

Developing the learning method for Hearing Impaired Children in Andhra Pradesh

Project-II

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Disability

Disability is the consequence of an impairment that may be physical, cognitive, mental, sensory, emotional, developmental, or some combination of these.

A disability may be present from birth, or occur during a person's lifetime.

Statistics

Over a billion (100 crore) people, about 15% of the world's population, have some form of disability.

21million (2, 19, 07,000) disabled persons in India (2.13% of total population) as per 2001

Percentage (%) distribution of disabled persons by type of disability

Vision 49%, Speech 7%, Hearing 6%, Movement 28%, Mental 10%

Sensory disability

Sensory disability is impairment of one of the senses. The term is used primarily to refer to vision and hearing impairment, but other senses can be impaired.

- **Vision impairment**

Total blindness is the inability to tell light from dark, or the total inability to see. Visual impairment or low vision is a severe reduction in vision that cannot be corrected with standard glasses.

- **Hearing impairment**

Hearing impairment is the inability of an individual to hear sounds adequately. This may be due to improper development, damage or disease to any part of the hearing mechanism.

360 million people worldwide have disabling hearing loss.

6% Hearing Impaired from total disabled persons (21 million) in India.

Types of Hearing impairment

Sensorineural Hearing Loss:

Sensorineural hearing loss is caused due to damage or disease of the inner ear or auditory nerve.

Conductive Hearing Loss:

Conductive hearing loss results from defects in the outer or middle ear.

Mixed Hearing Loss:

Mixed hearing loss is the combination of conductive and sensorineural hearing loss.

Degrees of hearing loss

The amount of hearing loss someone has is ranked as mild, moderate, severe, or profound.

- **Normal hearing**
You can hear quiet sounds down to 20 dBHL.
- **Mild hearing loss**
Hearing loss in your better ear between 25 - 39 dBHL.
You have difficulty following speech in noisy situations.
- **Moderate hearing loss**
Hearing loss in your better ear between 40 - 69 dBHL
You have difficulty following speech without a hearing aid.
- **Severe hearing loss**
Hearing loss in your better ear between 70 - 89 dBHL.
Require powerful hearing aids or an implant.
- **Profound hearing loss**
Hearing loss in your better ear from 90 dBHL.

You need to rely mainly on lip-reading and/or sign language, or an implant.

Treatment

Cochlear implants

A cochlear implant is an electronic medical device that does the work of damaged parts of the inner ear (cochlea) to provide sound signals to the brain for have moderate to profound hearing loss in both ears

Bone conduction implants

A bone conduction implant bypasses problems in the outer and middle ear by sending sound through bone directly to the inner ear for Conductive hearing loss and mixed hearing loss.

Hearing aids

**Hearing aids work by capturing sound and making the sound louder.
Hearing aids are most helpful for people with mild to moderate hearing loss**

Observations and Problems

1. After immediate switch on the device, they do not know any sounds.
2. 0 to 3 years age is good for speech and learning language.
3. Making visual interest if important (Toys, Pictures and shapes)
4. Children are observe the hand gestures and facial expressions.
5. 1 to 2 years age children are not listening properly, so that they can not Concentrate.
6. Teachers are made to repeat the words many times and loudly.
7. Parents do not know how to teach their children
8. After certain training period also children having pronunciation problem.
9. They have memory problem.
10. Making habit of wearing the hearing aid.

Design goal

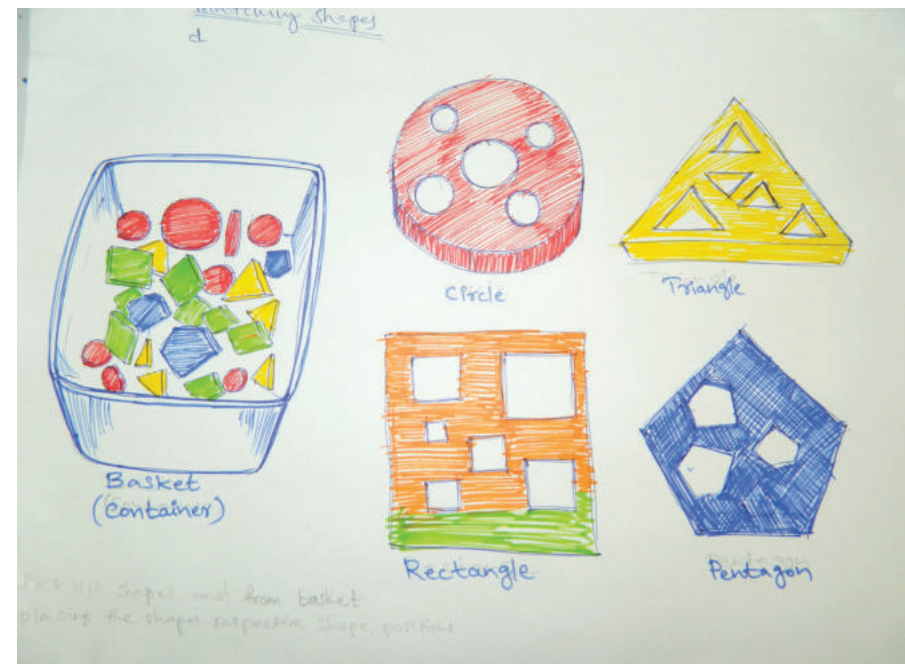
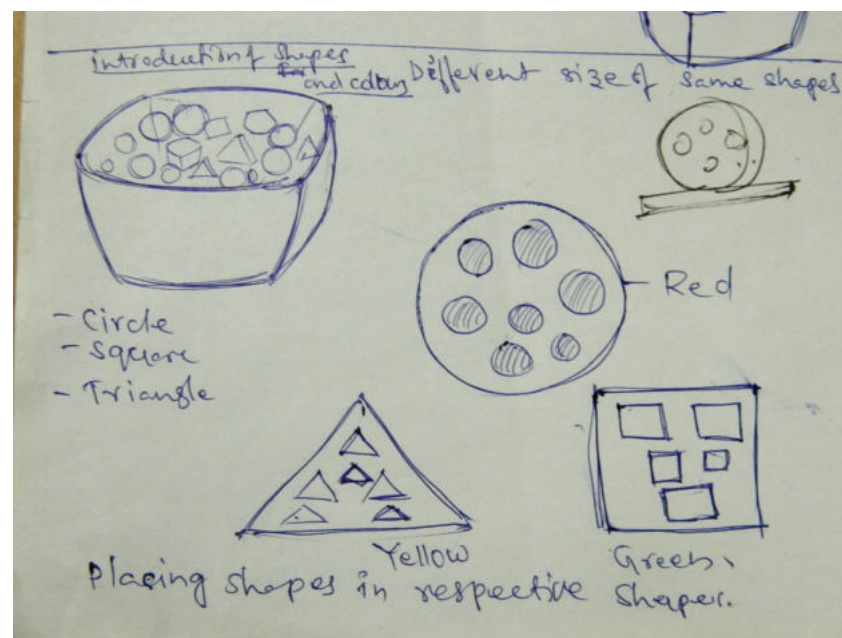
1. Encouraging the hearing sound and understand sound is important
2. Connecting the sounds with visuals to better understanding nouns.
3. Learning should be fun for making interest, easy to understand.
4. Children should spend more time at home for audition, learning speech.
5. Parents are mostly being with children for learning.
6. Developing the learning method for 4 to 7years age group children.

Design Concepts

Concept 1

Matching shapes

The geometrical 3-D forms of squares, triangles, circles in different sizes with different colours were placed in a box. The teacher will explain the children about the shapes, what the colour of each shape is and how to pronounce it.

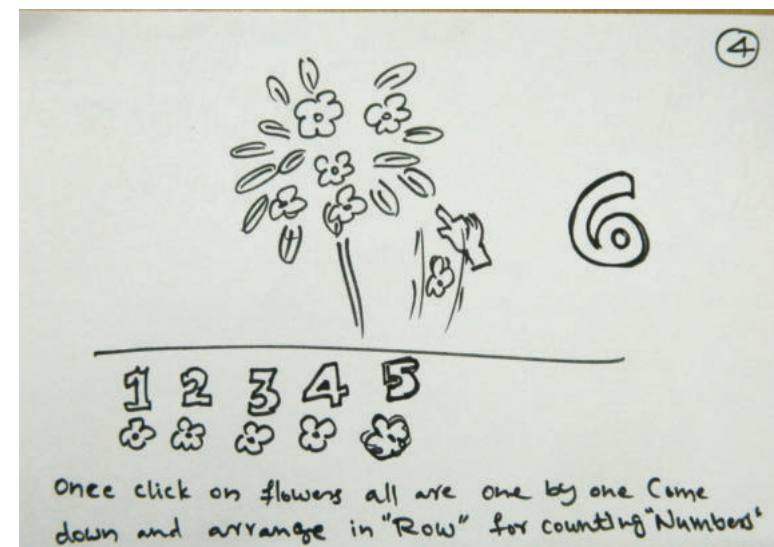
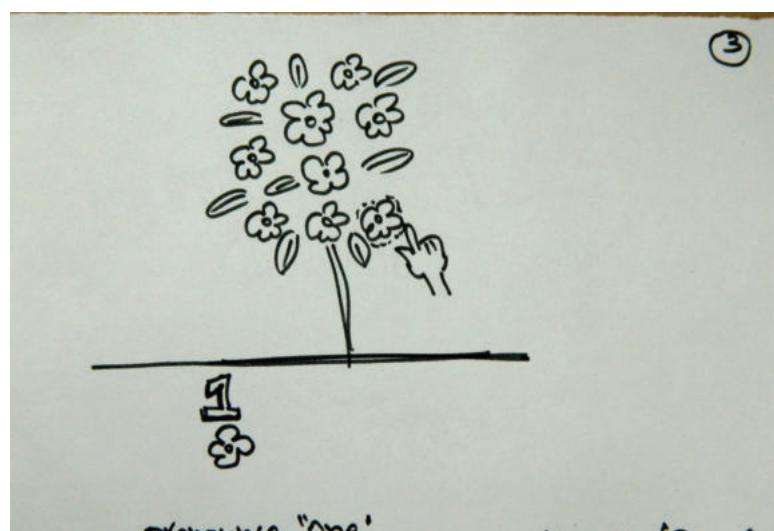
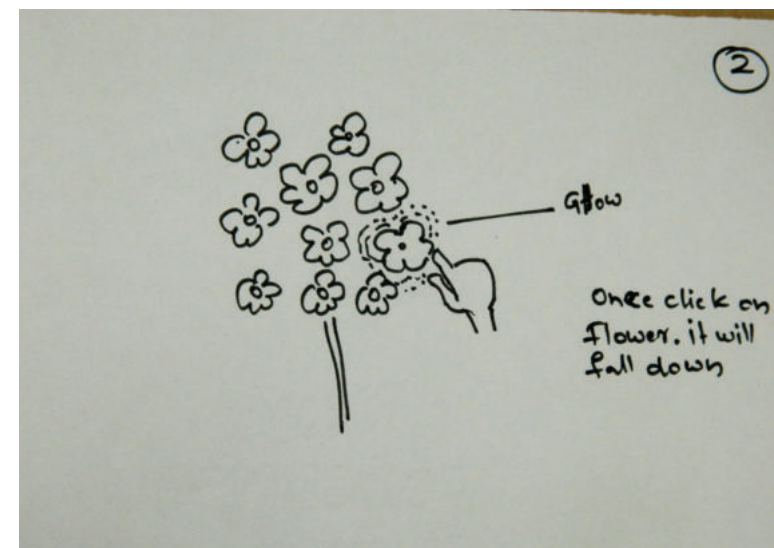
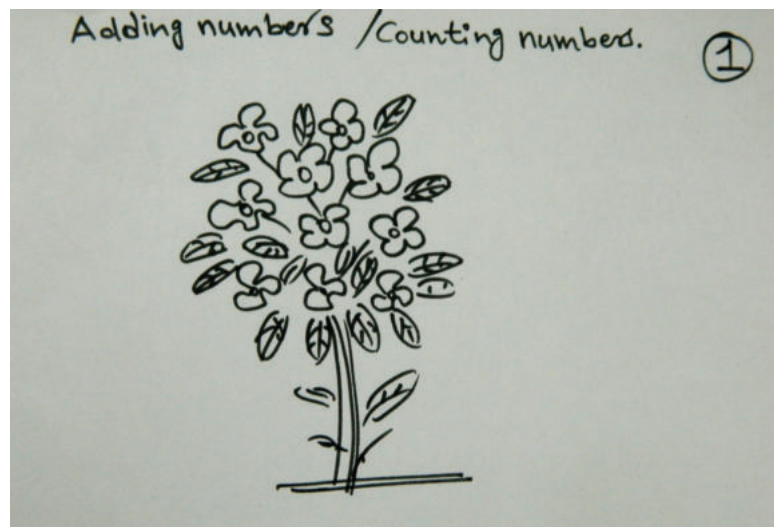


Design Concepts

Concept 2

Counting flowers

Introduction about numbers one to ten and numbers adding, subtraction

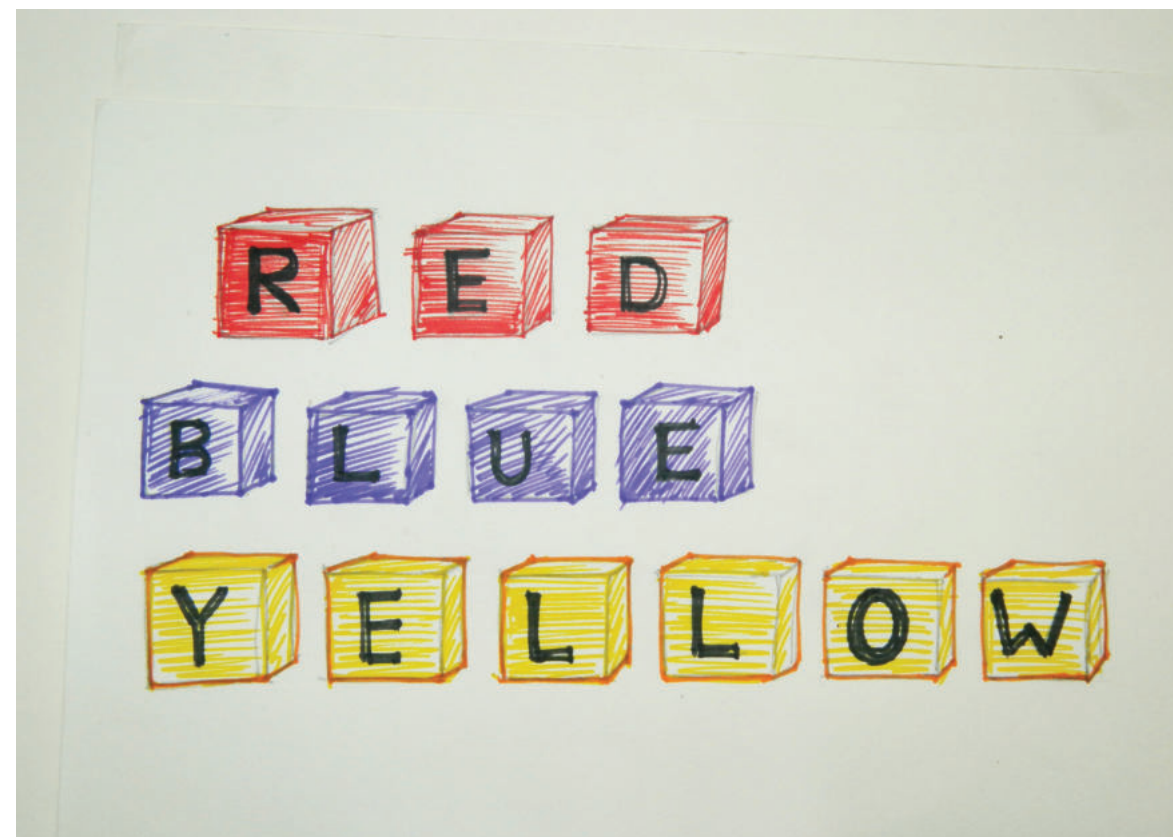


Design Concepts

Concept 3

Match colour Name

Here different colour cubes scattered on table there is primary colour name's letters written on cubes, here game is find out letters and arrange the colour names in order on table.

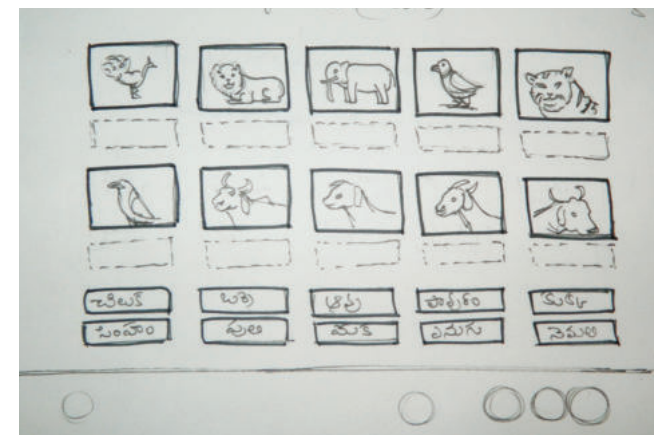
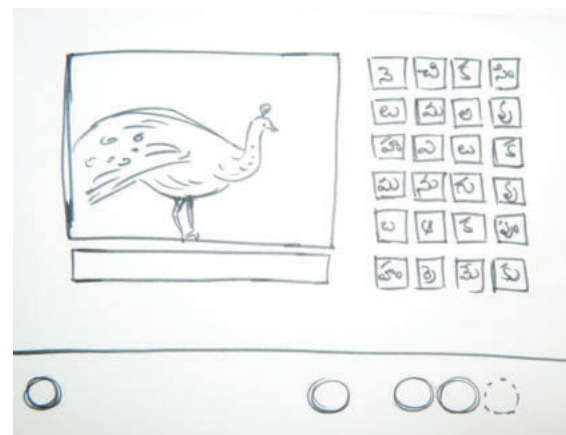
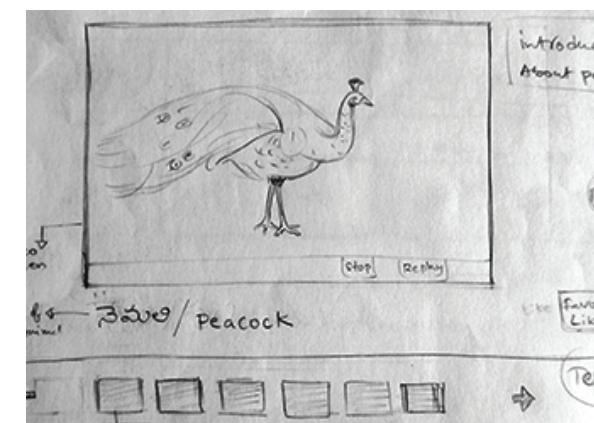
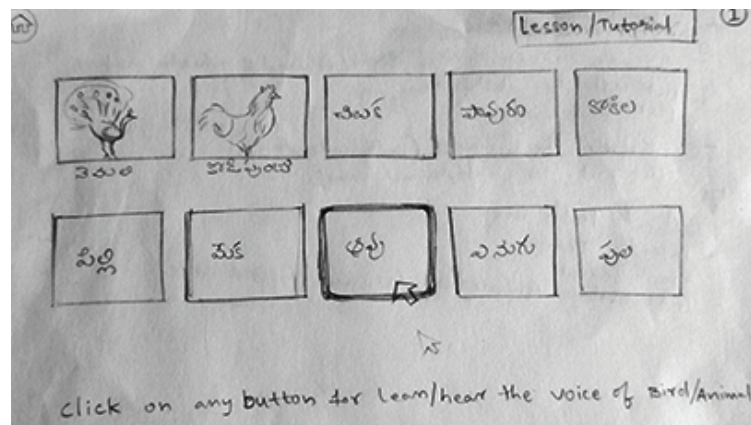


Design Concepts

Concept 4

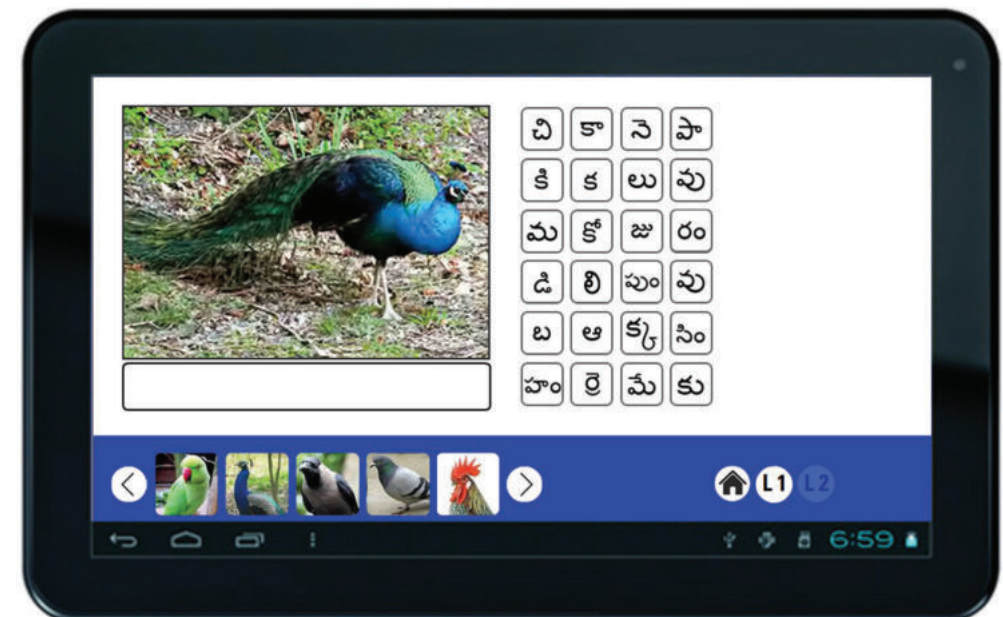
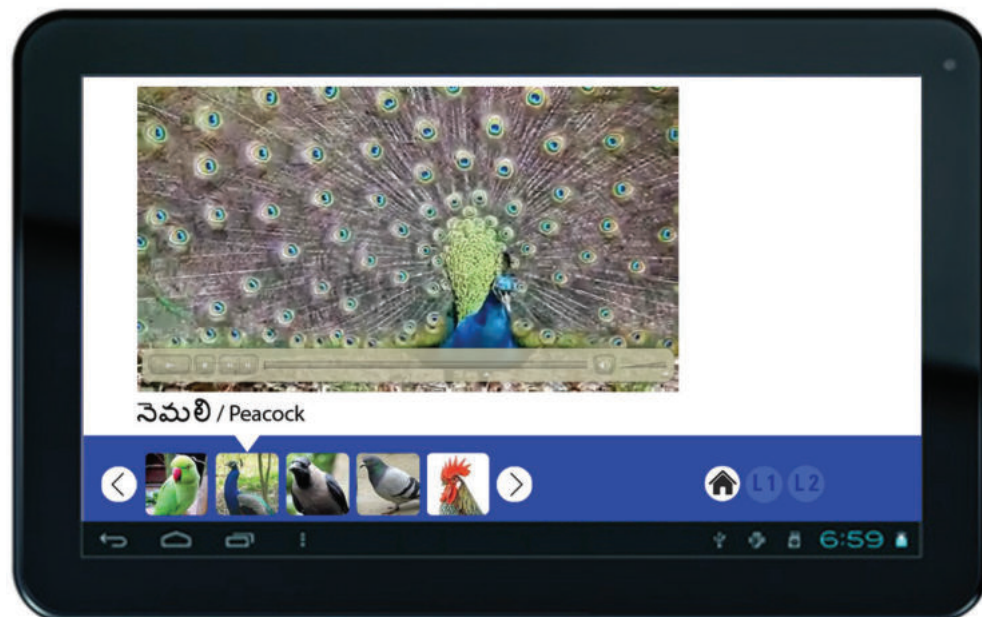
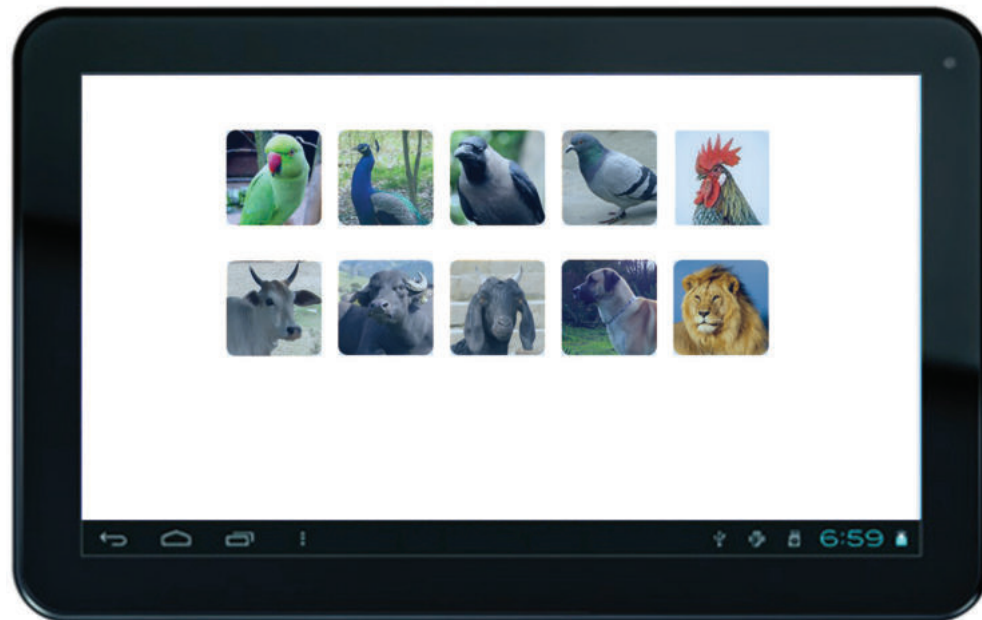
Birds and Animal introduction for encourages hearing, learning nouns

Rough sketches



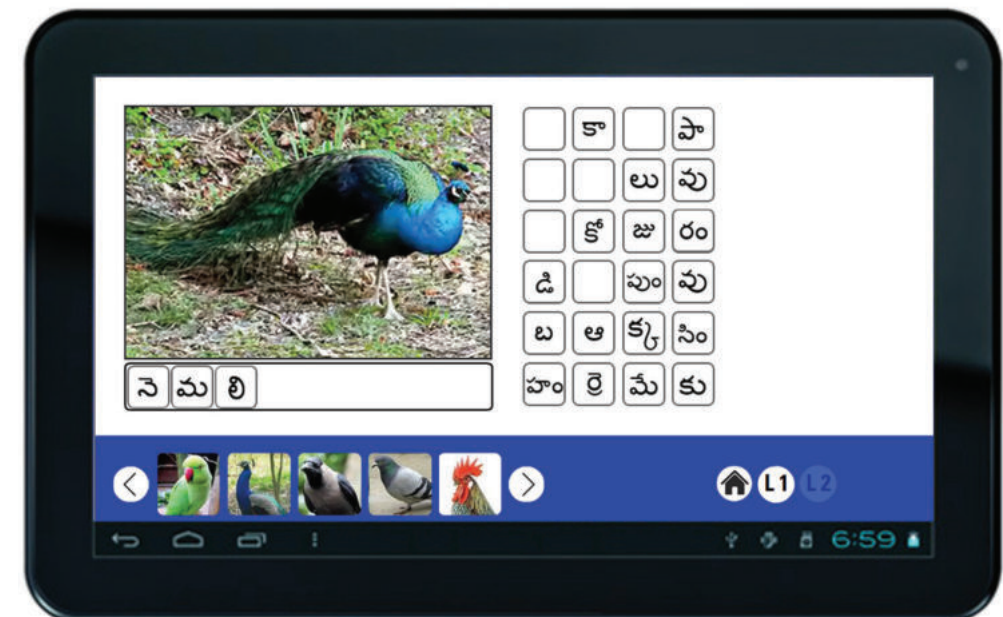
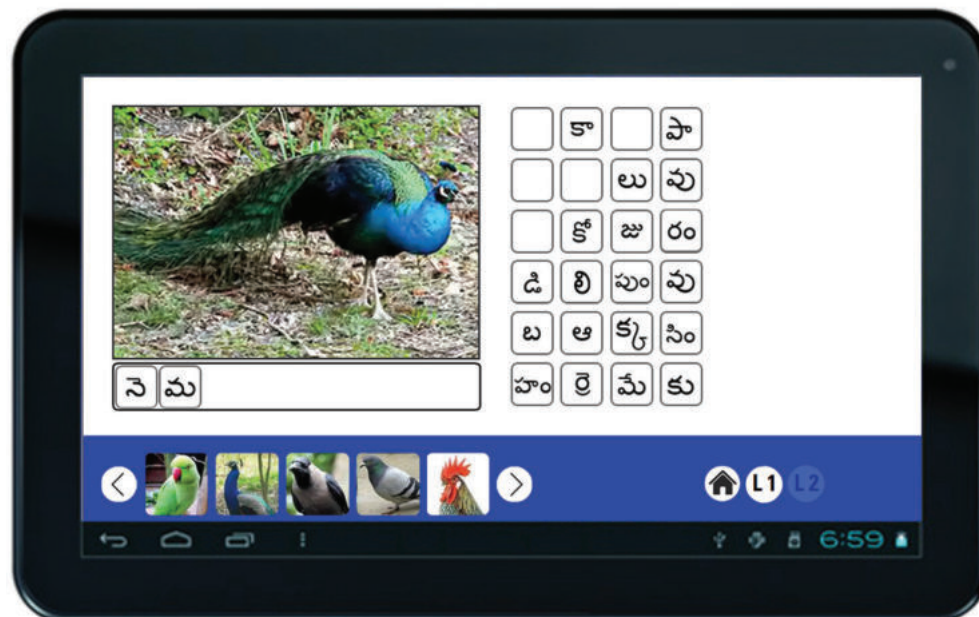
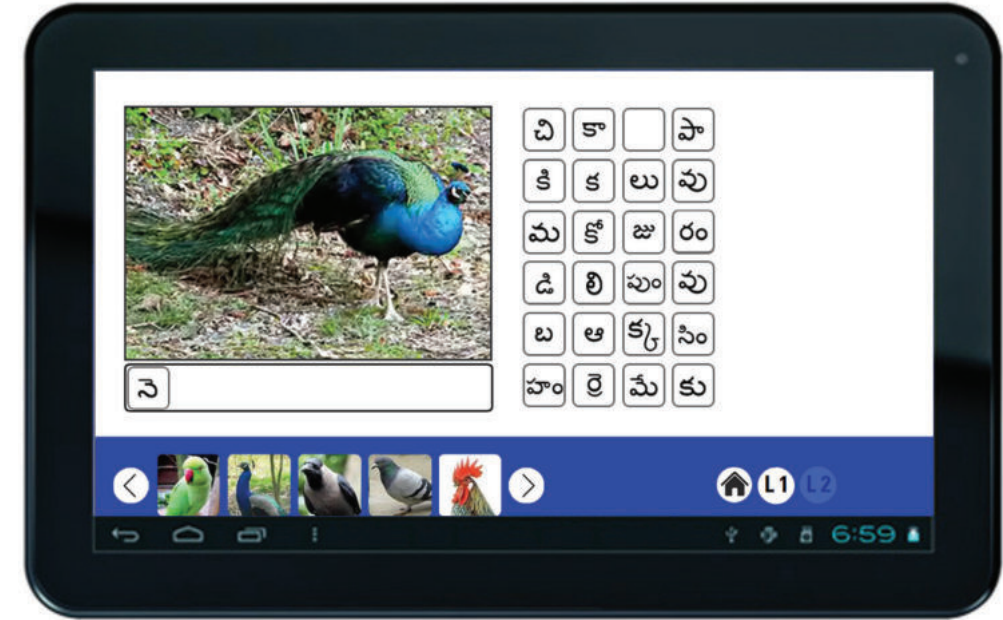
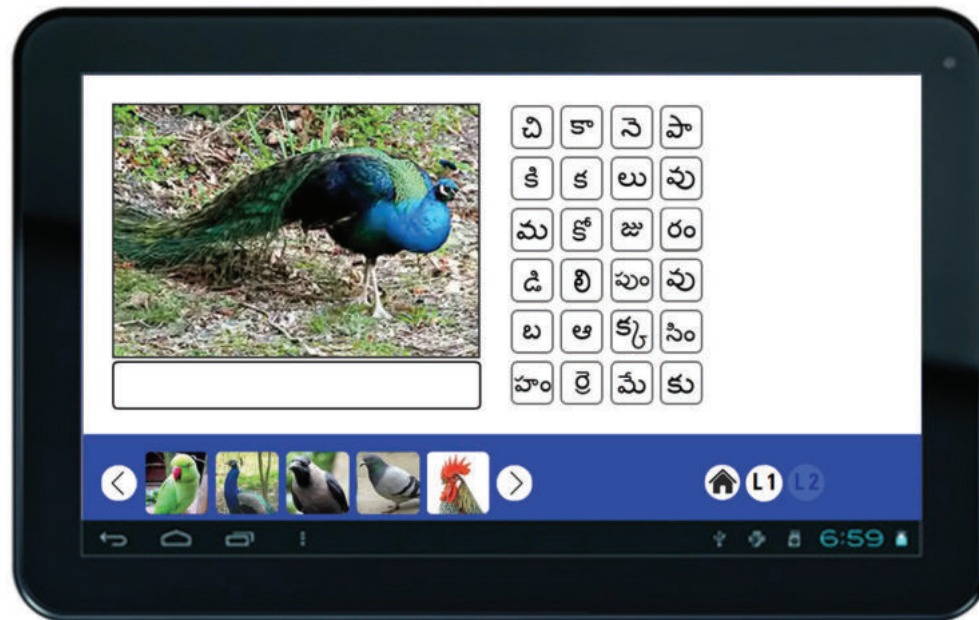
Concept 4

Prototype screens - Login screen & Introduction



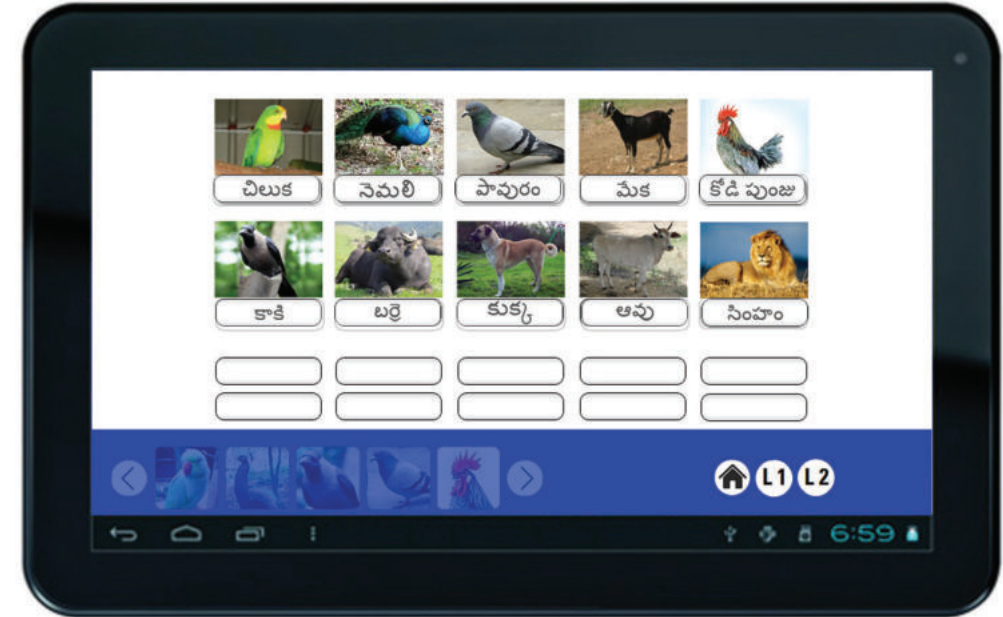
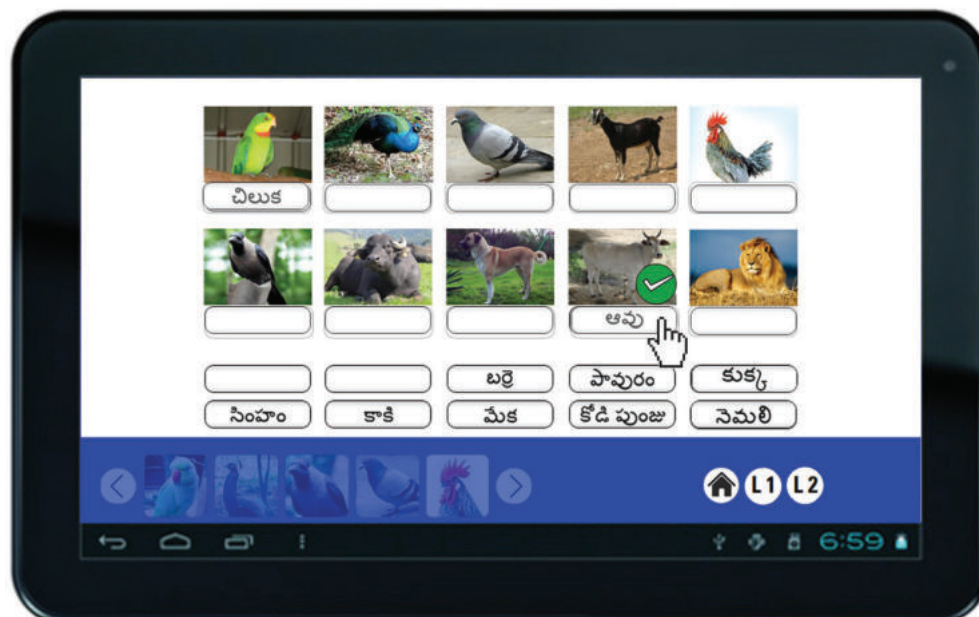
Concept 4

Prototype screens - Level 1



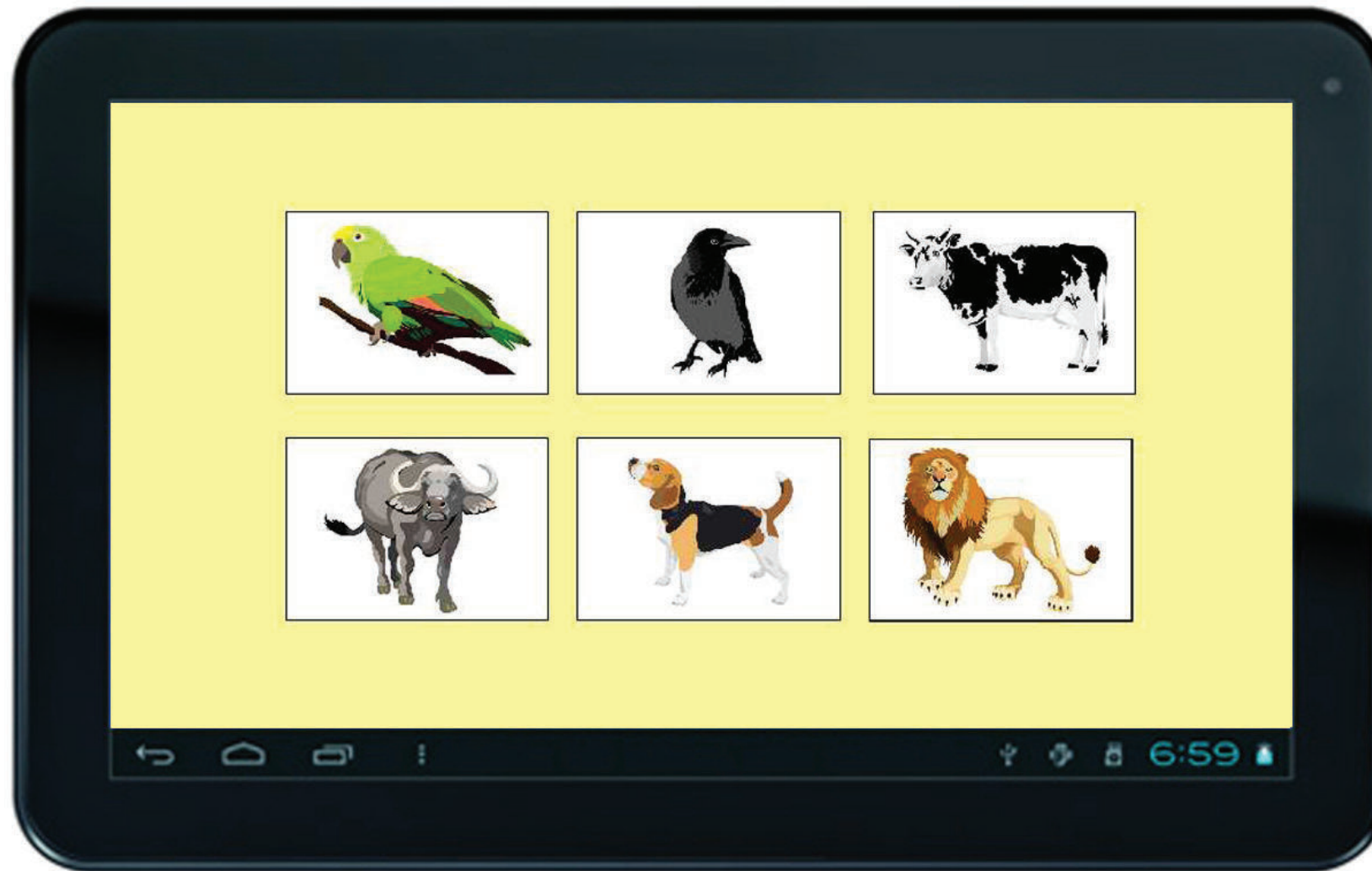
Concept 4

Prototype screens - Level 2



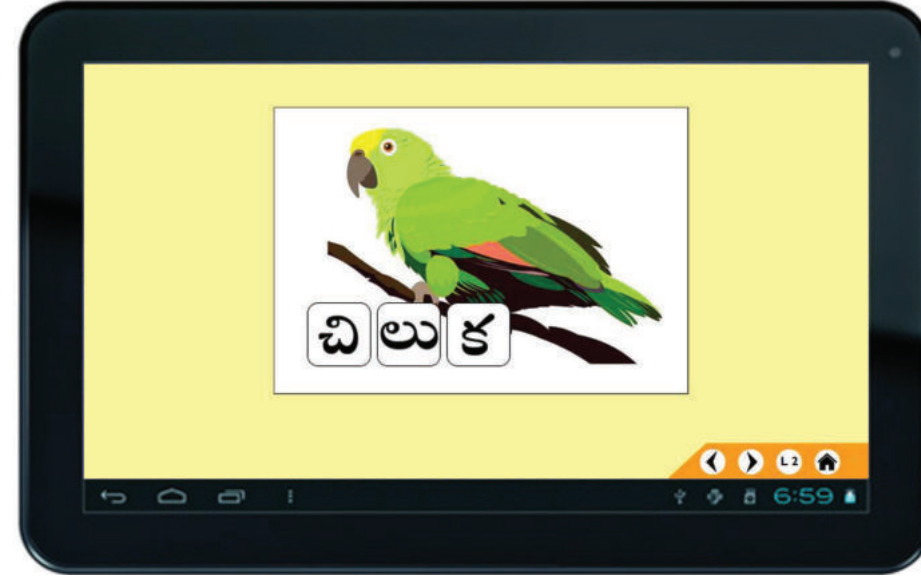
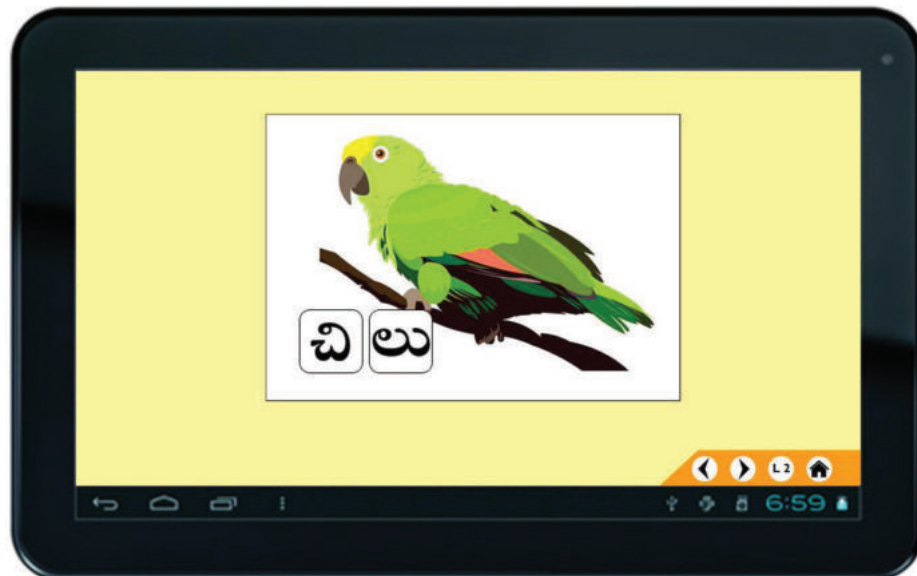
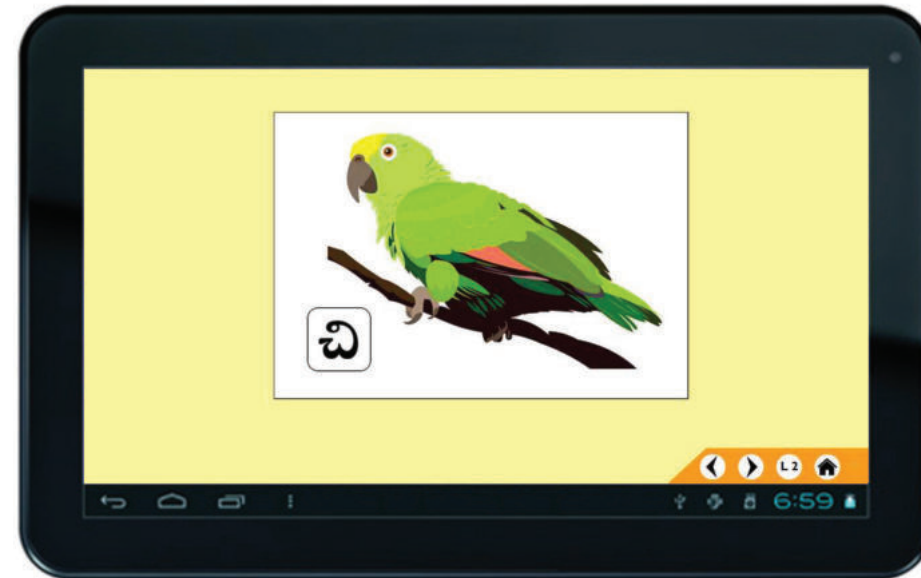
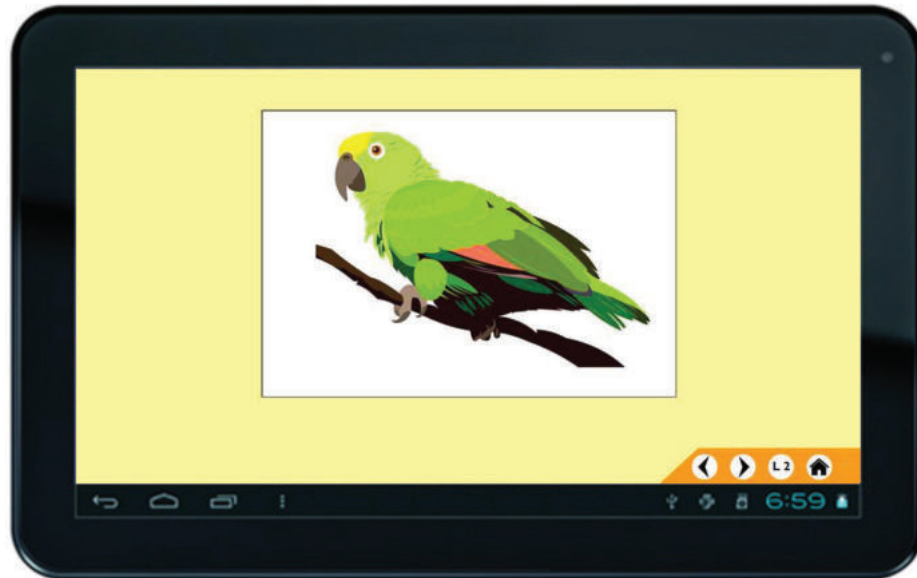
Final Concept

Prototype screens - Login screen



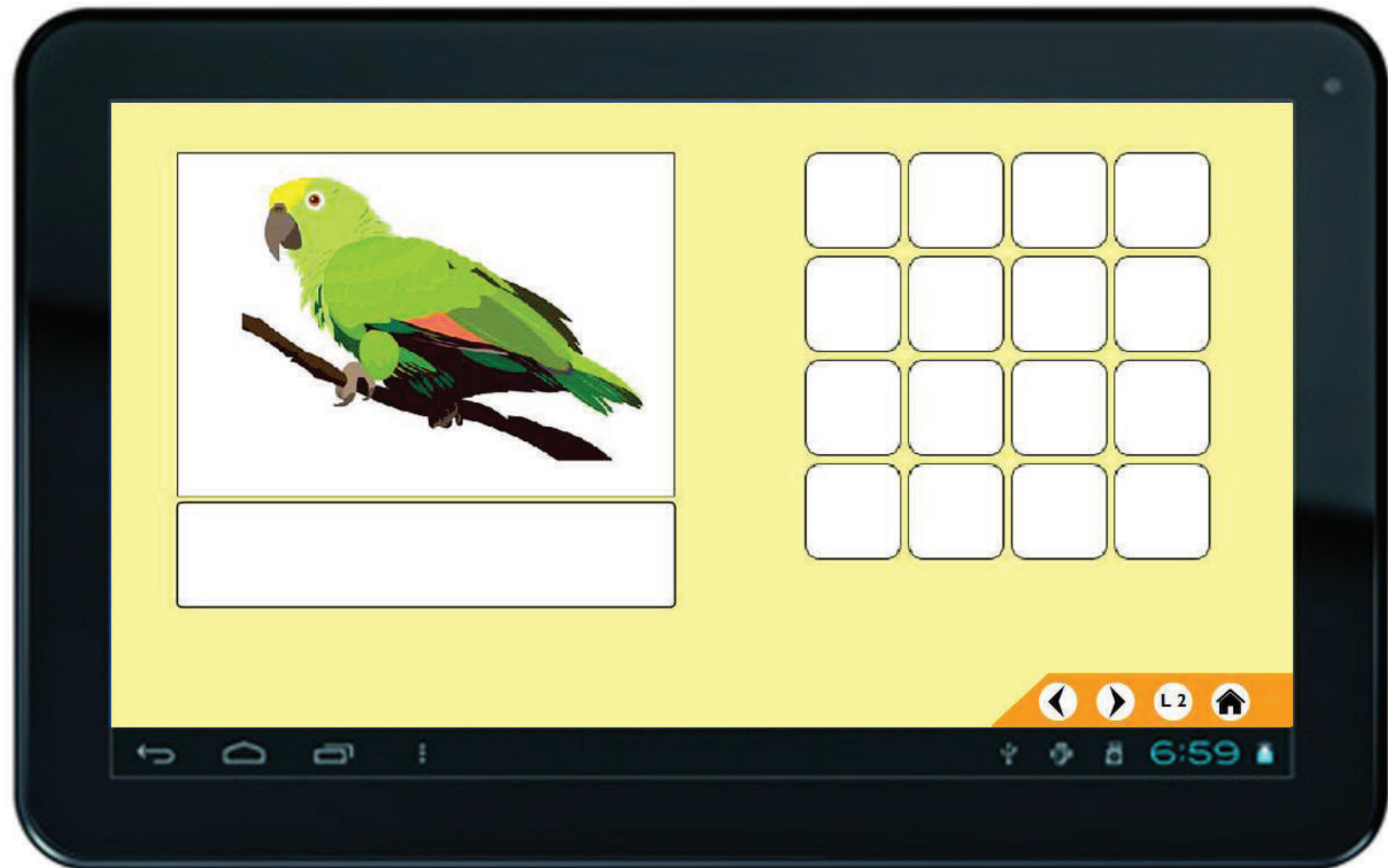
Final Concept

Prototype screens - Introduction



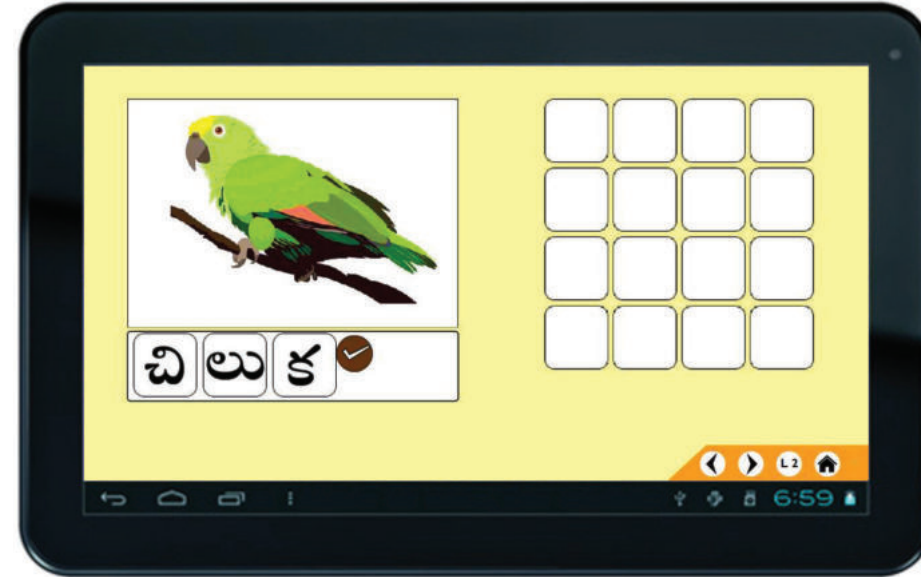
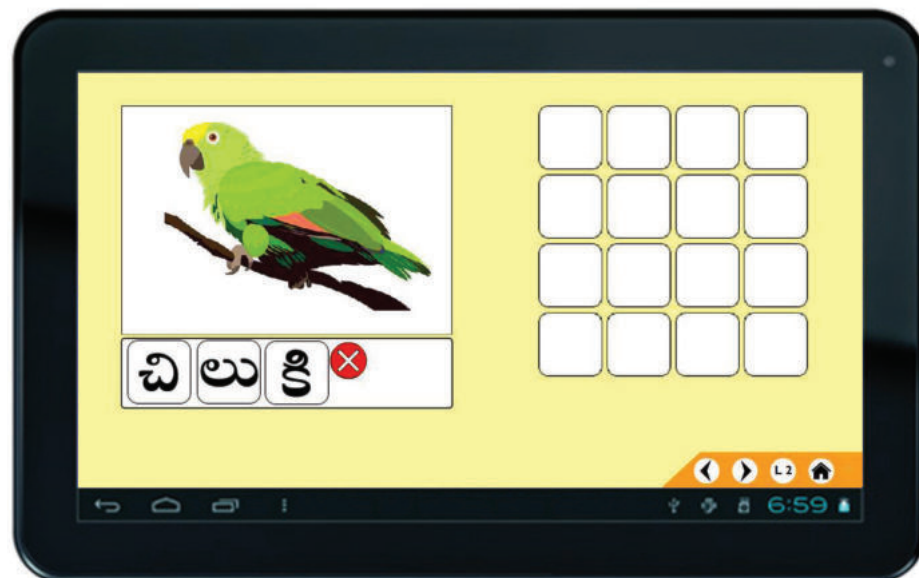
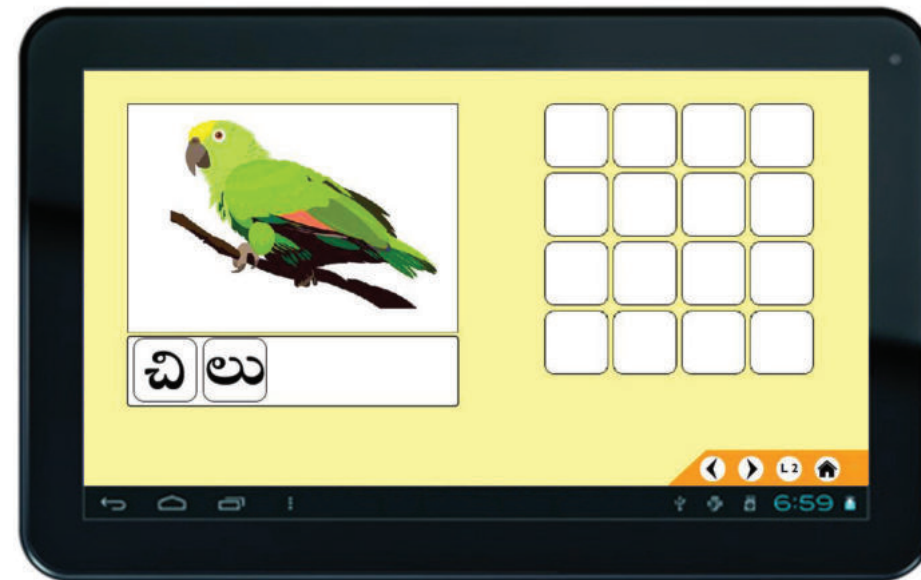
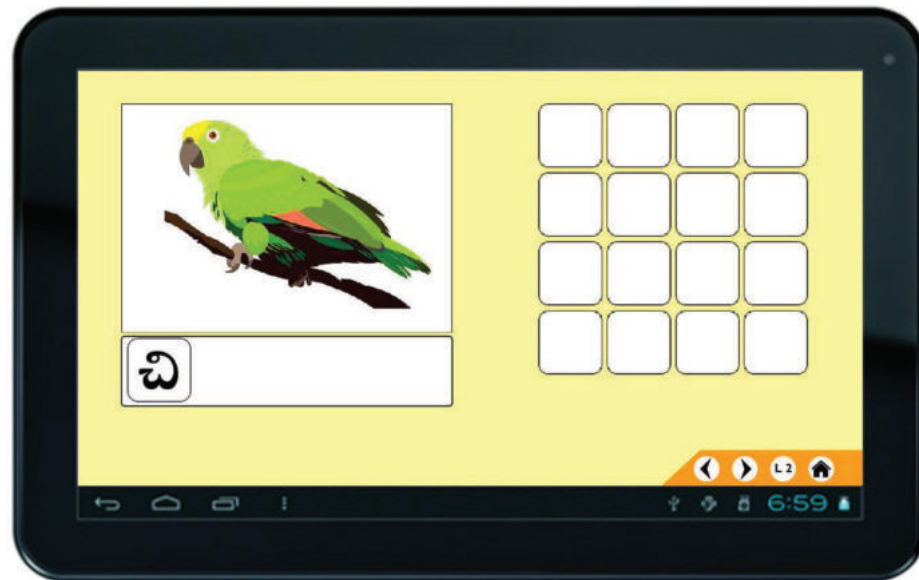
Final Concept

Prototype screens - Level 1 Game



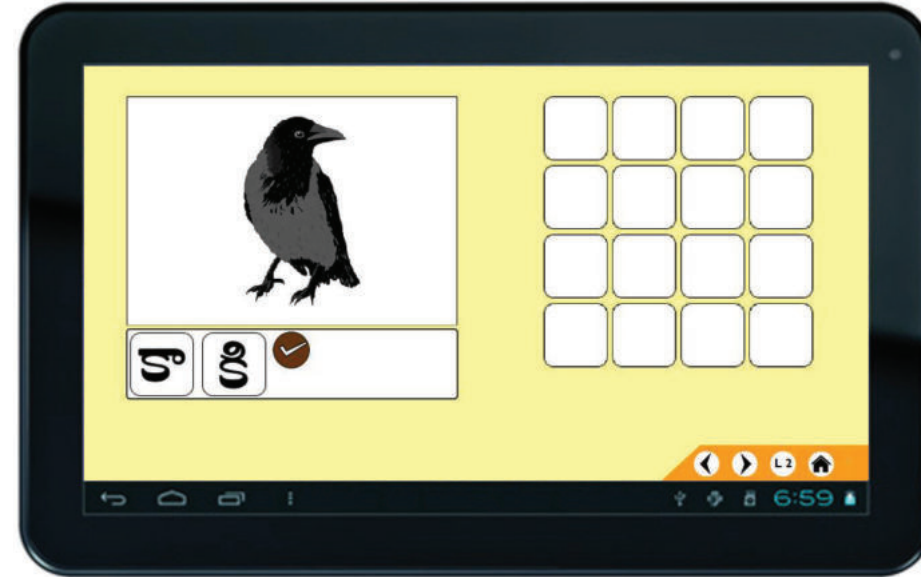
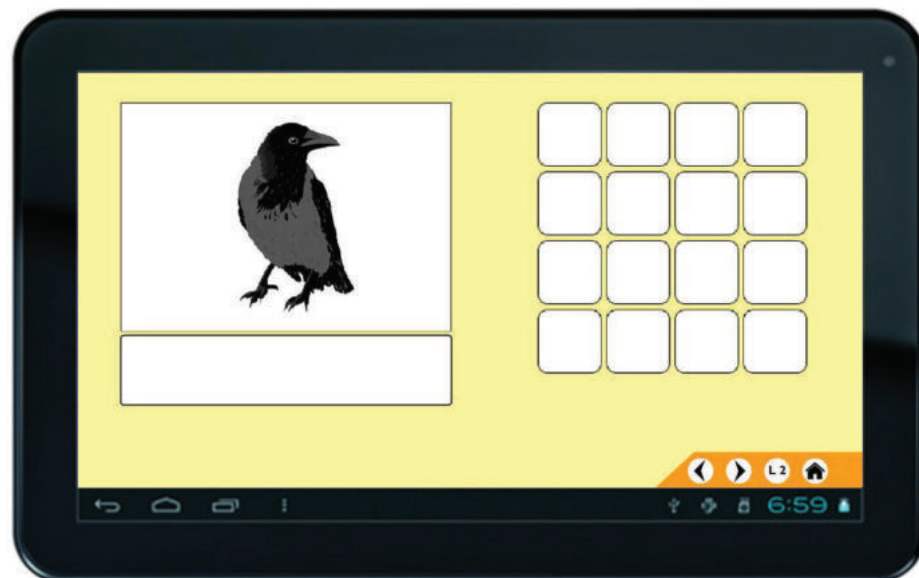
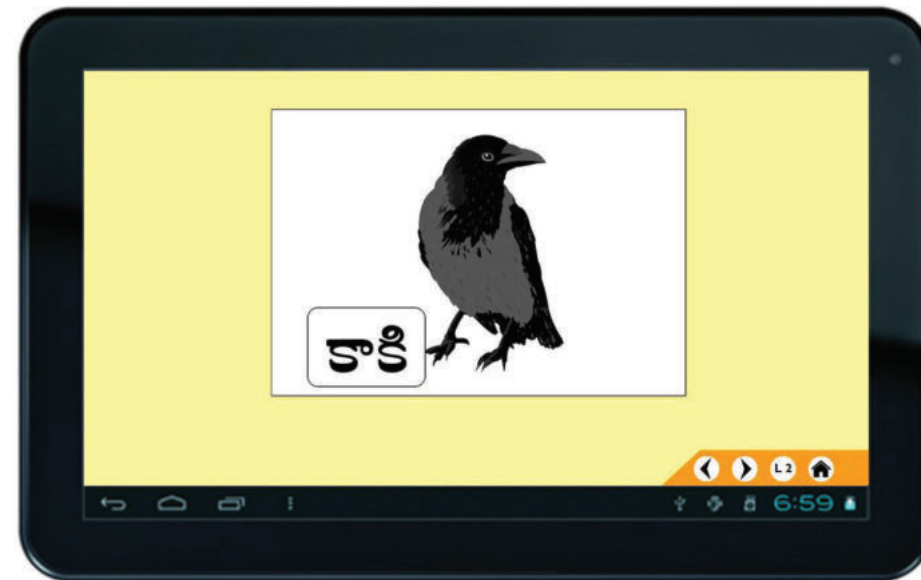
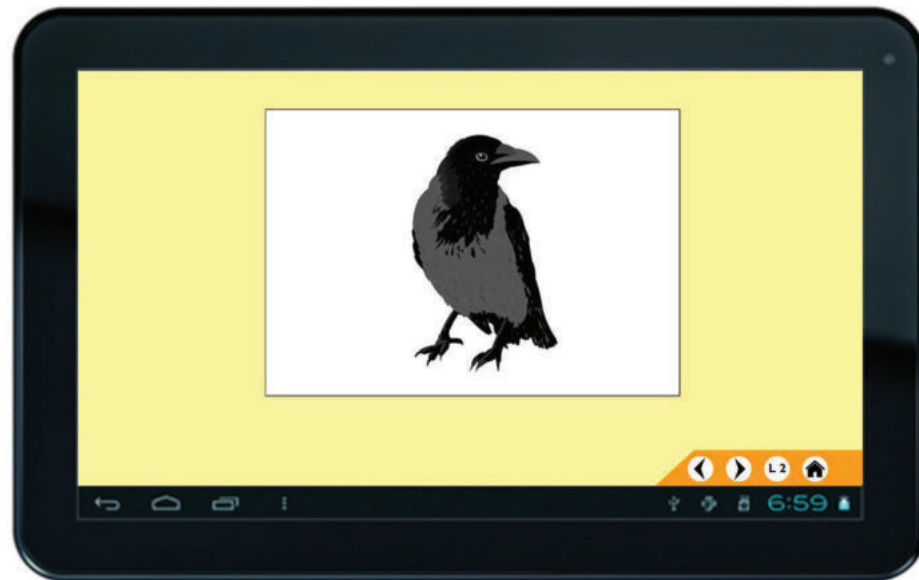
Final Concept

Prototype screens - Level 1 Game



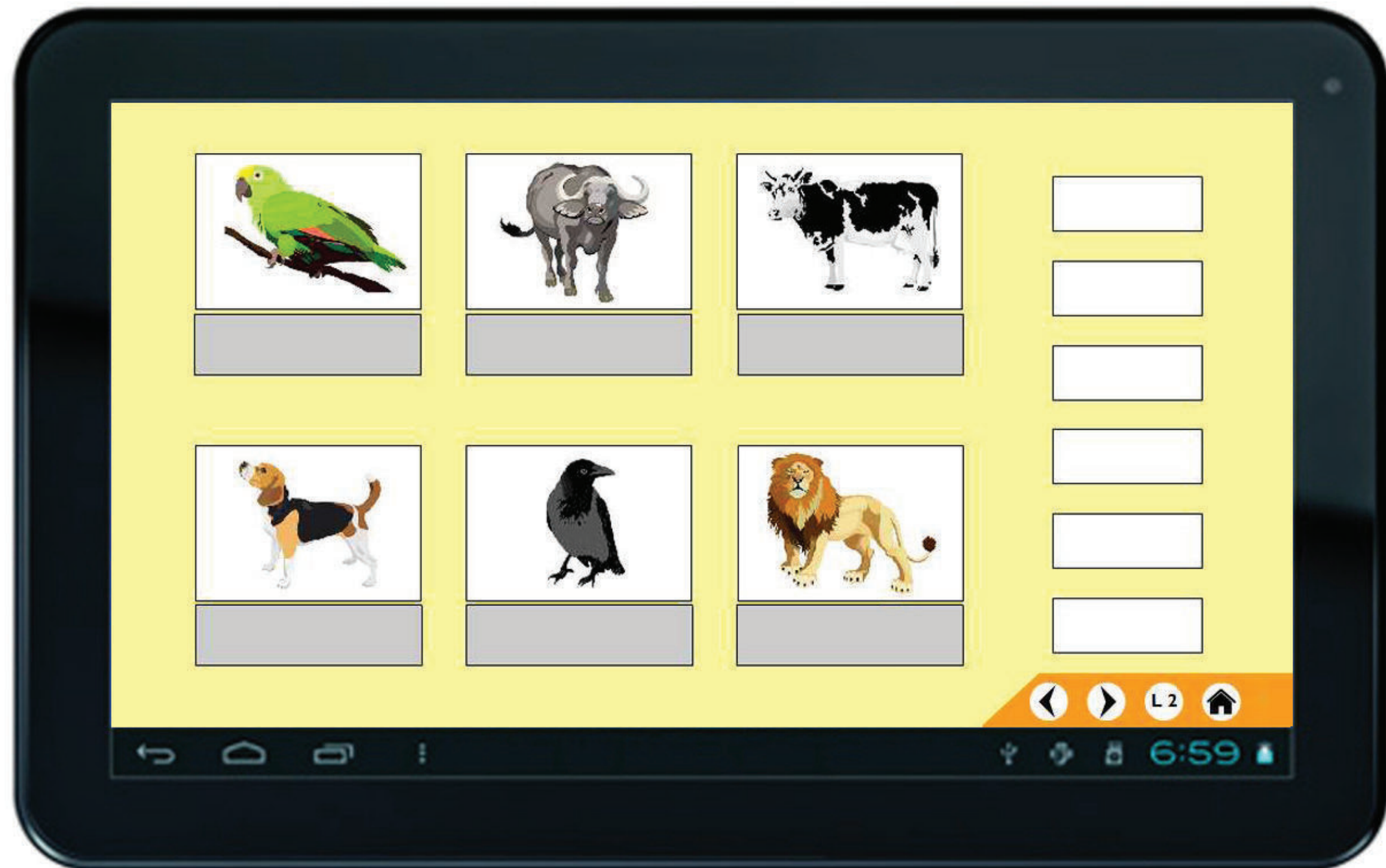
Final Concept

Prototype screens - Next Bird Introduction



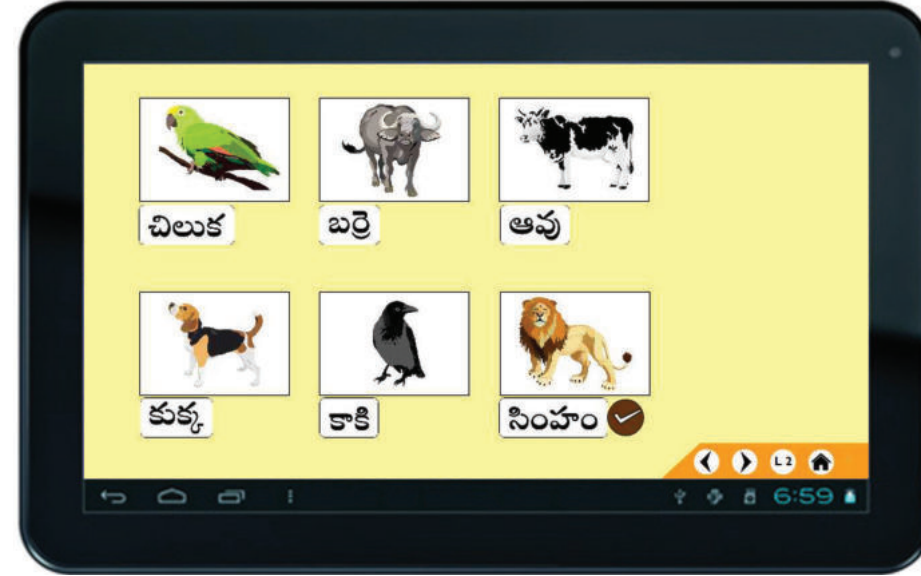
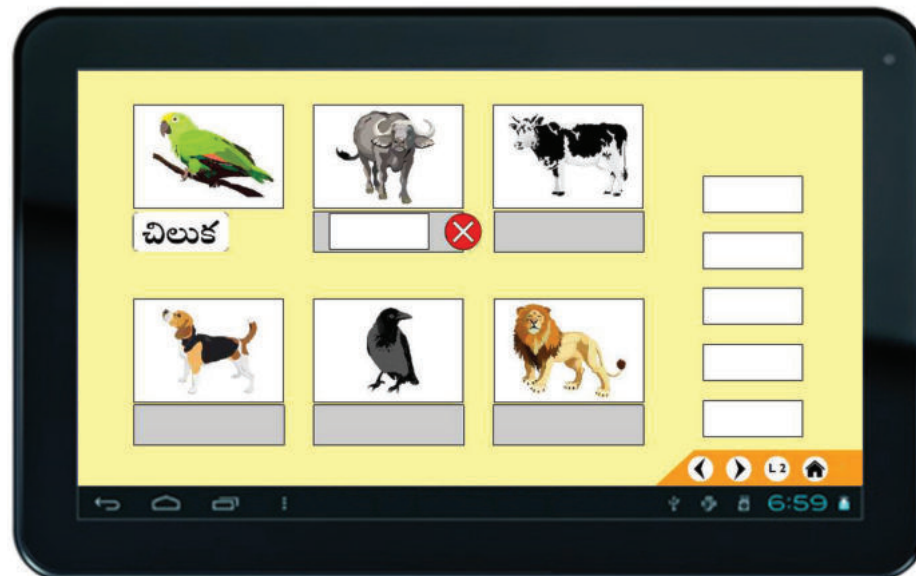
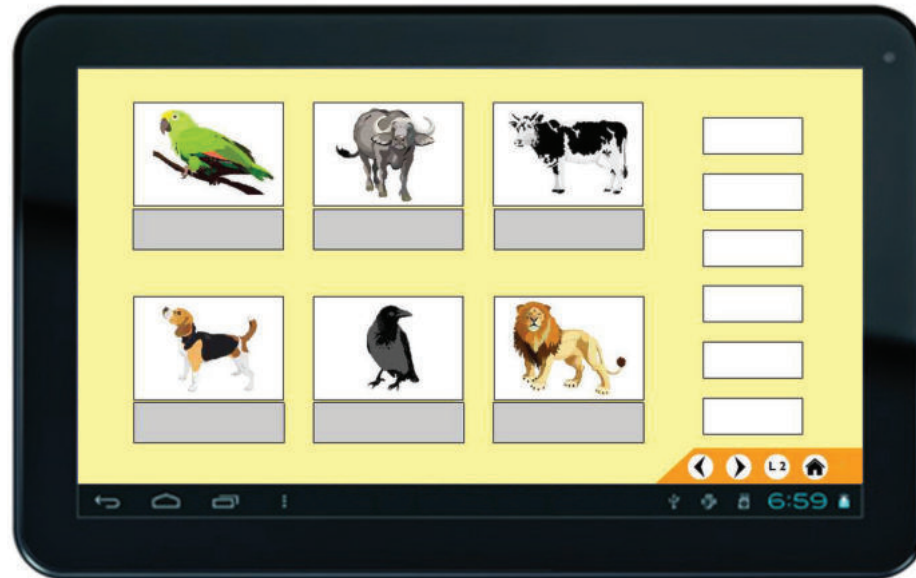
Final Concept

Prototype screens - Level-2 Game Matching Noun



Final Concept

Prototype screens - Level-2 Game Matching Noun



Reference

Websites:

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<http://ayjnihh.nic.in/aw/awareness/audiology.html>

<http://www.asha.org/public/hearing/How-We-Hear>

Hospital:

ENT department Apollo Hospital, Hyderabad

Audio Verbal Therapy Lab Apollo Hospital, Hyderabad

Books:

Listen, Learn and Talk Cochlear Ltd Book

(which is collected from Apollo hospital AVT department)

Videos & Images:

<http://footage.shutterstock.com>

Thank you