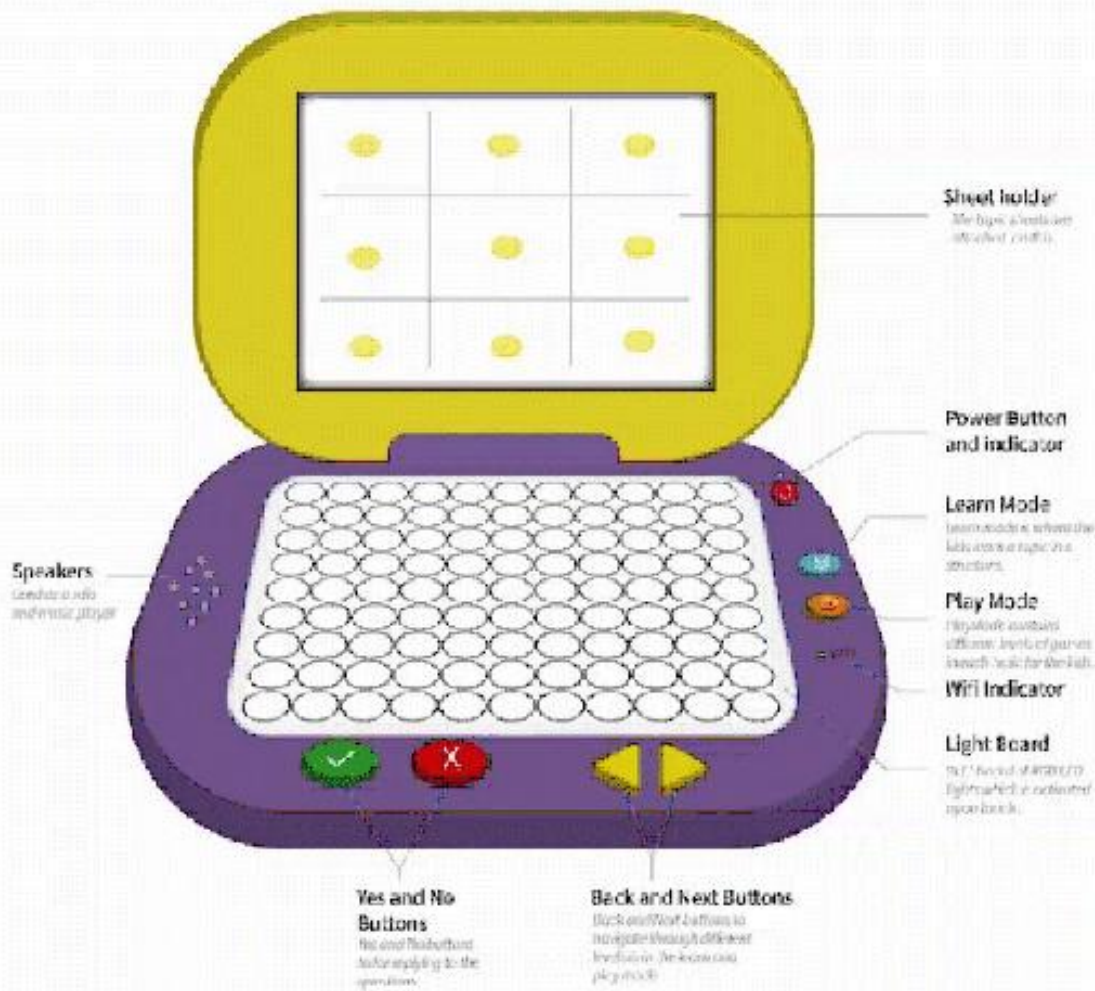
Design Brief

- The aim of the redefined project is to create a digital screen less device that engages the kid to learn writing while interacting with the device.
- It should serve as a platform to track the progress of the kid and maintain a communication between the parent and the teacher.

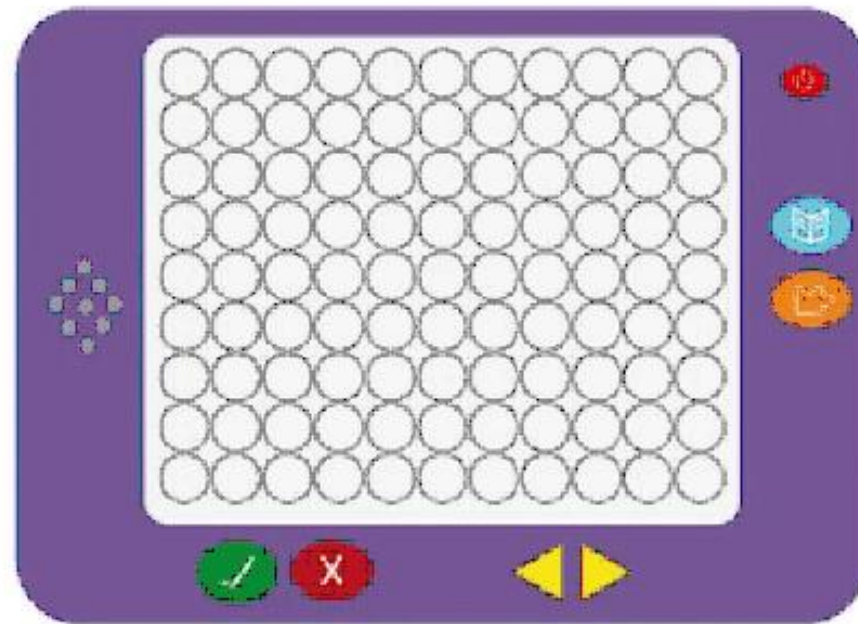
Final Idea

- Predu is a screenless audio based learning laptop for preschool kids. It gives interactive audio feedback and helps the kids learn English alphabets while interacting with it.
- Predu consists of 2 parts: **the Sheet holder** and the **Light Board**.
- It contains the English alphabet topic sheets that are placed in the sheet holder.
- Predu can be connected to the mobile app through wifi where the data from the device will be sent to the app.
- The mobile app is used by both the parents and the teachers to track the progress of the kids.





Light Board



Sheet Holder



RFID tag of the sheet
is inserted here

Modes of Learning

Learn Mode

Observation - here the kids first observe the letter, the shape of it and how it is written

Participation- here the kid takes part in tracing the letter along with the audio

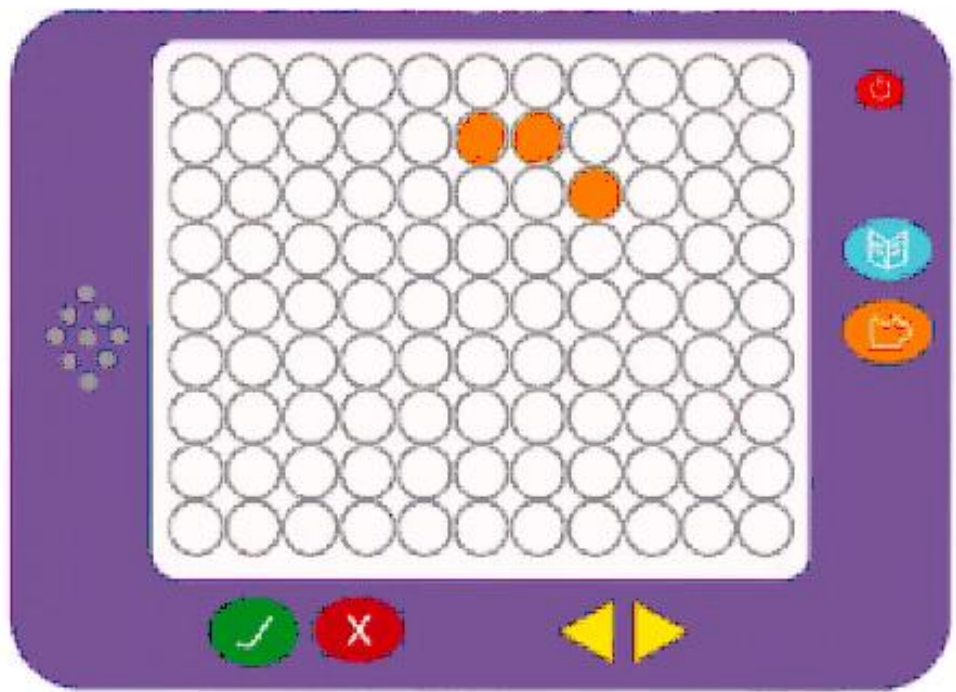
Practice- here the kid practices the letter separately by referring the letter in one side.

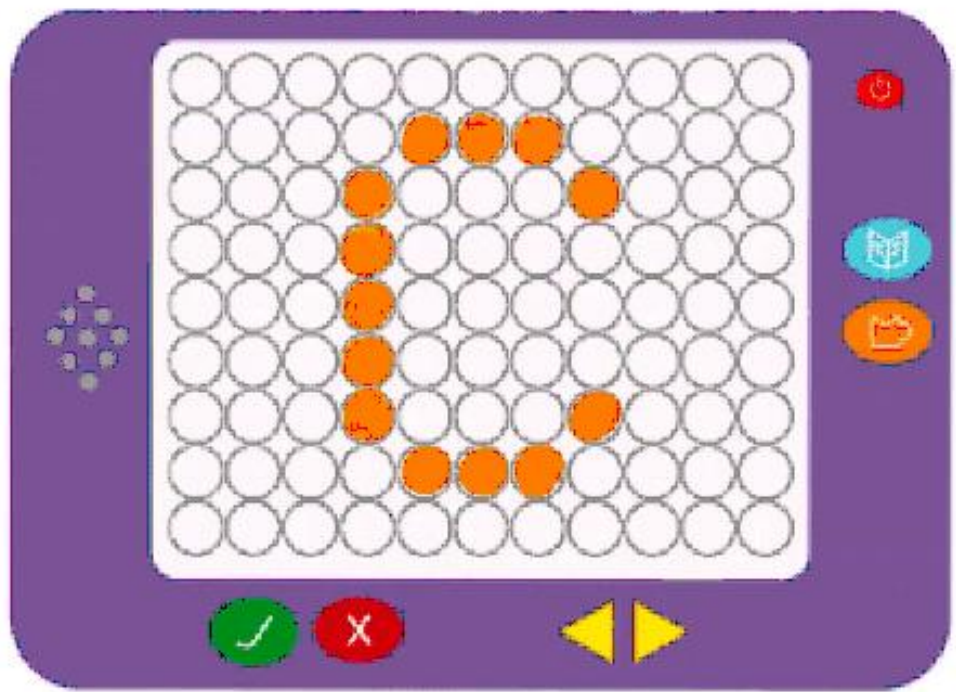
Play Mode

Performance - This mode is for testing their knowledge in the topic. A series of different games will be give for testing the kids

Modes of Learning

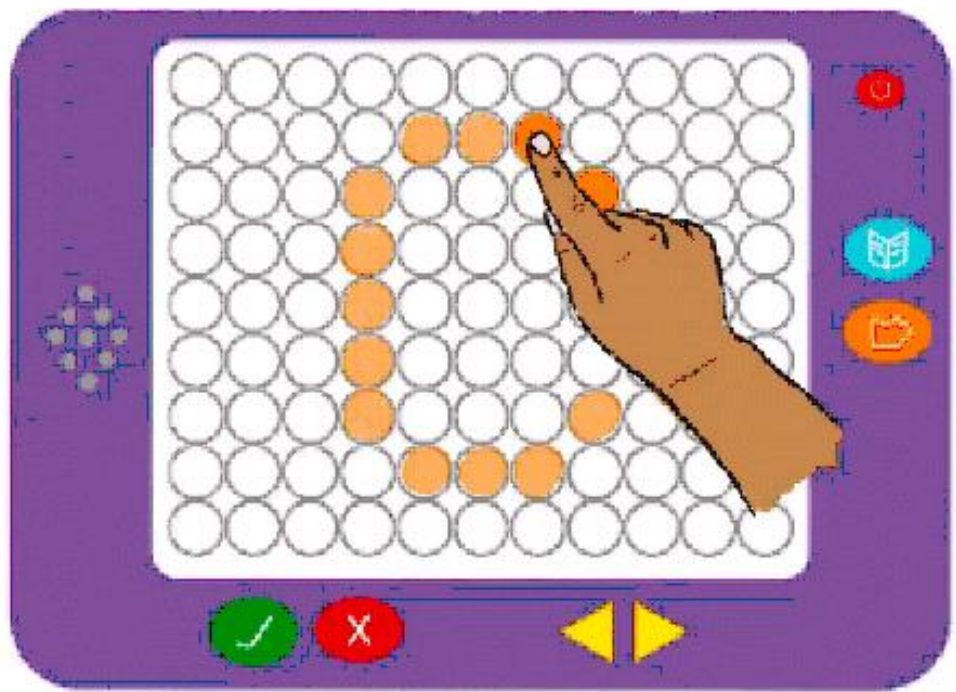
Learn Mode - Observation

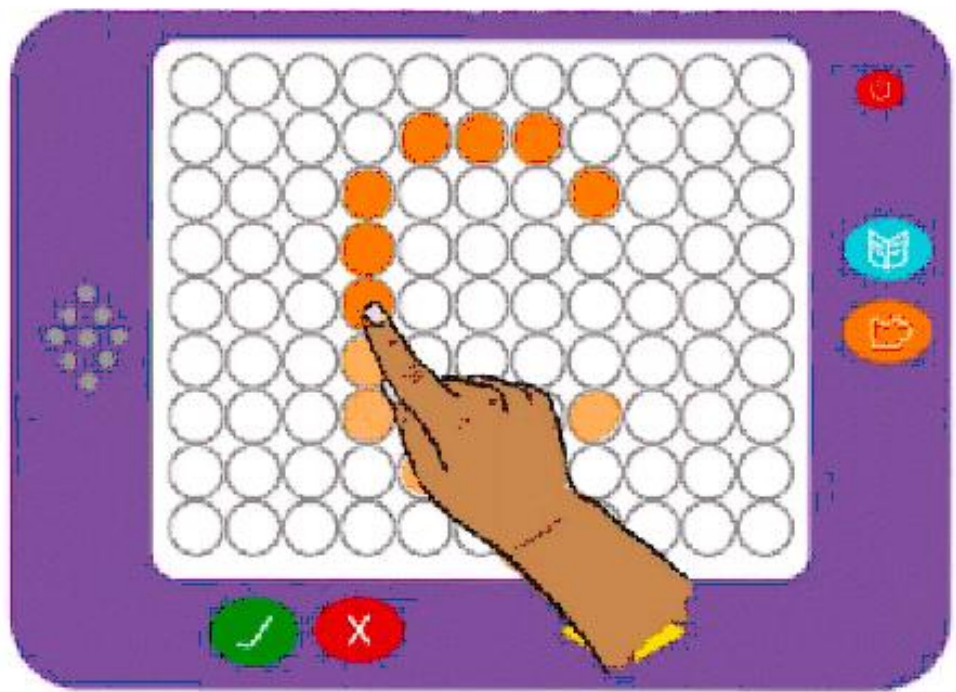




Modes of Learning

Learn Mode - Participation





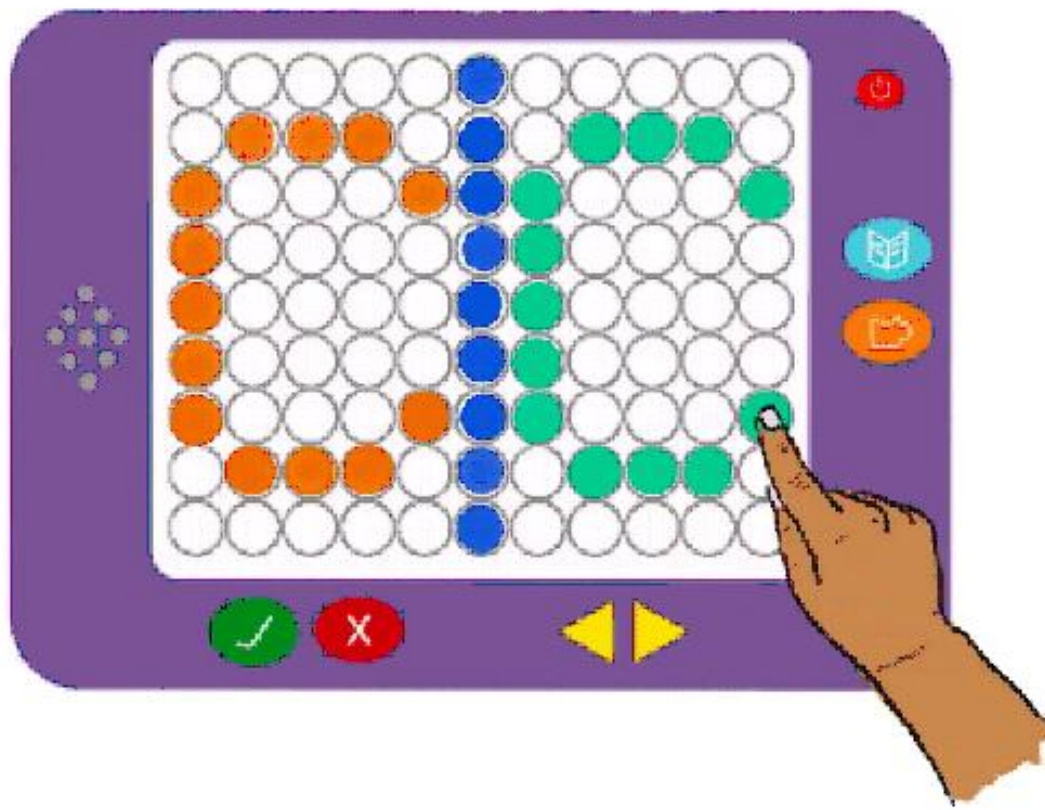


Modes of Learning

Learn Mode - Practice

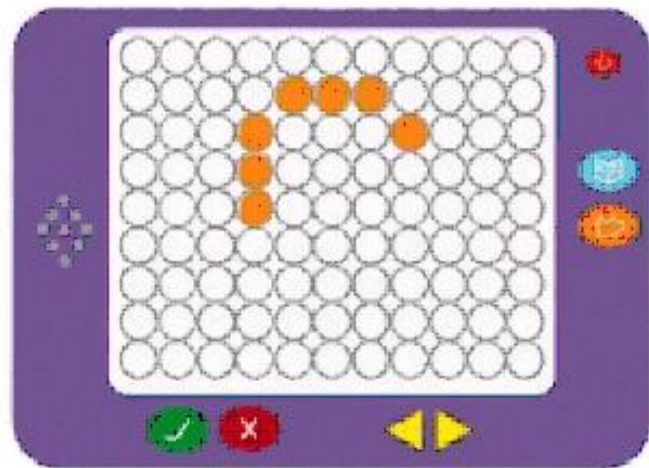




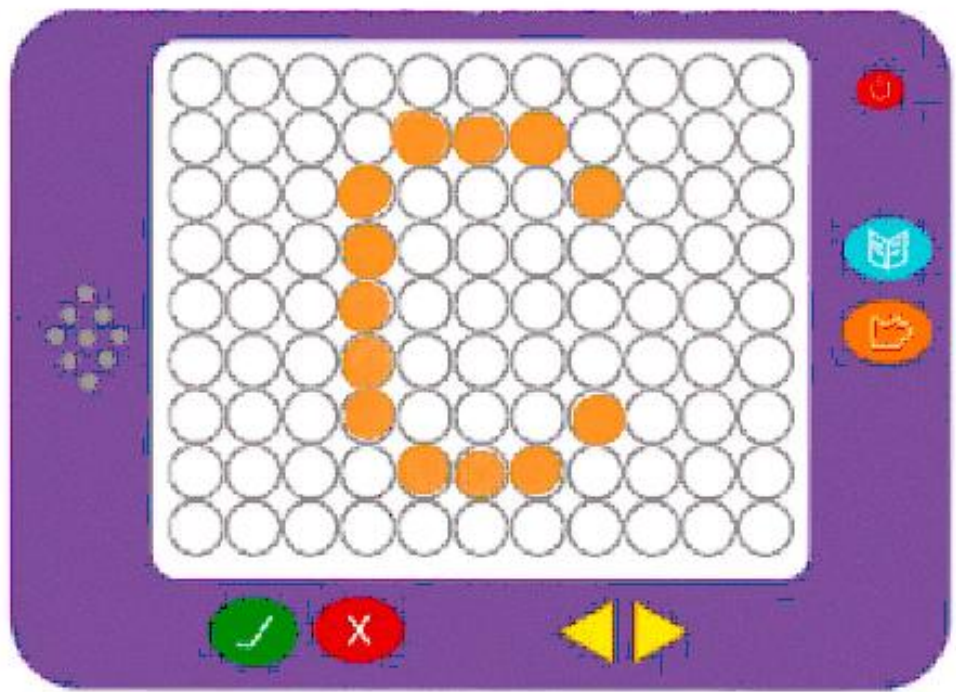


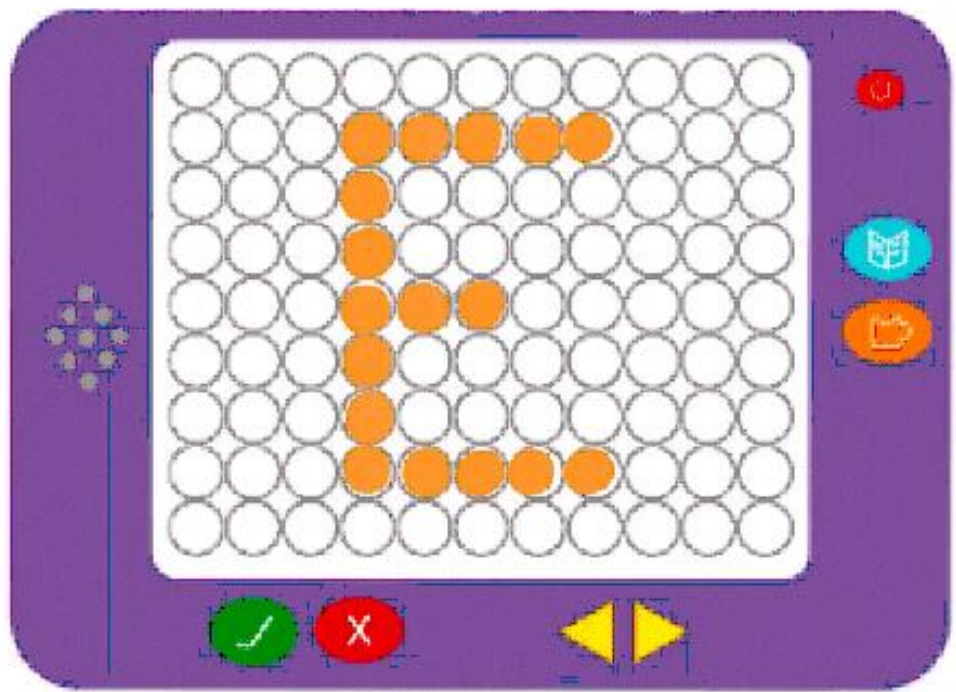
Modes of Learning

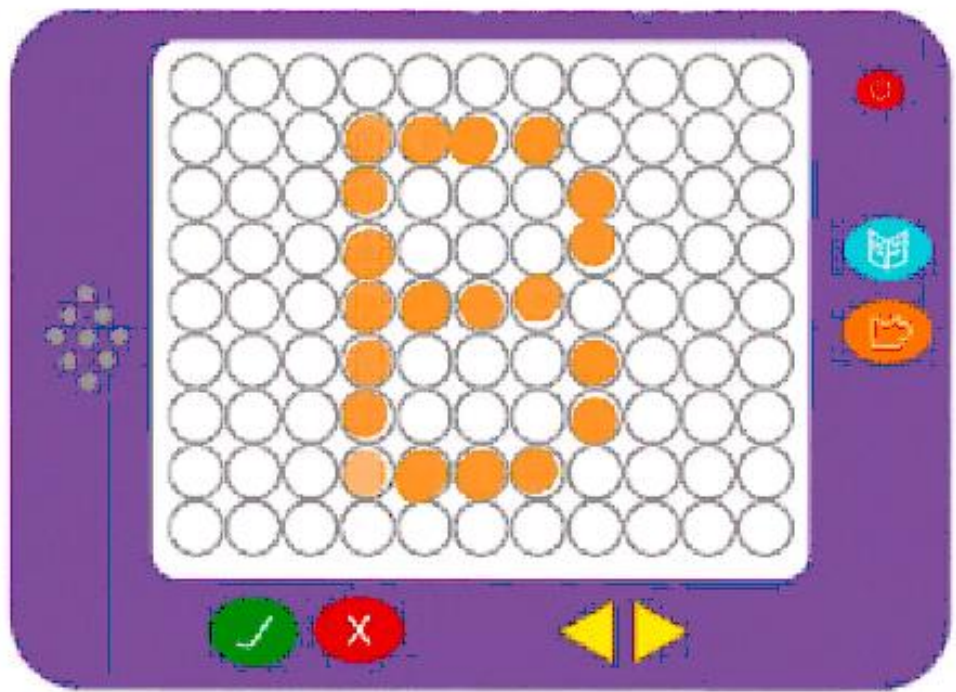
Play Mode

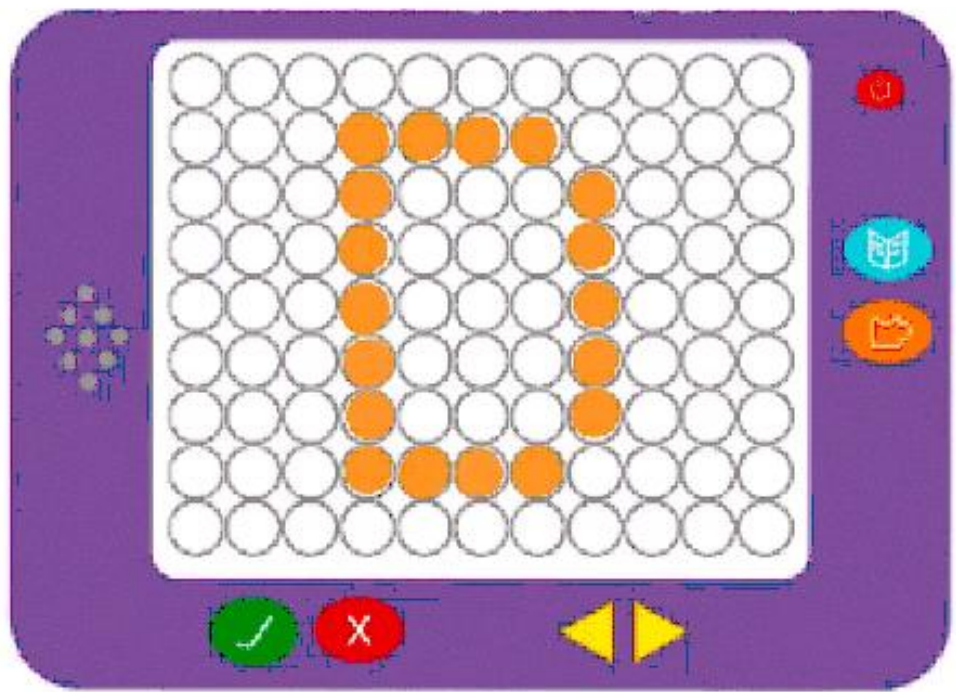


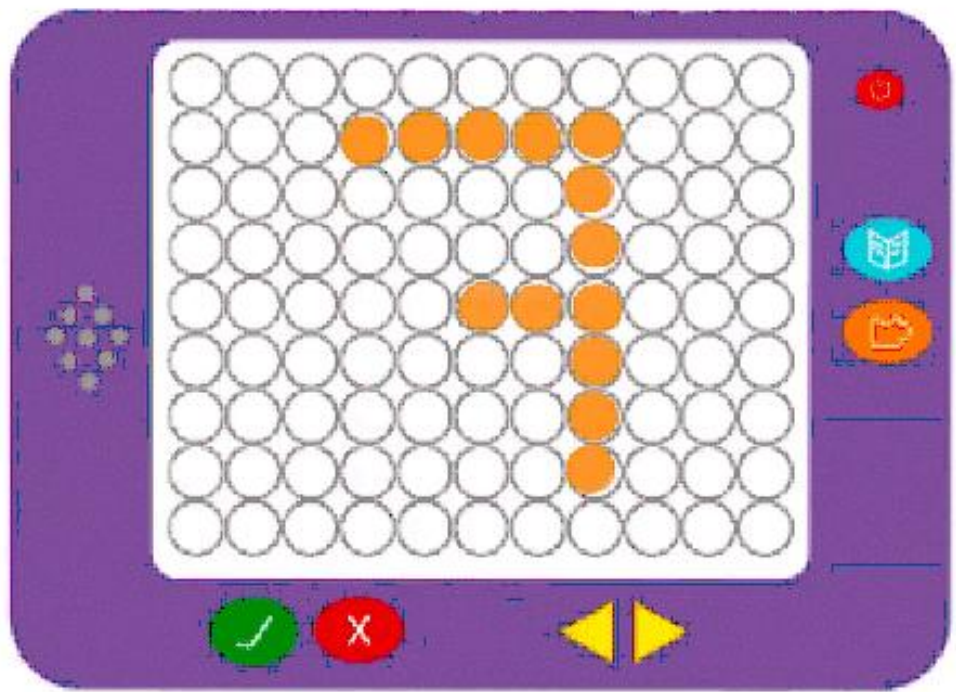
Complete the letter

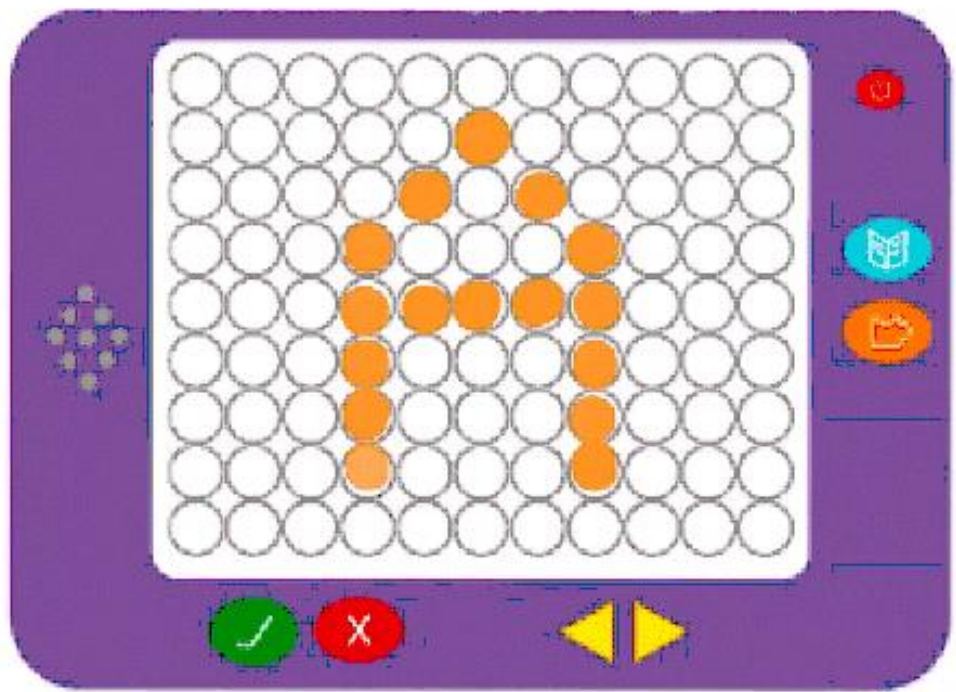


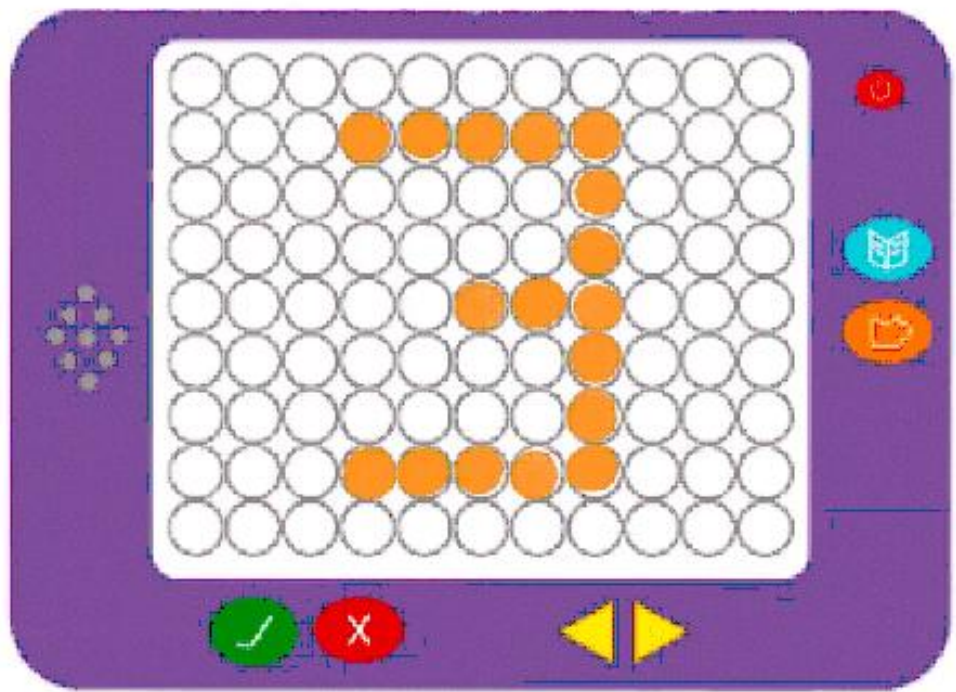






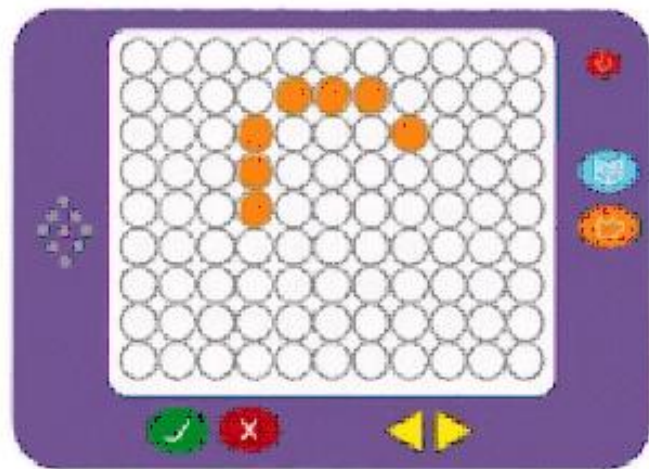






Modes of Learning

Play Mode



Complete the letter

Quiz with the parents

At last the final stage of performance evaluation is a set of questions that parents will be asking the kids and the kids need to draw it on the board correctly.

Examples of question:

Which letter looks like an umbrella handle?

The kids needs to correctly draw the letter J on the board.

Draw letter F and convert it to P

The kids needs to draw F and change it to P

Interactive audio

- The interactive audio feedback is the important feature of the device that guides the kid throughout their learning process. It interacted with the kid by asking questions, correcting the error done by the kids. The kids can interact with the audio through the yes and no buttons on the device.
- The audio is designed to hear like a voice of a 5 year old that casually chats with the kid.

"You did a good job for the first time, but missed a little line here, it's okay u will get better only through practice. Come on let's do it again"

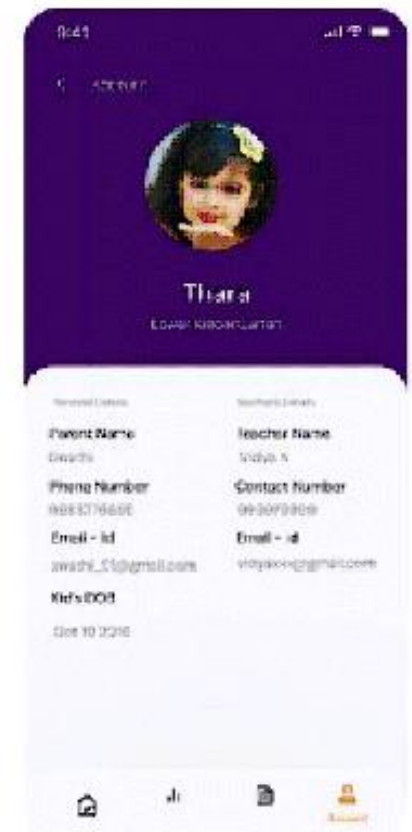
Predu Mobile App

- The Predu mobile app has two different sections: the parent section and the teacher section.
- The parent section contains the daily learning topic for the kid, the progress of the kids and can view the curriculum of learning.
- The teacher section contains the whole student list using the device and their progress



Predu Mobile App

Parents Section



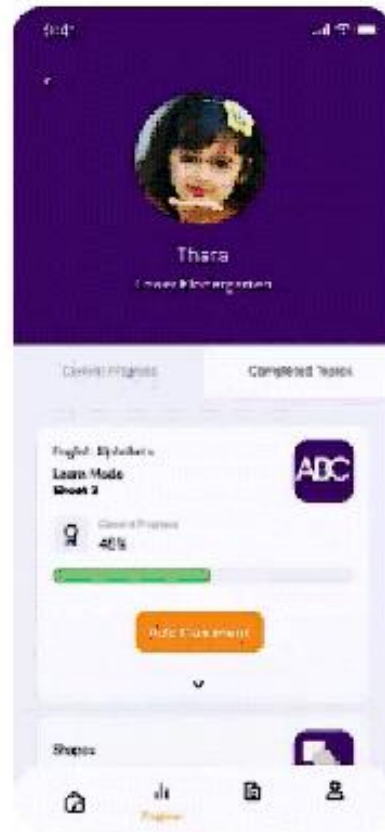
Predu Mobile App

Teachers' Section

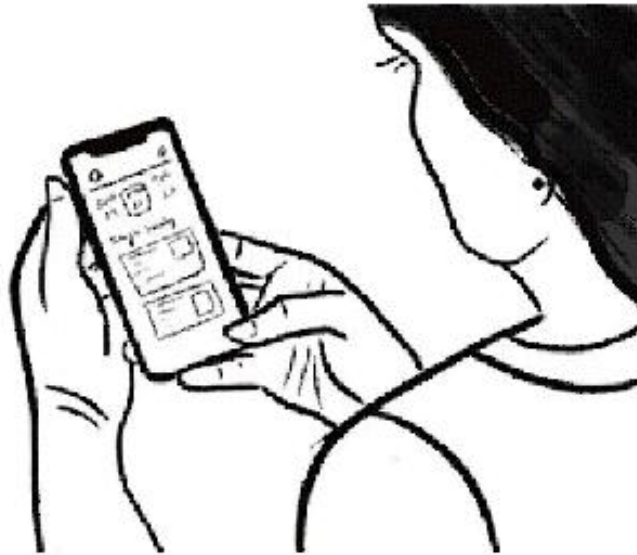


Predu Mobile App

Teachers' Section



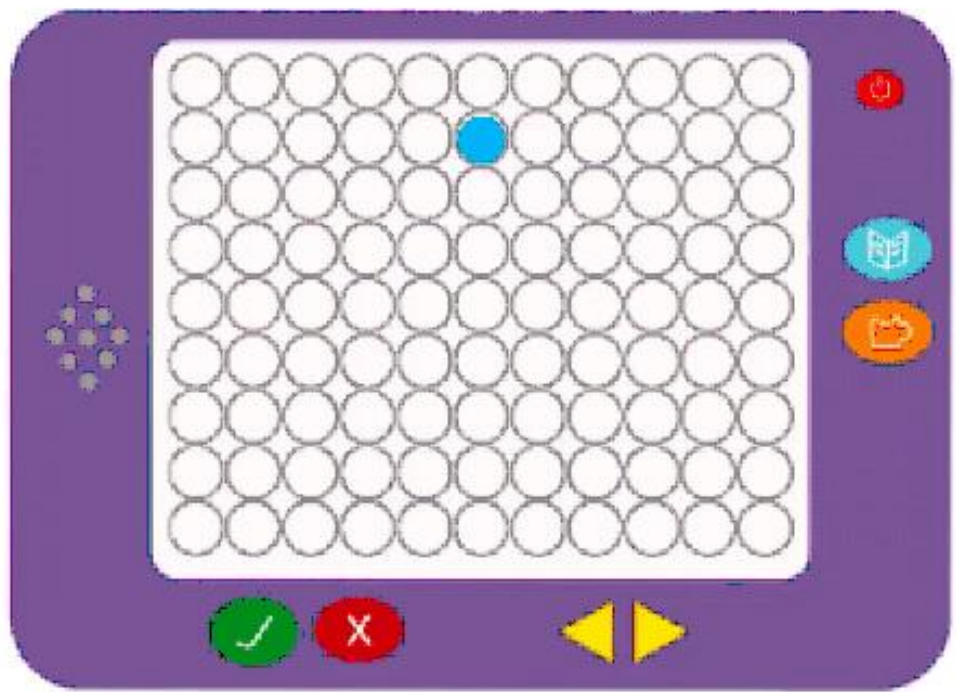
Scenario

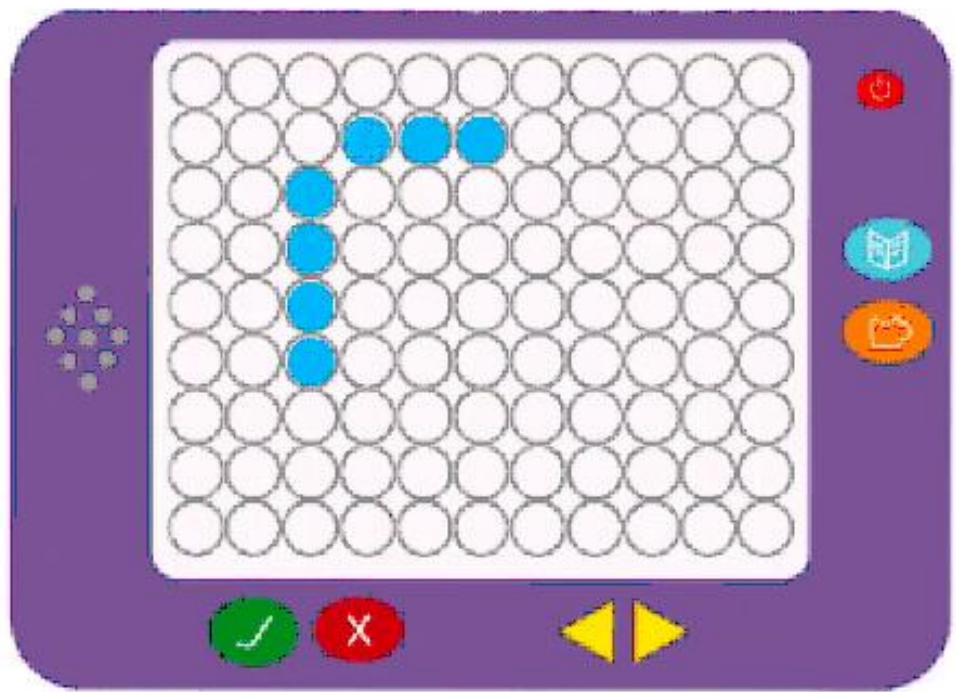


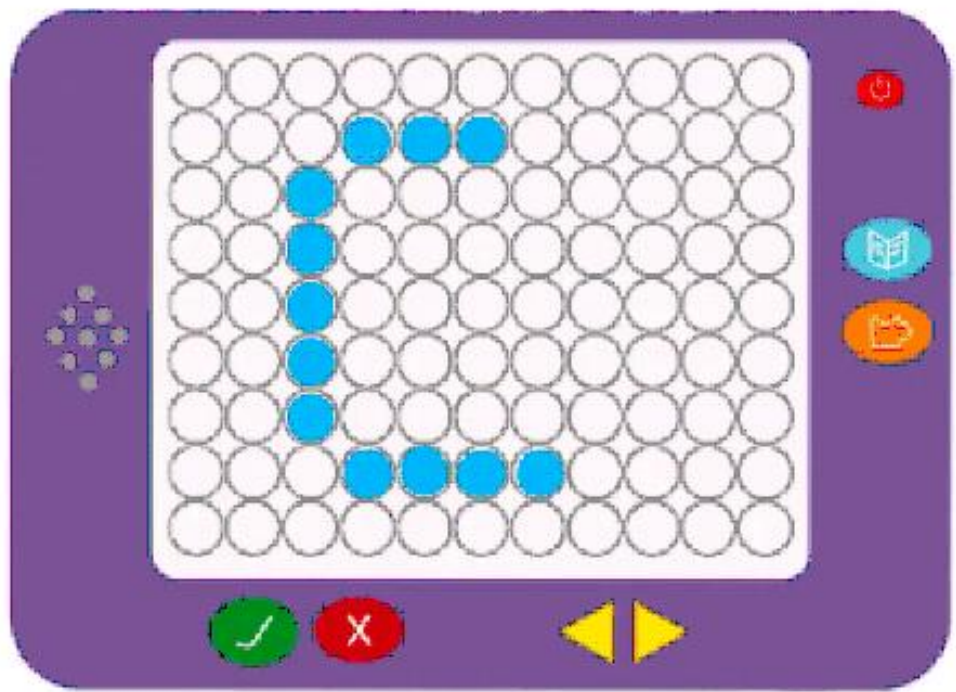
Swathi checks the app on what should be taught today which is learning letter C

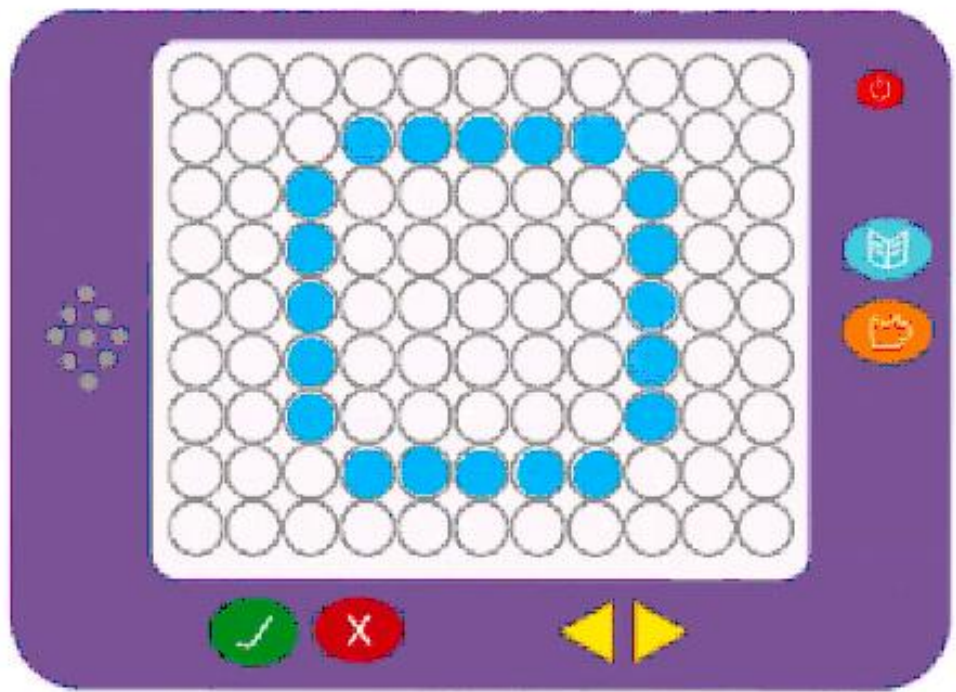


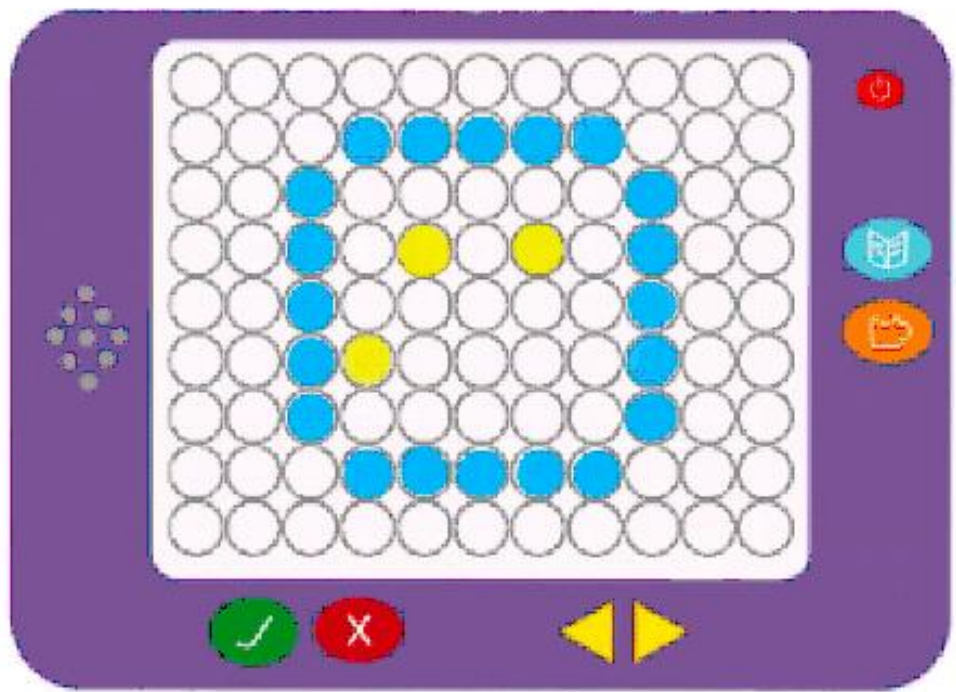
Opens Predu and gives it to Thara, Predu starts with a Welcome message

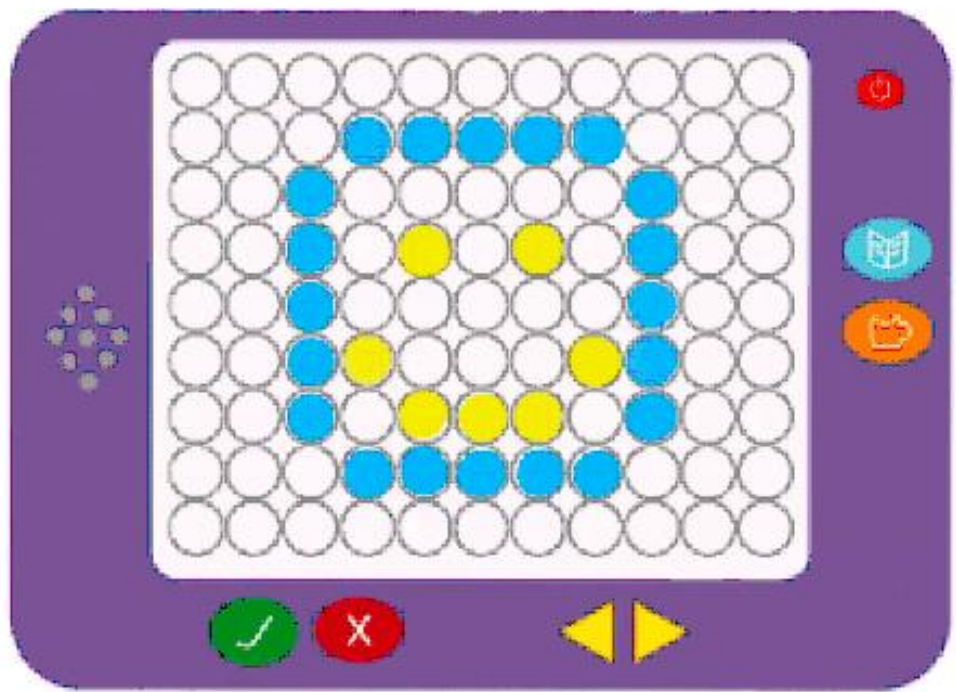


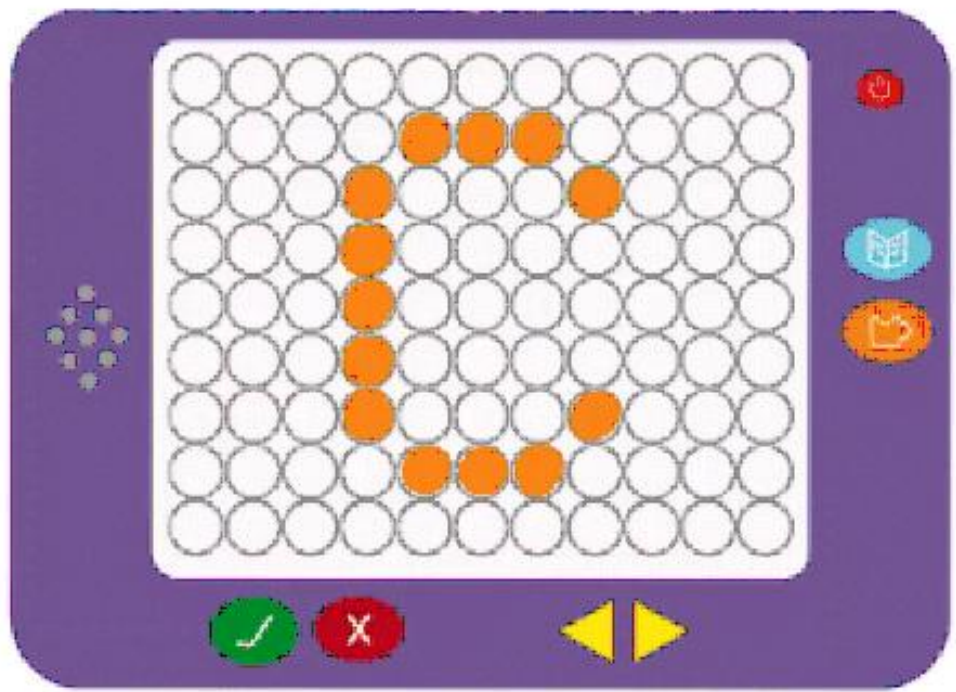








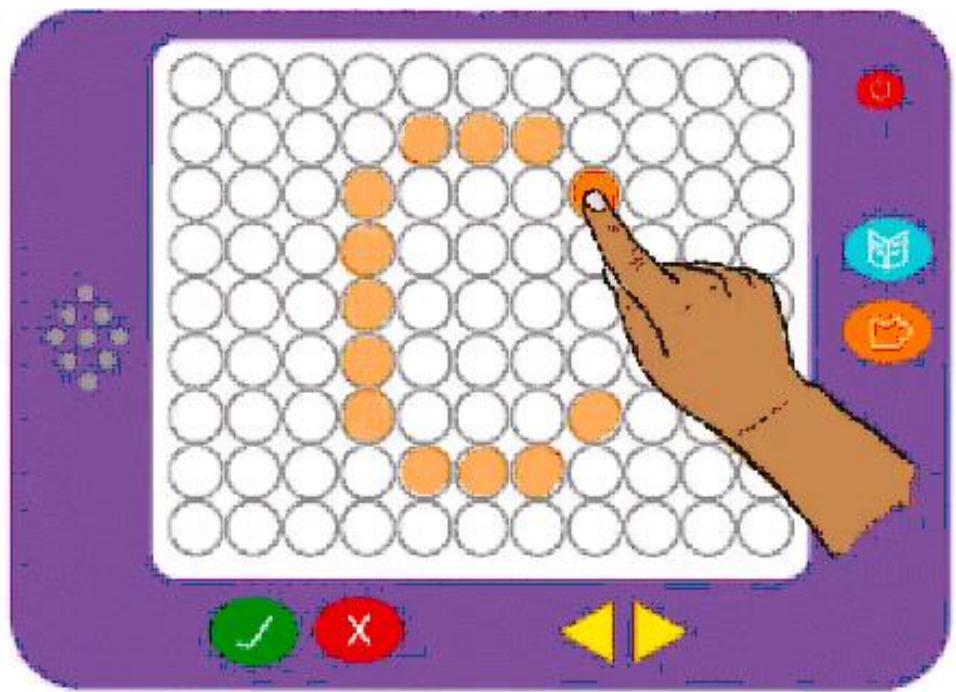


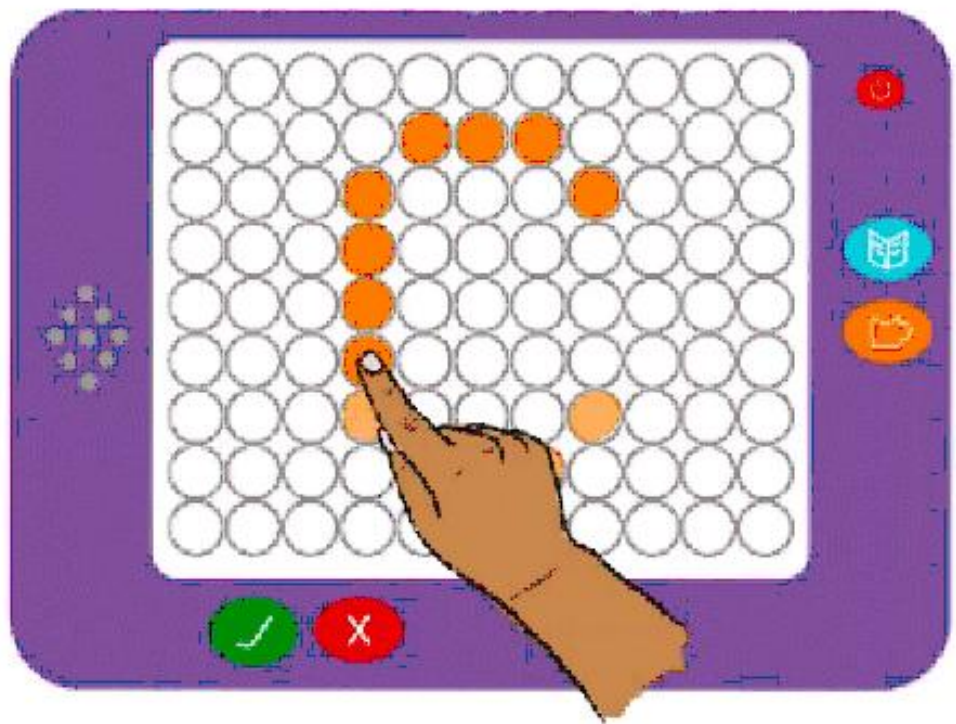


Scenario

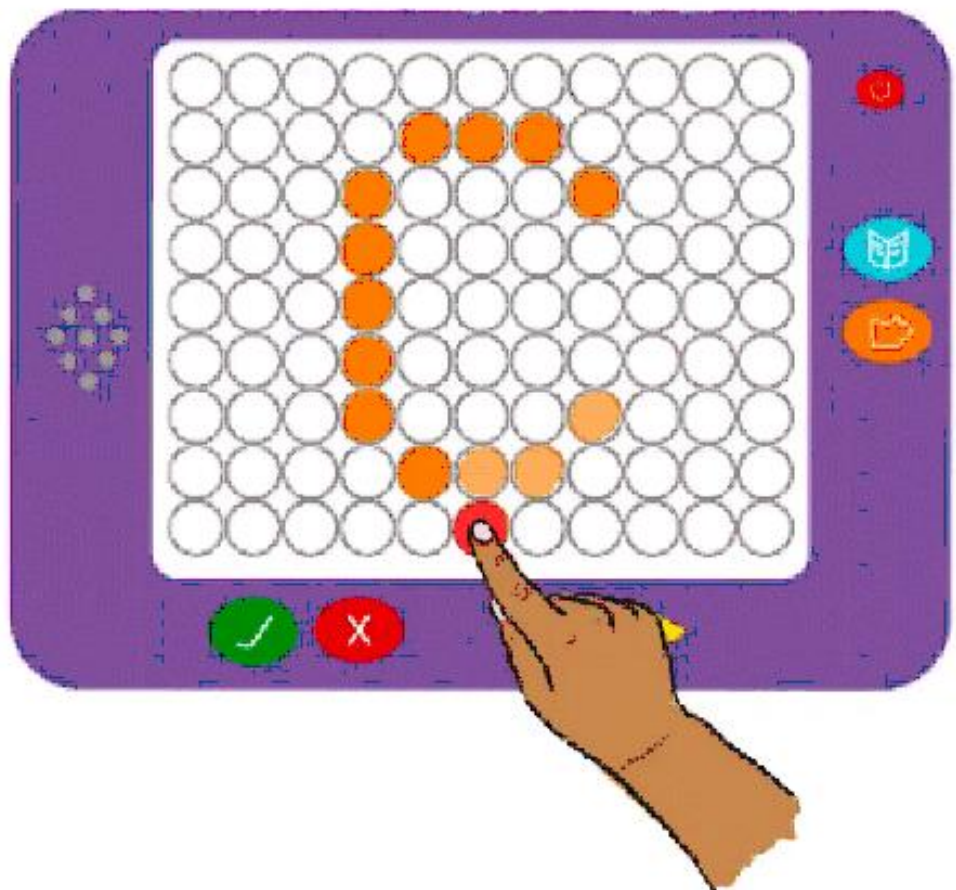


Thara gets excited on seeing the lights and hearing the audio









Scenario



At the end of the day, teacher Vidya checks the progress of each student.

Evaluation

Content Level.

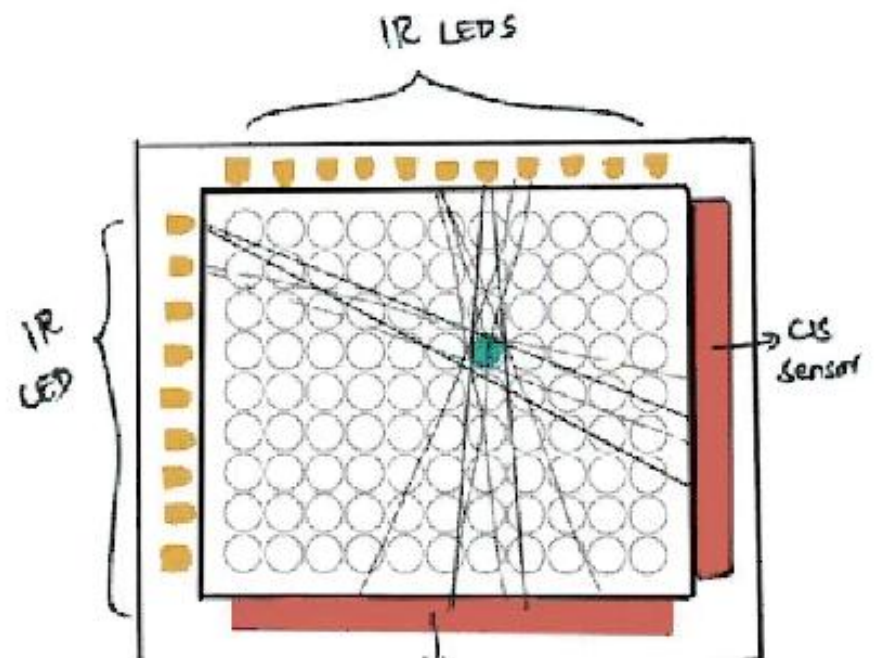
- Teach them patterns like standing line, sleeping line before starting to teach letters
- Showing real life example as reference to letters will confuse the kids, because each will have a different perception or idea.
- 2 letters a week is the right pace of learning
- The mirror images letter will confuse the kids even more

System Level

- Tracking the progress of the kids is good, but still the problem of seeing the kids face to face has not yet solved
- There is no proof that only the kid has completed the work, sometimes some other people can start and use the device.

Proof of Concept

I am trying to make a proof of concept for the Light Board that contain Touch lights. This Poc is going to be made of 9*11 RGB LED lights that made into a touch screen by using an IR LED Frame and CIS Sensors. The IR frame and CIS sensor helps to precisely capture the touch area and activates the corresponding light.



- The mirror images letter will confuse the kids even more

Future Work

- Extending the content to cover a lot of topics that are taught in the preschool. Like teaching them numbers, counting, shapes and colors.
- Learning regional language alphabets through this device can be interesting and can also help the kids learn faster.
- The mobile app can act as a means of communication with other kids' parents thus forming a community.

Conclusion and Learnings

- Though this project was made keeping online education in mind. But it serves the purpose even in normal conditions.
- In conclusion, this project creates a platform that connects the kids , the parents and the teachers together, where they can cooperate in educating the child efficiently.
- This is the first project that I did entirely by myself, and have learnt in using various tools, how to apply the knowledge acquired in different courses and how to document the ideas.

ThankYou !