

PROJECT II

INTERACTIVE DEVICE FOR SCHOOLS

Redesign of clicker system

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Guide : PROF. P. KUMARESAN

Project Brief



To design a product that will assist students in their learning, such that the dropouts will be reduced

Research and problem Identification

Schools visited



Aarambh organisation



KV IIT Bombay

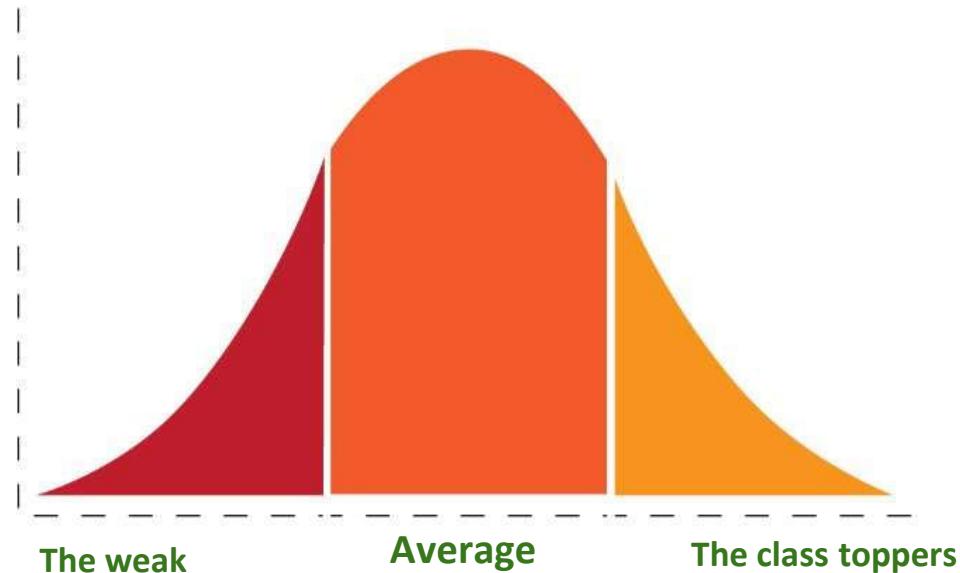


KV IIT Campus school

Research and problem Identification

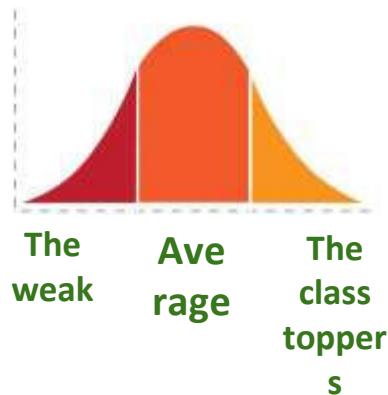
Classroom interaction turned out to be a major factor in engagement

Observation



Research and problem Identification

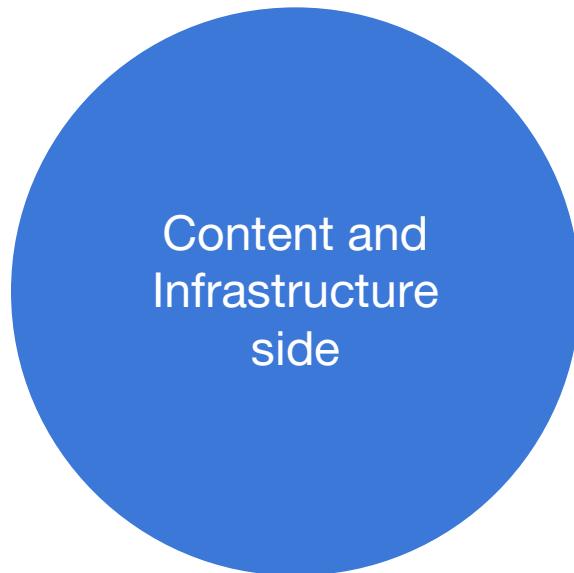
Observation



Average students

- Mostly **left out** in major class discussions
- **Shyness** makes them avoid raising hands
- **Fear** of speaking out the wrong answer and getting humiliated
- **Language** or pronunciation inefficiencies
- bad articulation
- **Lack of confidence**, as the top scorers tend to overpower the discussions

Issues with the current education system are seen as two faced



Secondary research



K-Yan



Clickers

Clicker Ecosystem



Motivation to use clickers

- **Alternative for passive, one way communication**
- **Give opportunity to every student**
- **Plan lessons**
- **Attendance.**
- **Periodic breaks**
- **Improved alertness.**
- **Concentrate**

Feedback from teachers about clickers

Additional burden to prepare questionnaire

Easy to make questions for subjects like mathematics and science

Complicated

No need for an separate assessment device

It is useful to plan the next lecture by knowing the understanding of whole class

Problems with existing clickers system

- Expensive
- Complicated ecosystem
- Not mobile as computer and receiver are fixed to one class
- Need internet connection
- Lack of ergonomics and aesthetics to the device
- Limited Functions

Pilot test and observations



Teacher

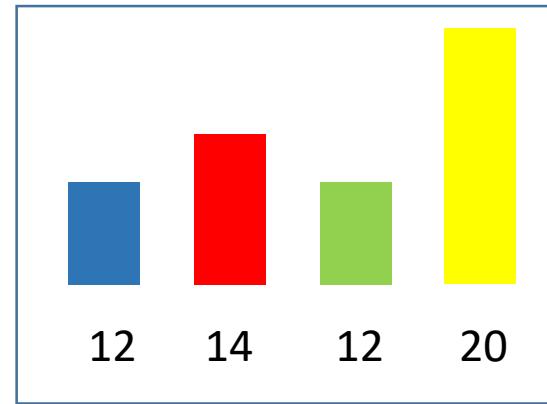
- Teacher is enthusiastic
- help to plan the class according to the student's responses.
- Preparing questions during the class is not difficult

Student

- Student are enthusiastic and eager
- Student find the whole process similar to gaming
- Activity level of the students is higher
- Need to display timer to get responses in time

Redesign of clickers system

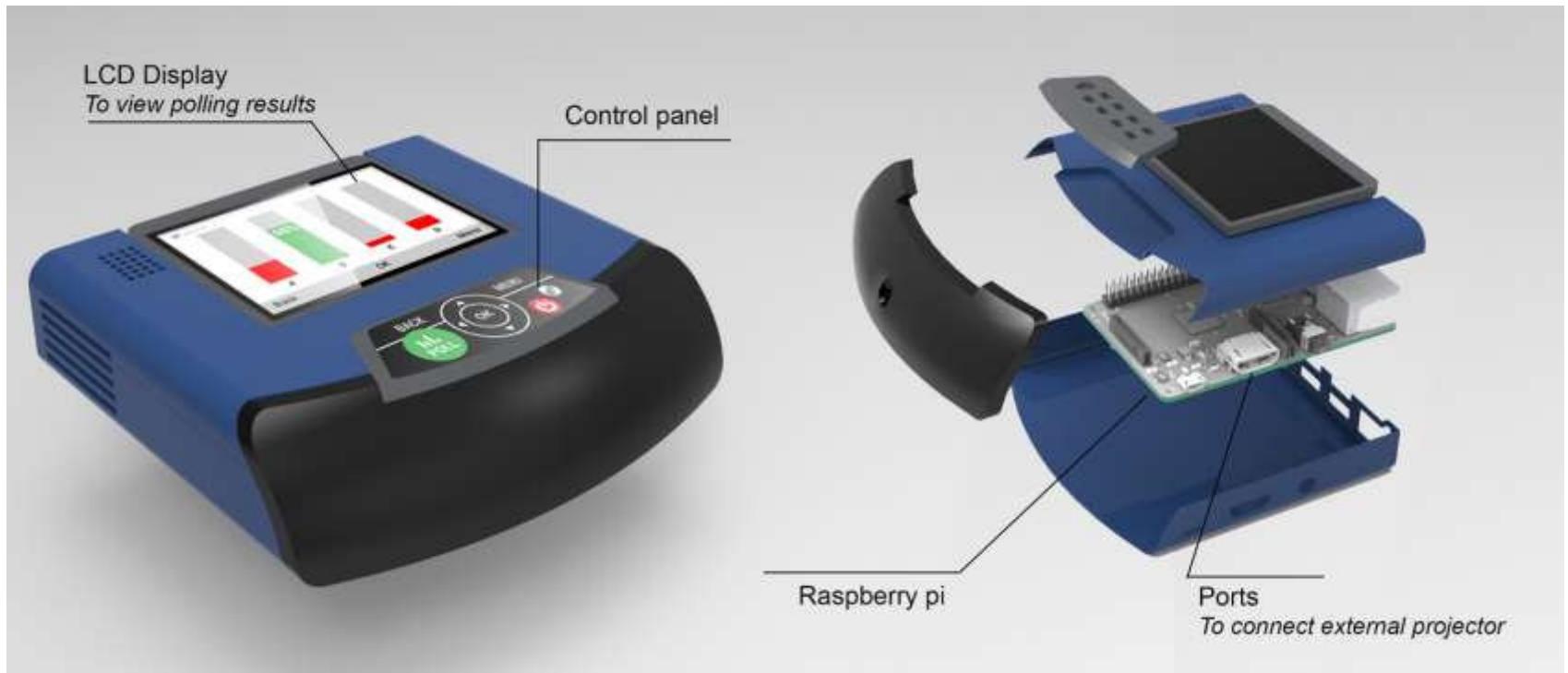
The final system displays timer and results



Timer- to get responses in time

Results

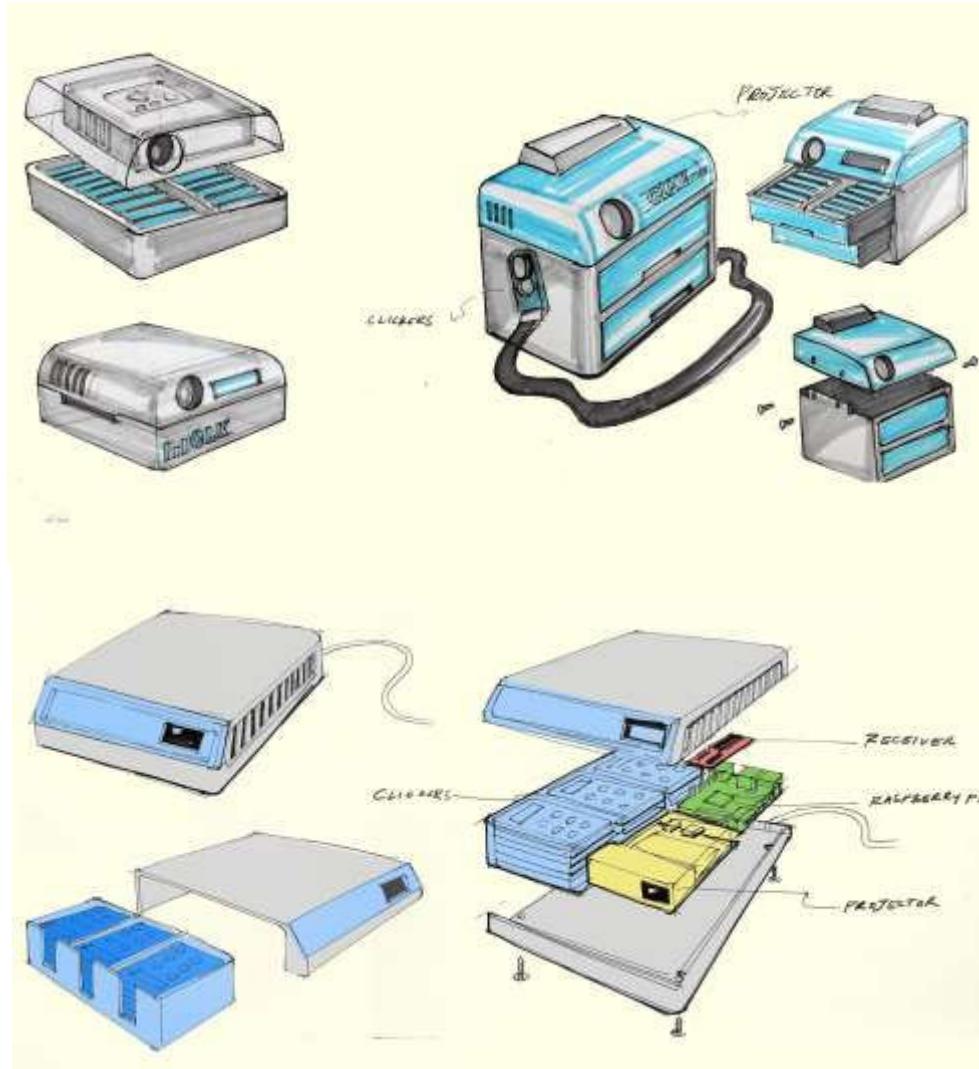
Concept 1: A portable compact device built over Raspberry pi with small display and integrated receiver to view results



Concept 1 advantages and disadvantages

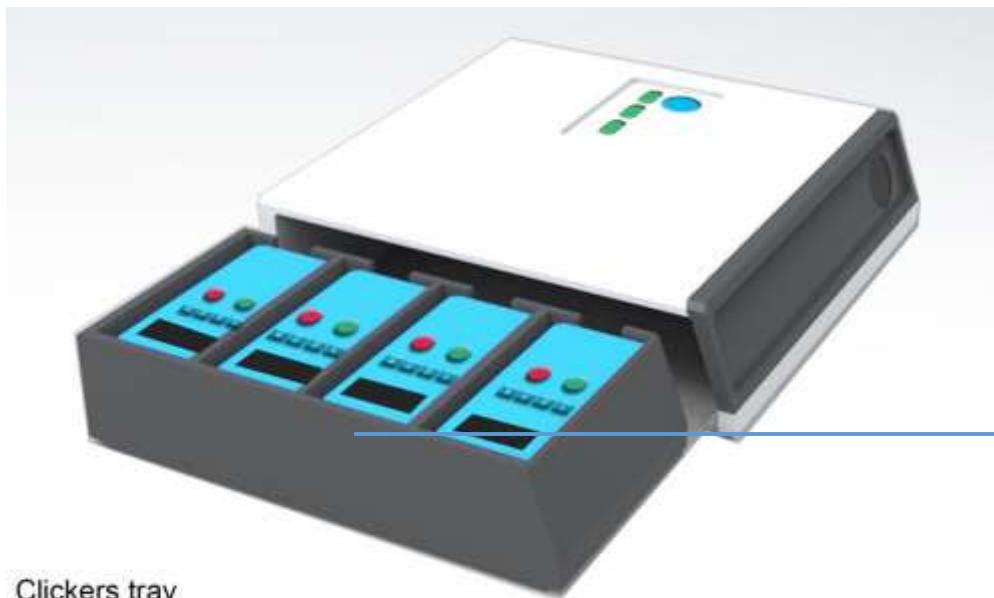
- Built in display to view results
- Since device is built over Raspberry pi, it comes with all basic ports
- Can show multimedia content when connected to projector using USB
- Only instructor can view the results and shared with students through orally

Concept 2 : Portable projector integrated with raspberry pi and Receiver





Pico Projector
Runs using Raspberry pi



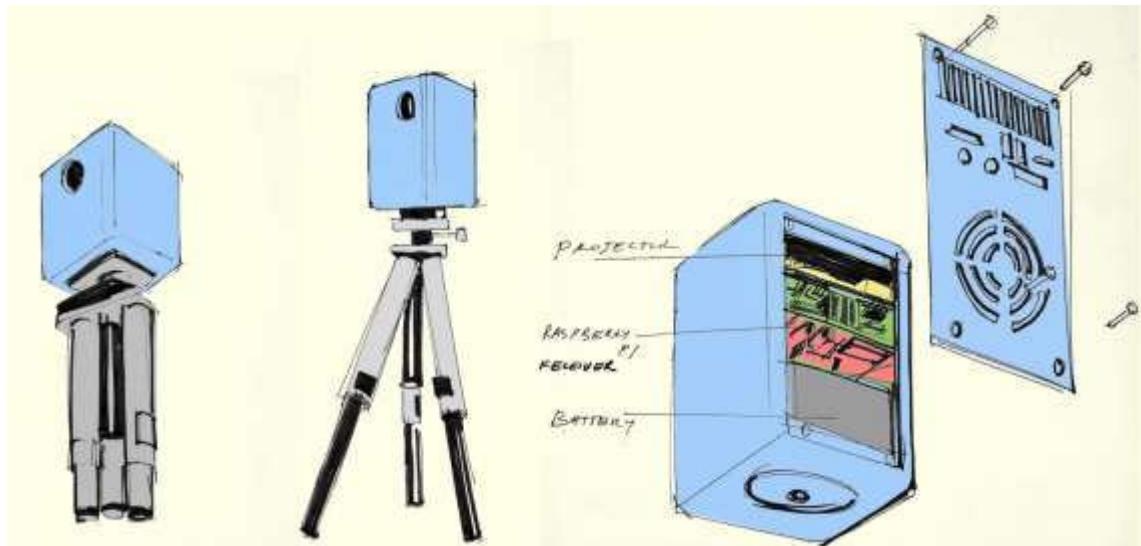
Space for clickers tray slide
on the side

Clickers tray

Concept 2 Advantages and Disadvantages

- Built in pico projector
- Inbuilt case for clickers
- Portable easy to carry
- Pico projector has less lumens, so not so clear visibility
- since its a table top, a table is needed to use the device

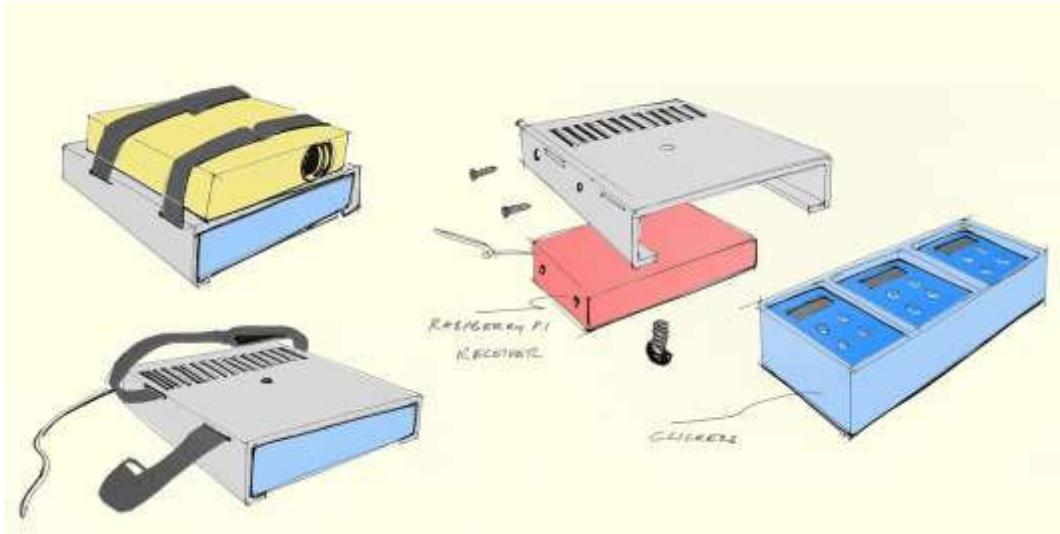
Concept 3 Portable projector integrated with Raspberry pi and Receiver and tripod



Concept 3 Advantages and Disadvantages

- Built in pico projector
- Can attached to tripod so easy to place around the class
- portable
- Pico projector has less lumens, so not so clear visibility

Concept 4 modular concept



Concept 4 advantages and disadvantages

- Built in pico projector
- Modular, easy maintenance
- portable
- Pico projector has less lumens, so not so clear visibility

Concept 5 LED Display board

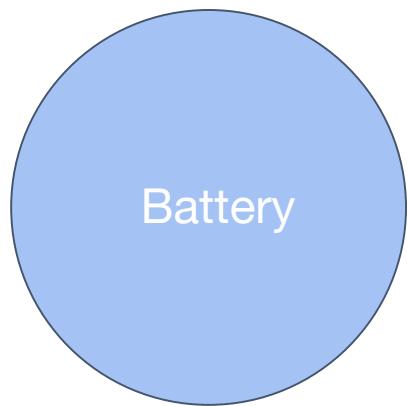


Concept Advantages and Disadvantages

- LED display to show timer and histogram, less cost
- Better visibility
- portable

Clicker design

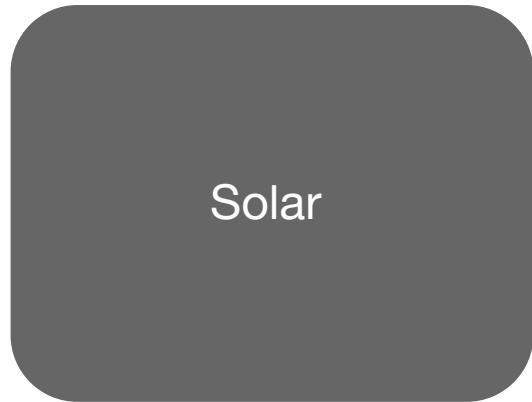
Power options



Battery



RFID



Solar

Clicker design 1

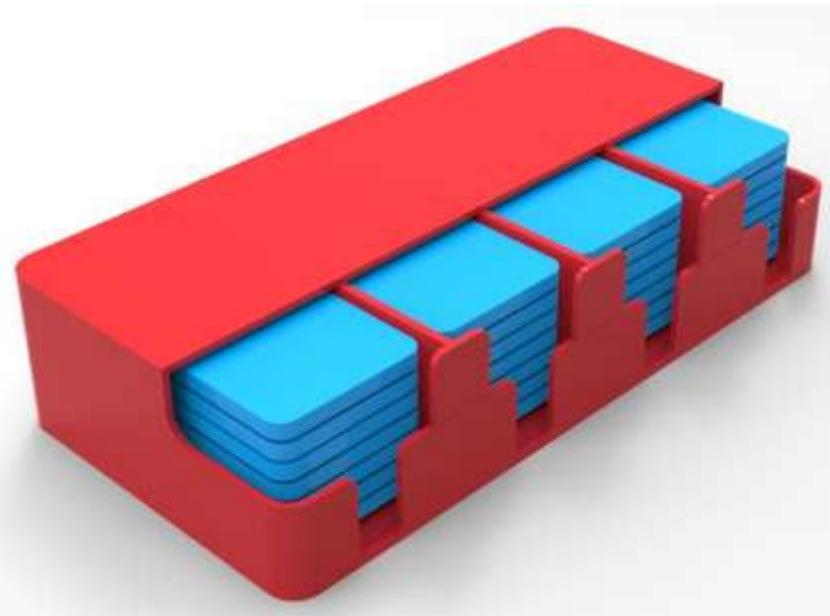
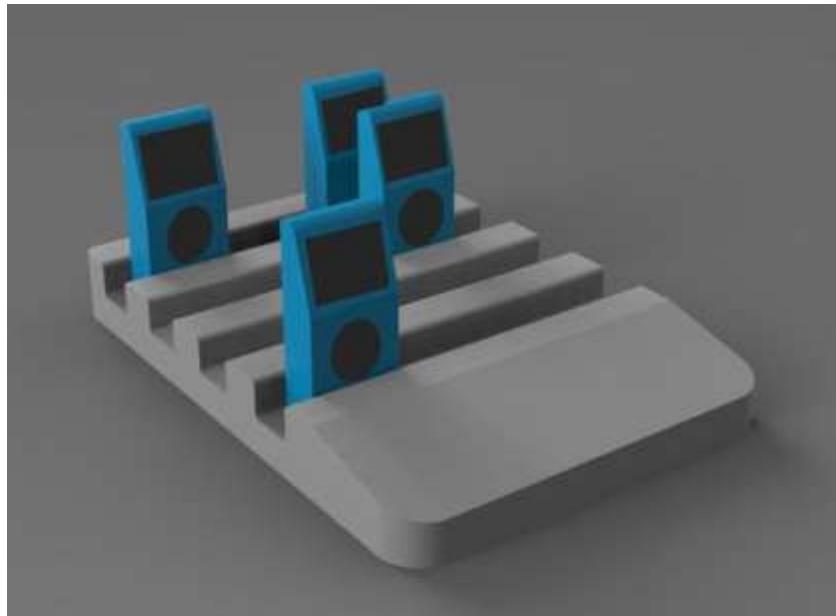
RFID clicker



Clicker design 2



Tray design



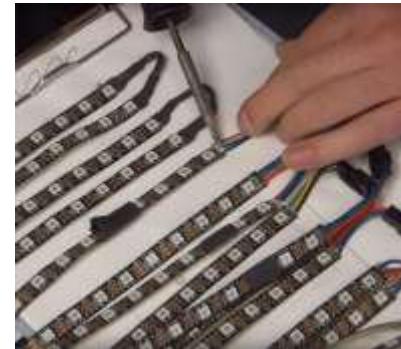
- For easy distribution and collection
- portable

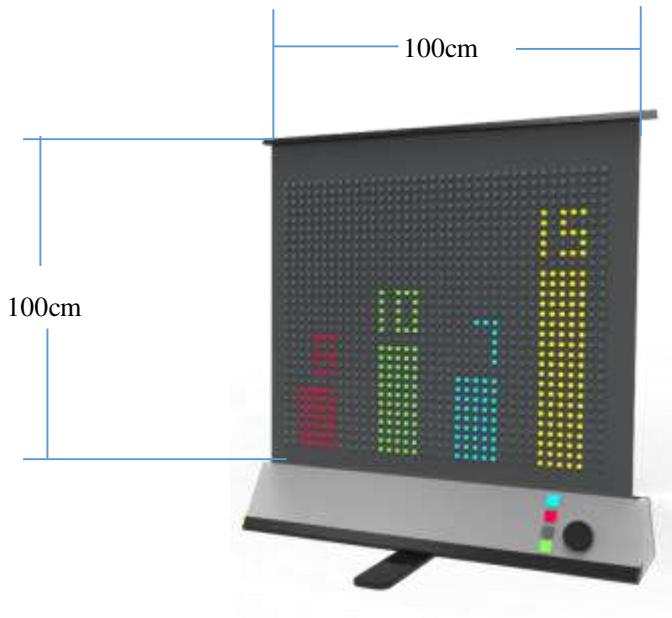
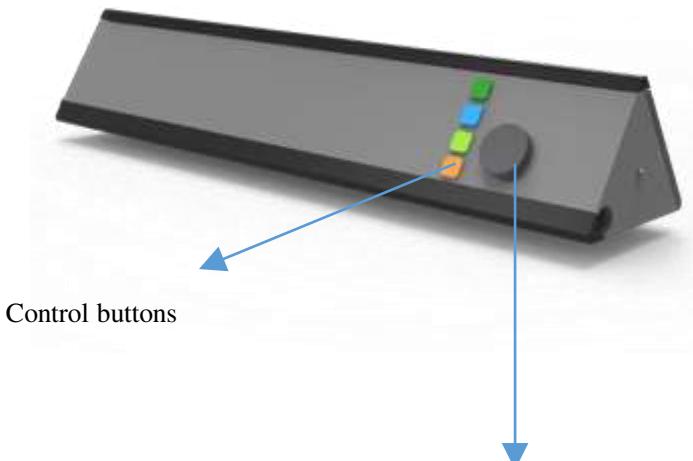
Concept Evaluation

	Ease of use	portability	Service and maintenance	manufacturing	cost	aesthetics	total
Concept 1	4	4	3	4	4	4	23
Concept 2	3	4	3	3	3	3	19
Concept 3	3	3	3	3	3	4	19
Concept 4	3	4	4	4	4	3	22
Concept 5	4	4	4	4	5	4	25

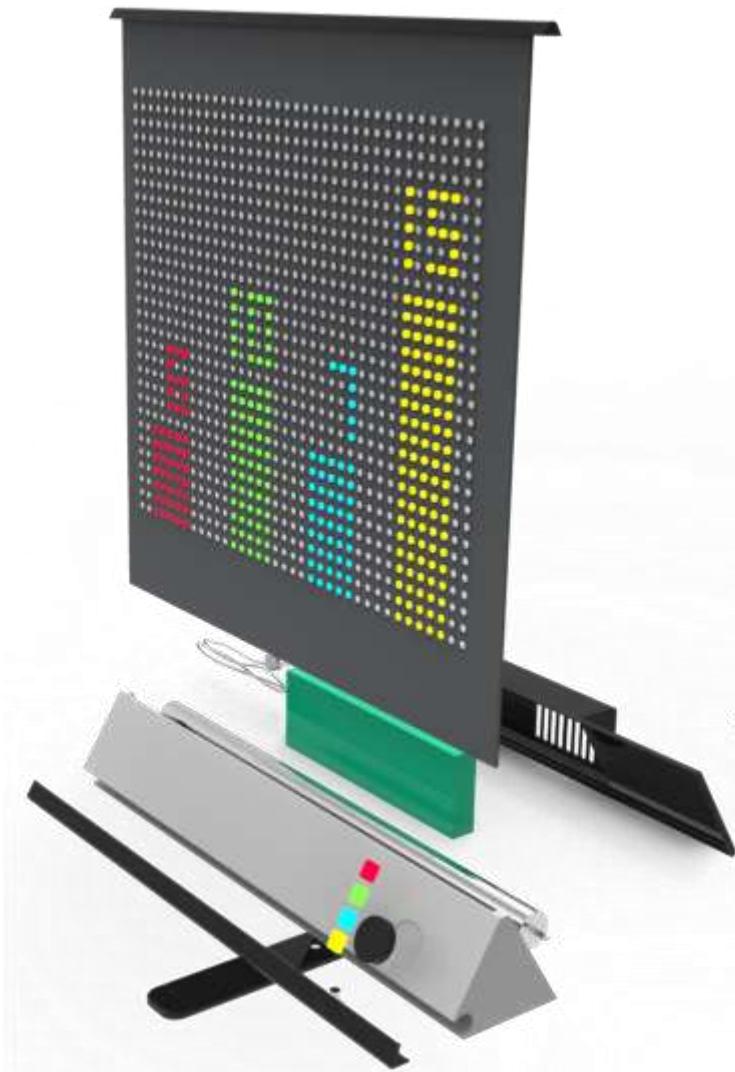
Final concept

Foldable LED display

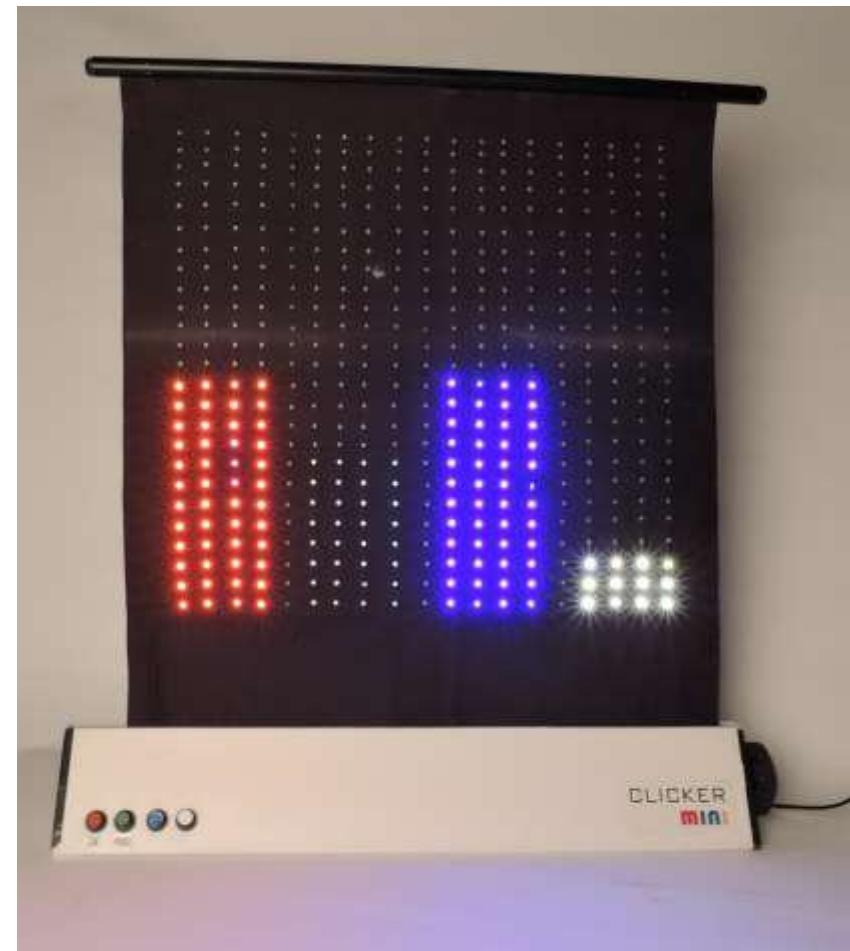




Renders



Final concept Prototype



Final concept Prototype

