POPsign

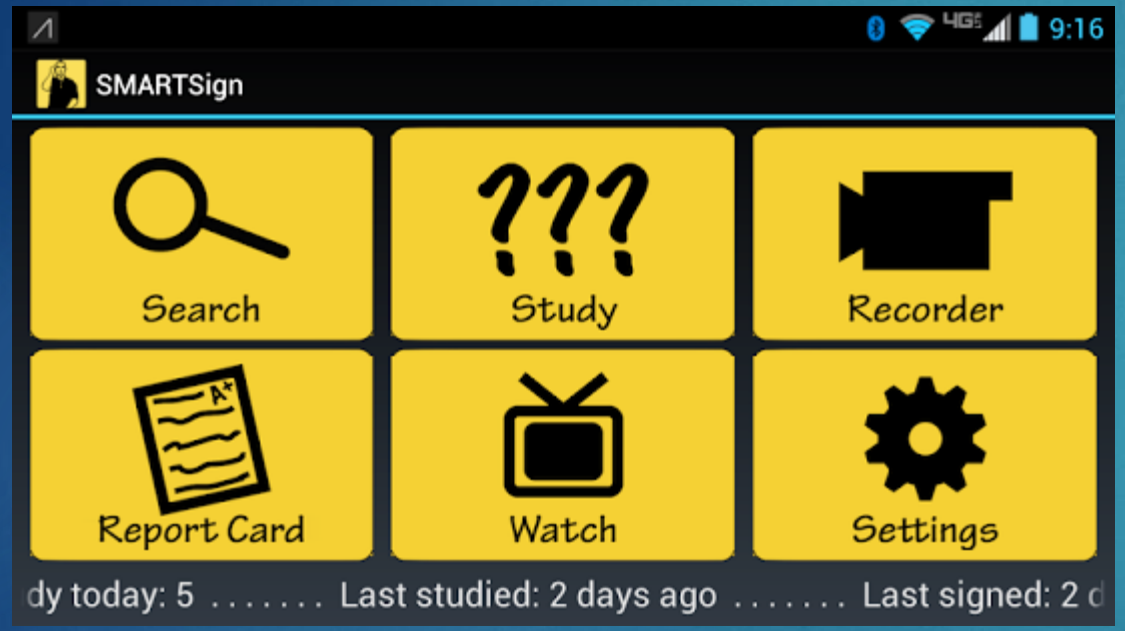
DESIGN OF AN AMERICAN SIGN LANGUAGE MOBILE LEARNING GAME

CELESTE MASON – MS-HCI PROJECT – APRIL 30, 2015 - ADVISOR: THAD STARNER

Problem to Address

- 90 to 95% of deaf children are born to hearing parents
- Complex set of factors influence their decision to learn American Sign Language (ASL)
  - Time constraints
  - Confusing advice from experts
  - Social stigma of signing in public
  - Lack of adequate learning resources and support

Current Apps



SMARTsign – Kim XU

ASL Mobile Game – Chrystina Wilson

Proposed Solution POPsign

- A mobile ASL game design based on popular gameplay design practices

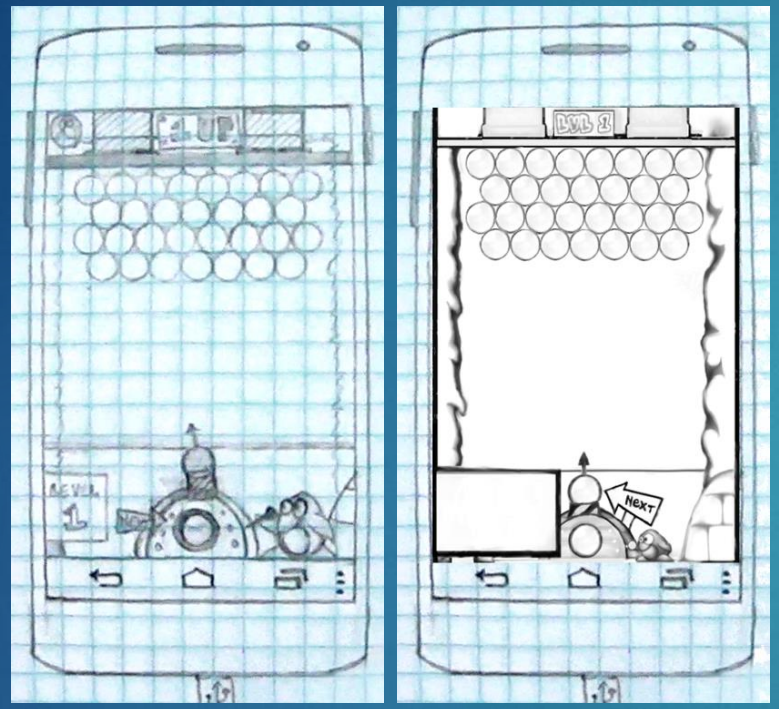
Users & Requirements

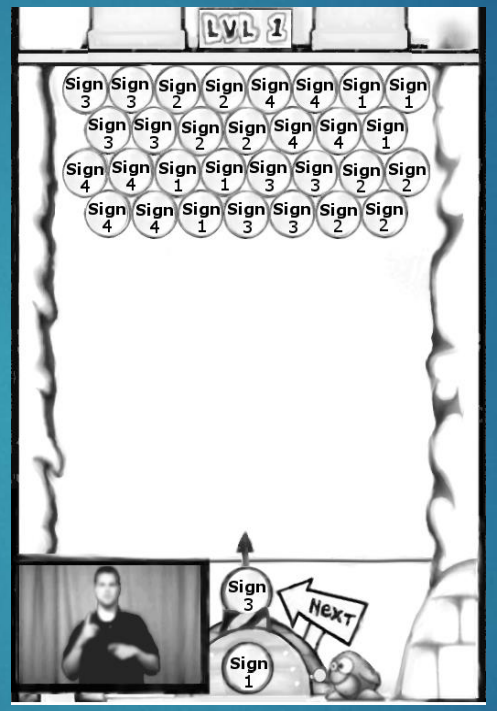
- As broad a user base possible
- Adults in Age Range typical of parents

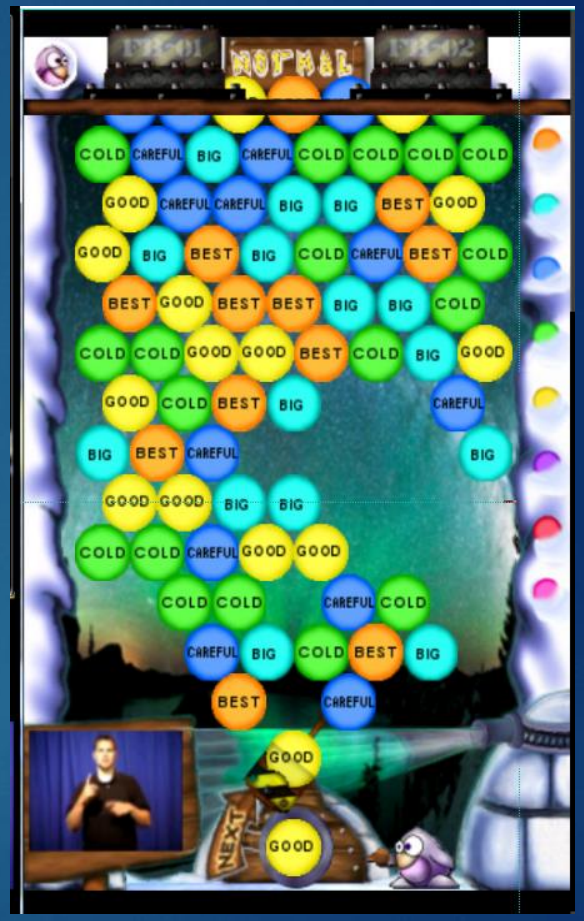
Motivation

- Make use of free time to:
  - Have Fun
  - Learn ASL

Early Design







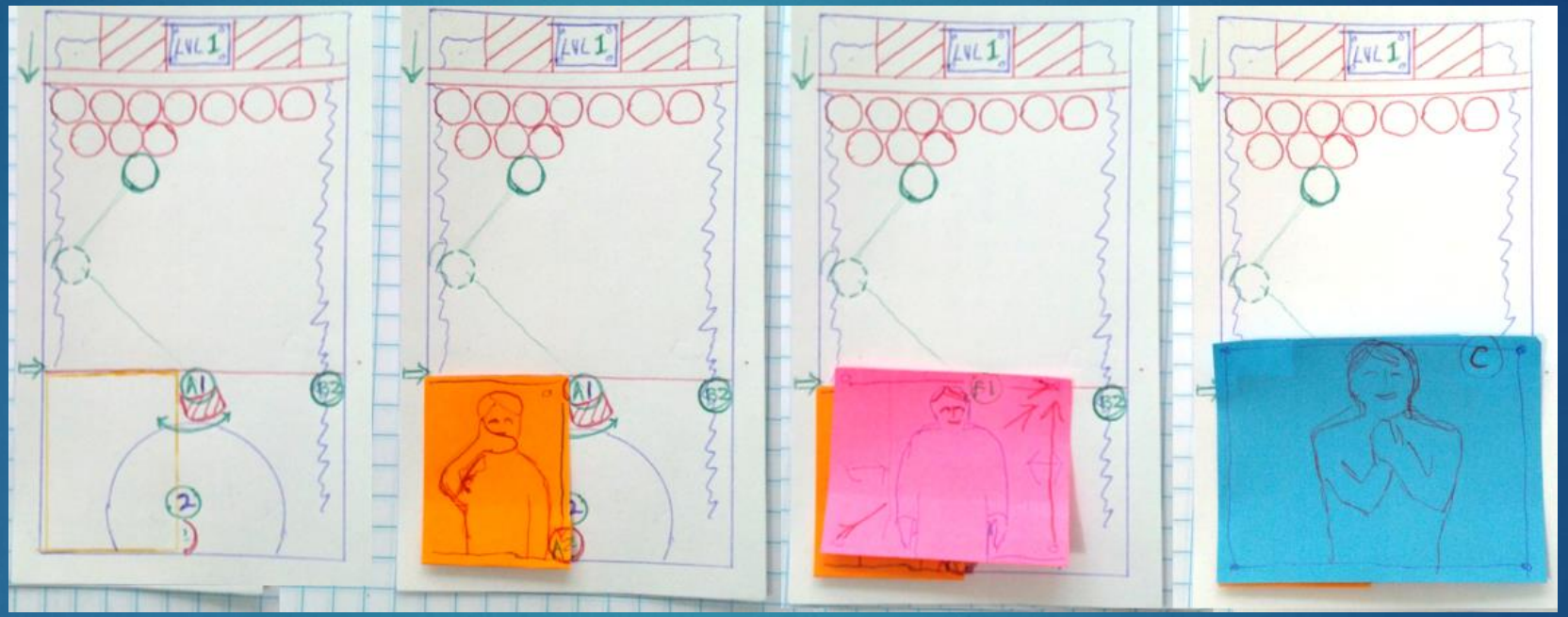
- Paper Prototype
- Determine Requirements

- Layout
- Incorporate ASL elements

Prototype Design & Evaluation

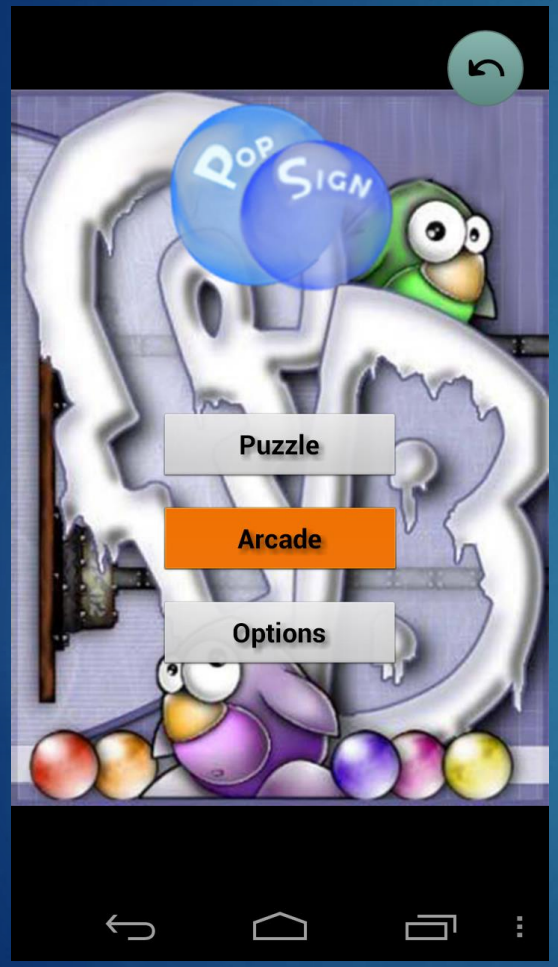
- Rough Prototype
- Preliminary Evaluation
  - Experts
  - Potential Users
  - Potential Tasks
    - Puzzle Mode
    - Arcade Mode

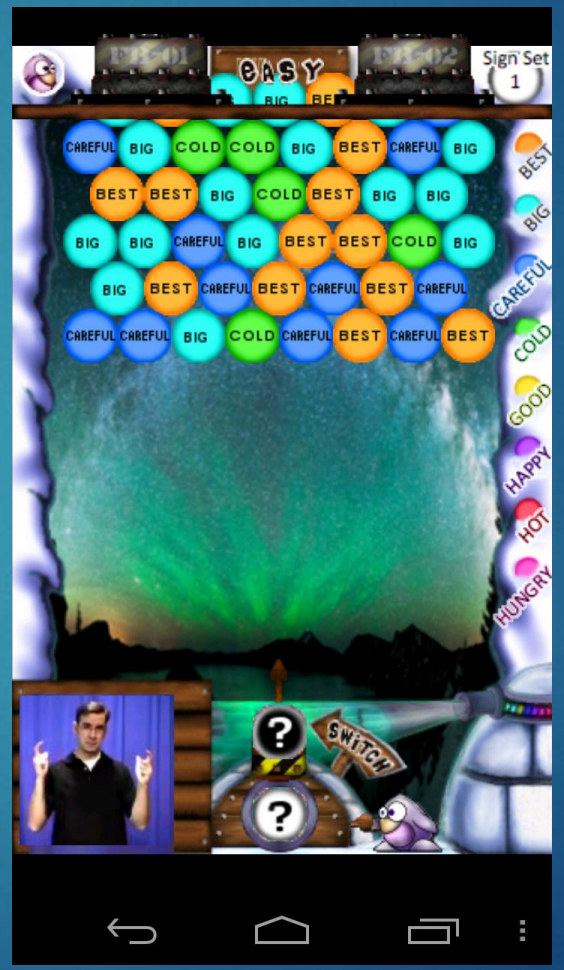
Refine Design



- Paper Prototype – V2
- Vary Video Dimensions and placement

Implementation



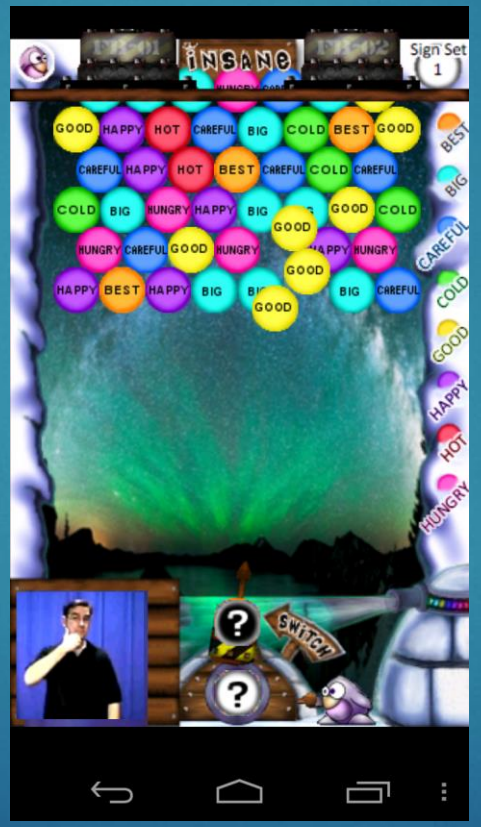


- Frozen Bubble Android Port
  - Java / C++
- Eclipse IDE
- SMARTsign Dictionary

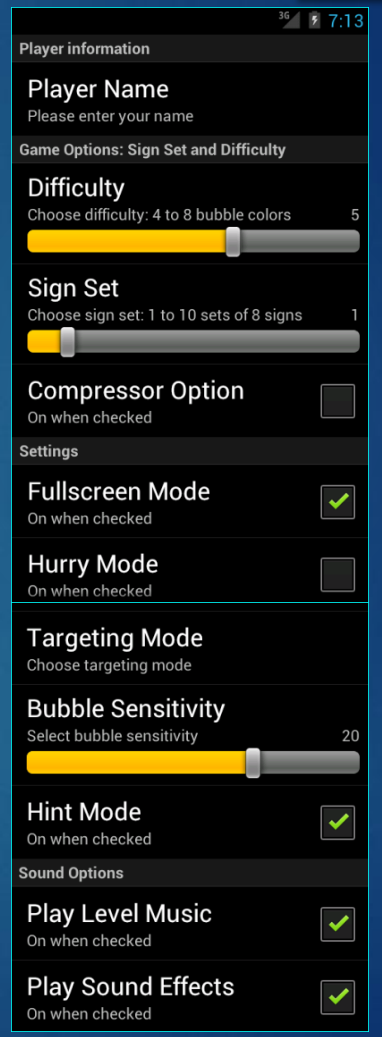
User Interface

- Two Tasks, Three Primary Screens: Puzzle, Arcade, Options

- Puzzle Mode



- Arcade Mode



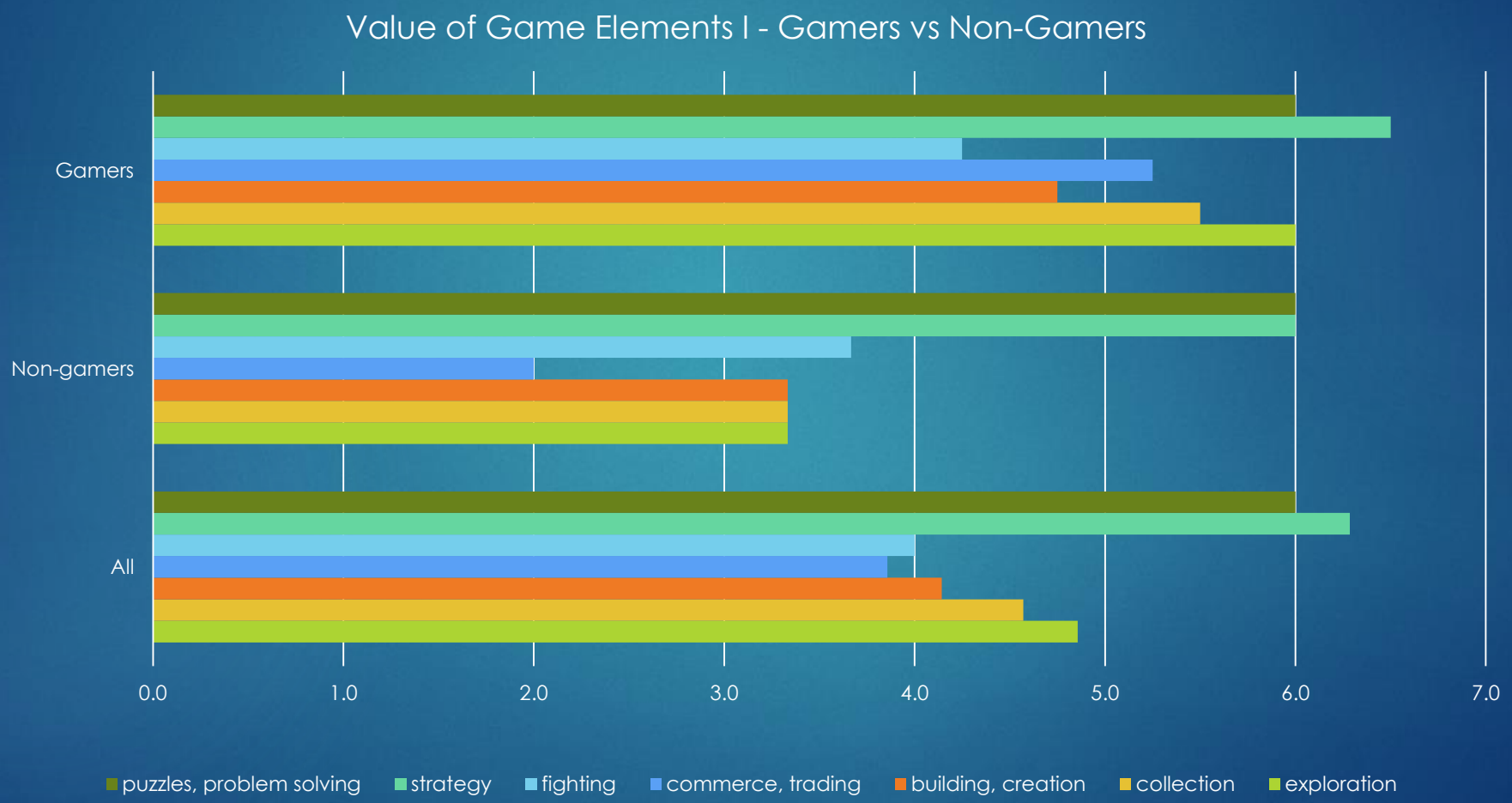
- Options Screen

User Evaluation

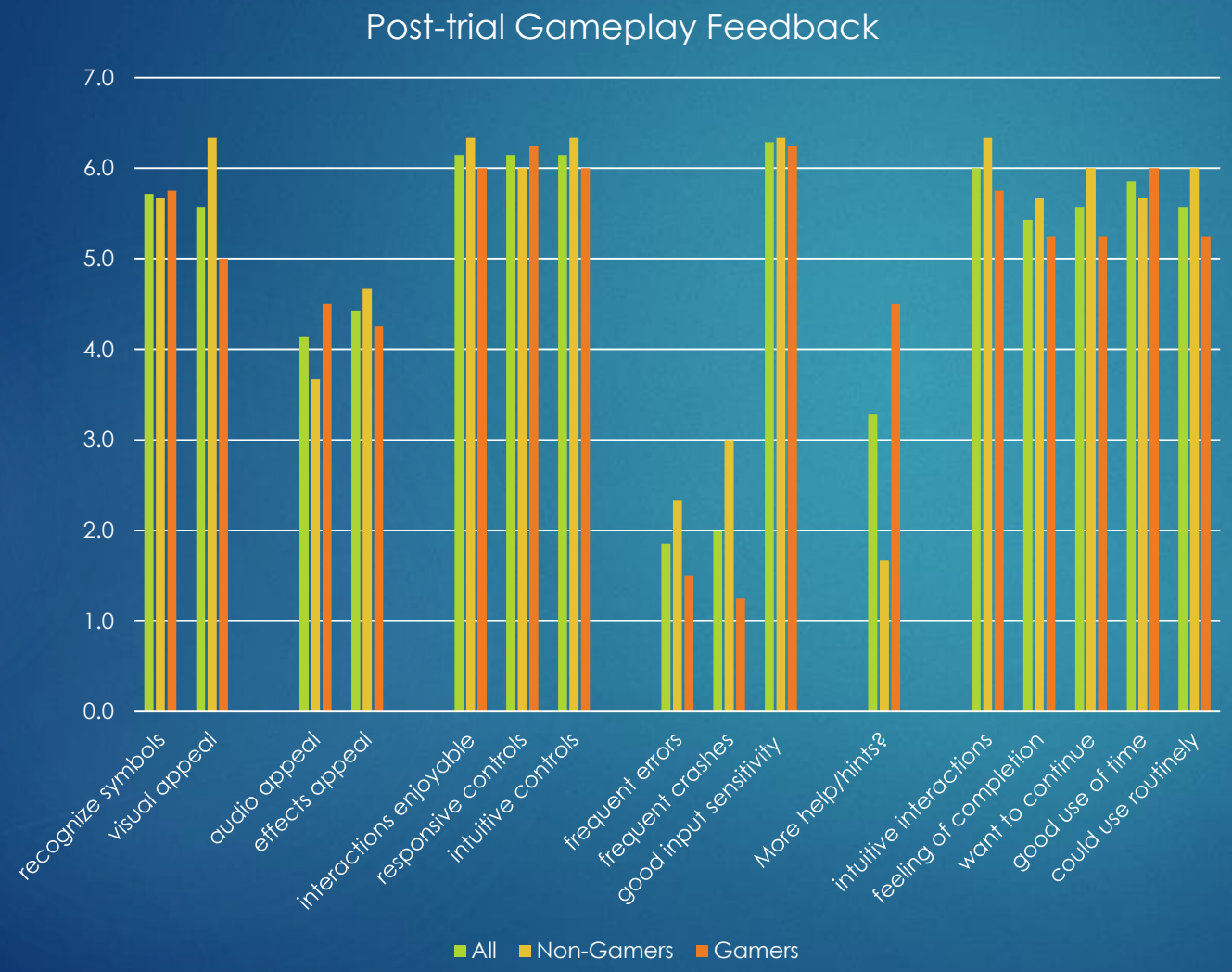
- 7 Participants: Ages 20 – 34
- Recruited by email, flyer, and word-of-mouth
- At locations convenient for them
- Video Camera and Written Notes

- Pre-Evaluation and Post-Evaluation written assessment
  - Questionnaires: gaming preferences, experience, user interface interactions
- Cognitive Walthrough, Think-aloud Protocol
  - Series of 4 Tasks + 1 Optional

Results ▸ Gameplay Preferences

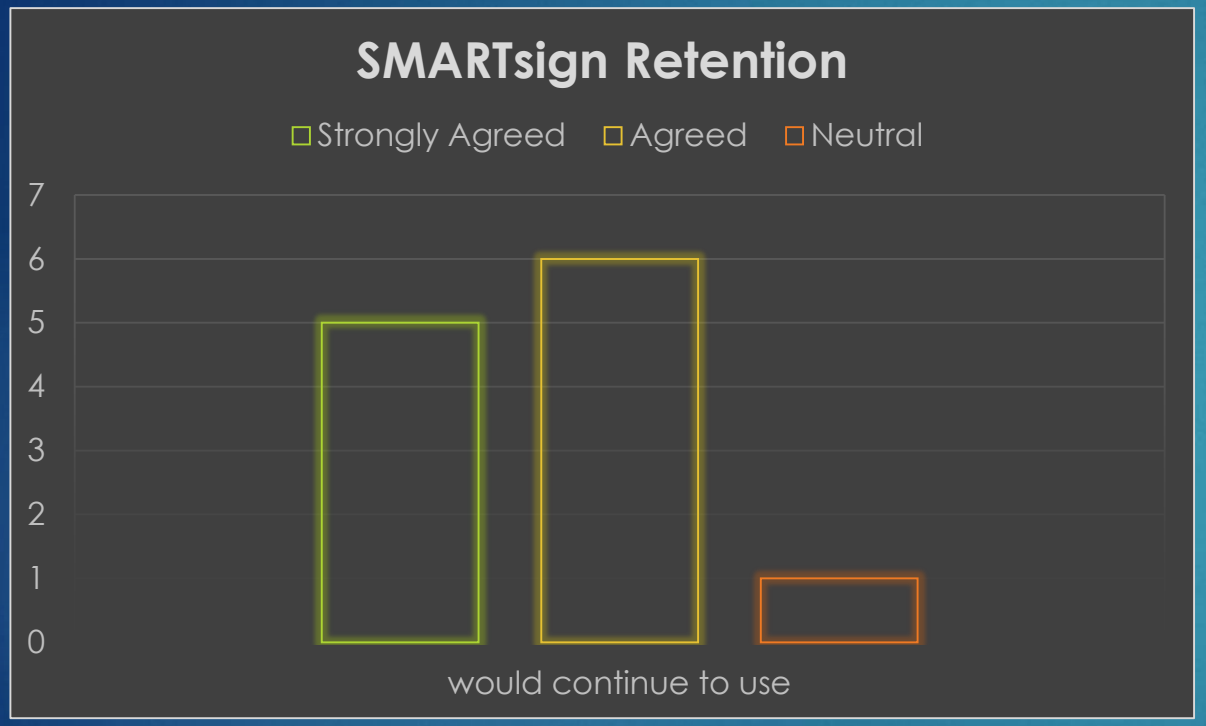


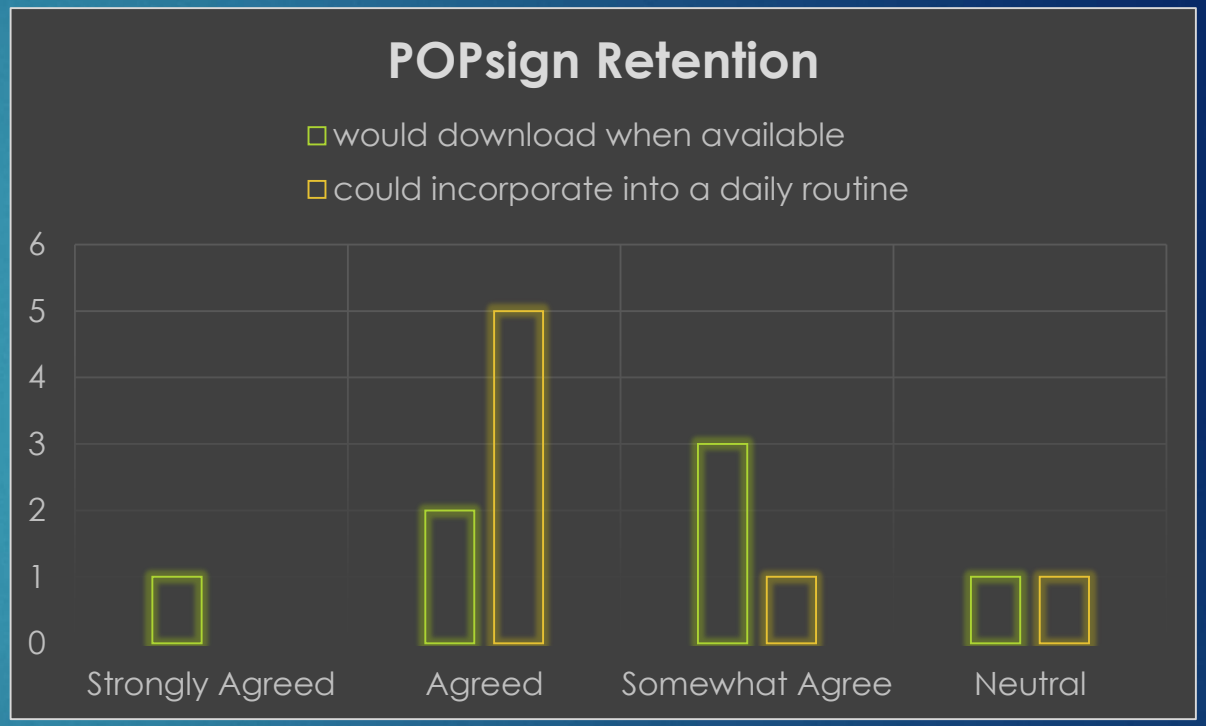
Results



- Gameplay Evaluations
  - Low Error Rate
  - Enjoyable Gameplay
  - Symbols Recognizable
  - Audio not so well received

Results



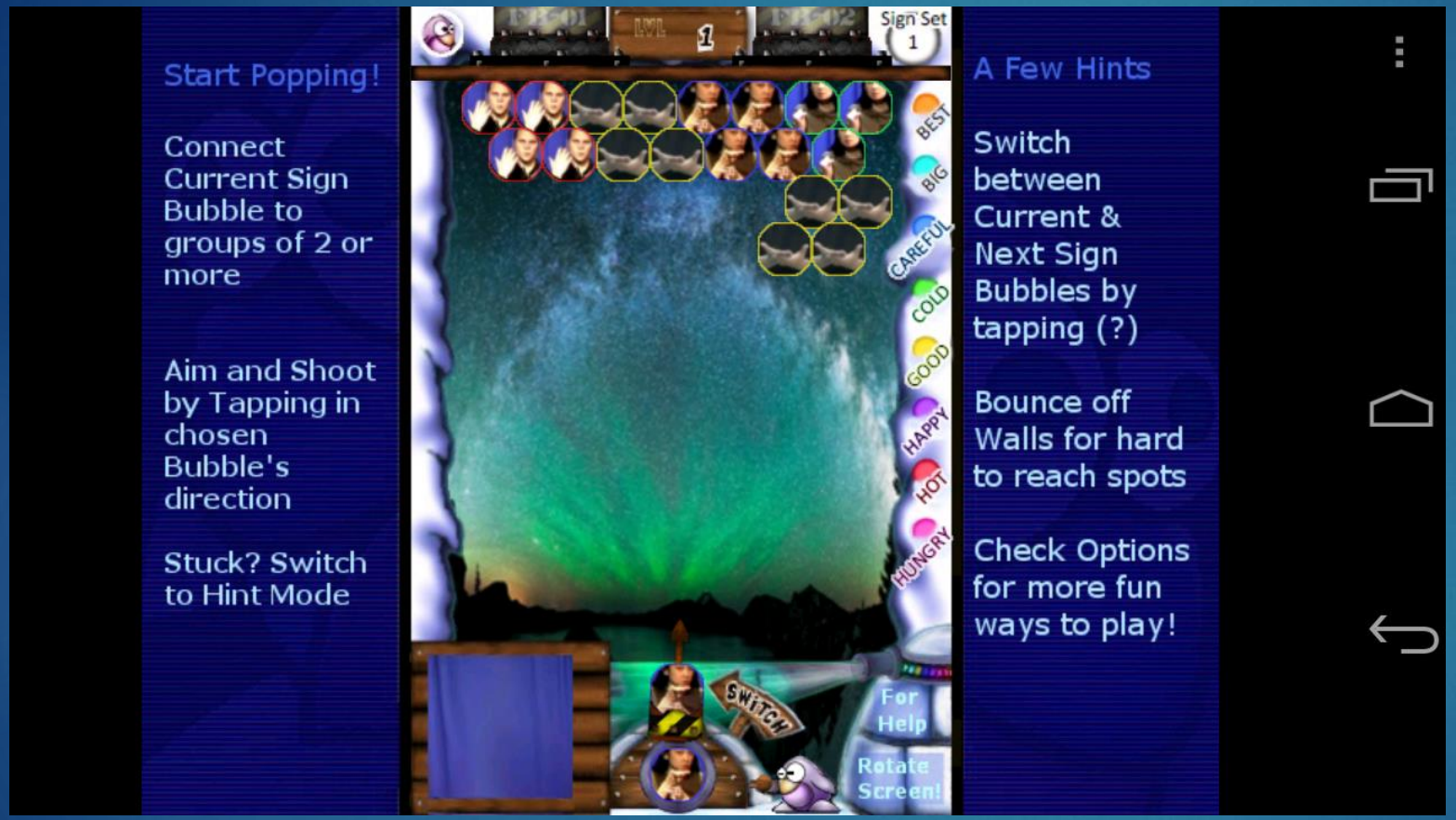


- Comparison: SMARTsign & POPsign Retention

Discussion

- Improvements:
- Users Interested in more vocabulary, how to incorporate when media, memory resources are in conflict
- Tutorial, Instructions, or Hints – don't detract from gameplay
- Need for better hand shape/pose detail or larger video pop-out

Reiteration and Future Work



- Instructions

- Hint Mode

Reiteration and Future Work

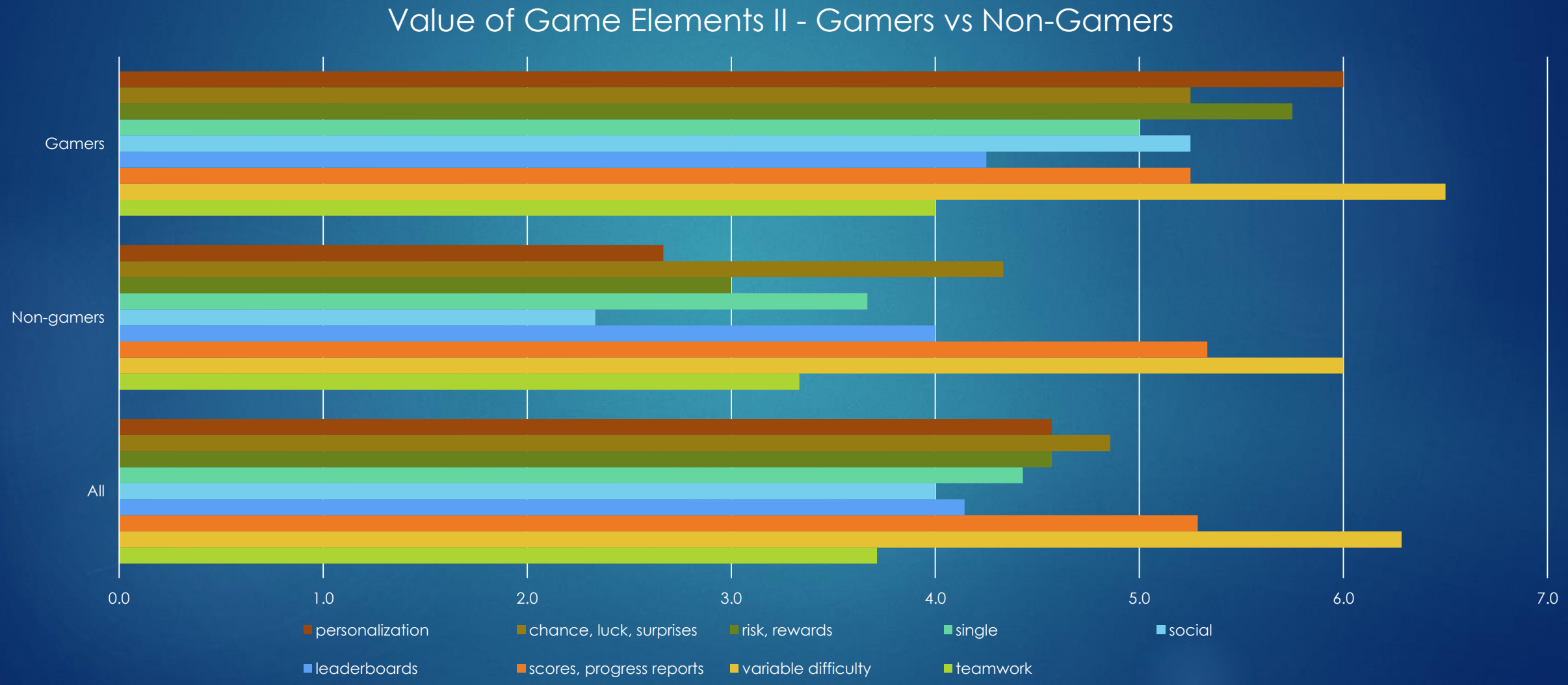
- Continue to Improve App
- Two-Week Field Trial Comparison with SMARTsign App to Gauge Longterm playability and retention
- Evaluate potential Learning Outcomes based on anticipated increased “Time on Task”

Thanks!

Questions?

Gameplay

Results ▸ Gameplay Preferences



Results ▸ Gameplay Preferences