Evaluating the Usability of a Mobile Game to Enrich Understanding of Hawaiian History and Culture

Kim K. Mah
Learning Design and Technology
University of Hawaii at Manoa
kimmah@hawaii.edu
Are you familiar with Kawai Nui?
Kualii’s Journey
Kualii’s Journey

Step 1: Get ARIS
You can either click the “Available on the App Store” button above, or open the App Store and search for “ARIS.”

Step 2: Login
Each player on ARIS has an account. To get started, create and account and use it to login.

Step 3: Pick A Game
A list of ARIS experiences will be listed. Touch the arrow for more information or the title to select.

arisgames.org
Presentation Outline

• Background
• Project Design
• Usability Study
• Results
Background: Hawaii Content & Performance Standard

- Teach Grade 4 students Hawaii’s history
- Teach students to understand its history
- Describe change and continuity in Hawaiian culture
- Include religion, land use and social class system
4th Grade Curriculum

- Hawaiian Studies
- Two textbooks
- Published in the 1980’s
- Presents a colonial history
- Not engaging for students
Project

Kualii’s Journey: A Search for Hauwahine

Na Pohaku o Hauwahine
Project

Kualii’s Journey: A Search for Hauwahine

Na Pohaku o Hauwahine

Ulupo Heiau
Project
Kualii’s Journey: A Search for Hauwahine

Na Pohaku o Hauwahine
Ulupo Heiau
Kawai Nui Marsh
Purpose

Evaluate the ease of use of an immersive, web-based, mobile game of Kawai Nui Marsh created to enrich the understanding of Hawaiian history and culture for 4th grade students.
Audience Poll

What was your Social Studies learning experience like in elementary school?

A. Social Studies was so exciting I remember my great teacher!
B. I learned some basic facts, I think!
C. Did I have Social Studies?
Project Design

- John Keller’s ARCS Model (2000)
  - Attention
  - Relevance
  - Confidence
  - Satisfaction
Attention

- Visual stimuli/Story
- Hands-on
- Inquiry
- Variability/Media
Attention

• Visual stimuli/Story
• Hands-on
• Inquiry
• Variability/Media

Aloha, welcome to KUALI'I'S JOURNEY: IN SEARCH OF HAULAWAHE. Before you begin the game there are a few things you should know. You will see an informational page. You can read it or listen to it.

Continue
Attention

- Visual stimuli/Story
- Hands-on
- Inquiry
- Variability/Media
Attention

• Visual stimuli/Story
• Hands-on
• Inquiry
• Variability/Media
Relevance
• Experience
• Present worth
• Future usefulness
• Choice
Relevance

- Experience
- Present worth
- Future usefulness
- Choice
Relevance

• Experience
• Present worth
• Future usefulness
• Choice
Relevance

- Experience
- Present worth
- Future usefulness
- Choice
Confidence

• Objectives provided
• Knowledge gained
• Feedback
• Learner control
Confidence

- Objectives provided
- Knowledge gained
- Feedback
- Learner control
Confidence

- Objectives provided
- Knowledge gained
- Feedback
- Learner control

<table>
<thead>
<tr>
<th>Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puzzle Piece 2</td>
</tr>
<tr>
<td>Puzzle Piece 3</td>
</tr>
<tr>
<td>Puzzle Piece 4</td>
</tr>
<tr>
<td>Puzzle Piece 5</td>
</tr>
<tr>
<td>Puzzle Piece 6</td>
</tr>
<tr>
<td>Puzzle Piece 7</td>
</tr>
<tr>
<td>Puzzle Piece 8</td>
</tr>
<tr>
<td>Puzzle Piece 9</td>
</tr>
</tbody>
</table>
Confidence

• Objectives provided
• Knowledge gained
• Feedback
• Learner control
Satisfaction

- Learners achieve a goal
- Action satisfies a need
- Use newly acquired knowledge
- Learners feel good
Satisfaction

- Learners achieve a goal
- Action satisfies a need
- Use newly acquired knowledge
- Learners feel good
Satisfaction

• Learners achieve a goal
• Action satisfies a need
• Use newly acquired knowledge
• Learners feel good
Satisfaction

• Learners achieve a goal
• Action satisfies a need
• Use newly acquired knowledge
• Learners feel good
Target Audience

• Students
• Ages 8-12
• Active and inquisitive
• Hands-on learning
Target Audience

- Students
- Ages 8-12
- Active and inquisitive
- Hands-on learning
Technology Tool: Fotocam
Technology Tool: ARIS

**Editor**
- Open-source platform
- Create a story
- Make it a tour
- Make it a scavenger hunt

**Client**
- Play a game
- “Kualii’s Journey: In Search of Hauwahine”
- Use GPS or on-screen map
- Use it for media collection
Technology Tool: ARIS

Editor
- Open-source platform
- Create a story
- Make it a tour
- Make it a scavenger hunt

Client
- Play a game
- “Kualii’s Journey: In Search of Hauwhahine”
- Use GPS or on-screen map
- Use it for media collection
Usability Study

- Instruments
- Pre-Study survey
Usability Study

• Instruments
• Required permission forms

KUALII'S JOURNEY: A USABILITY STUDY
Minor Assent

My name is Kim Mah and I am a 4th Grade teacher at Aikahi Elementary School in Kailua, Oahu. I am also a Master's student in the Learning Design and Technology department at the University of Hawaii at Manoa. I request your permission to participate in a usability research project on a place-based game I designed to enrich the Hawaiian Studies curriculum for 4th Grader.

WHAT WE'RE DOING:
I am asking you to help me test a game I created called, “Kualii’s Journey,” and to complete a set of tasks. Our goal is to see how easy or difficult you find the game to use. Your participation in this study will help determine the changes to be made on the game to improve user experience.
Usability Study

• Instruments
• Usability protocol

---

Scenarios (“tasks”) for Usability Protocol

Scenario 1:
You are a 4th grader on a field trip at the Kawai Nui Marsh and are given a smartphone. You enter the game and have read the directions and introduction. You want to begin the game. How would you go about completing this task?

Start Game:
1. Explain how you planned to begin the “journey.”
2. Explain what you are seeing during this process.
3. Explain what you are thinking about.
4. Explain what you should do next.

Scenario 2:
You are still a 4th grader on a field trip. You have come to a stop on journey and are faced with decisions. You want to collect the first reward. How would you go about completing this task?

Scenes:
1. Explain what you would do first.
2. Explain what you are seeing during this task.
3. Explain what you are thinking about as you are going through this task.
4. Explain what you could do next.

Scenario 3:
You have progressed through the game, perhaps got to another location with your smartphone. You have been collecting your rewards and taking notes. You want to check what you have accumulated in the inventory and the Notebook.

Game Menu
1. Explain how you got to the correct page.
2. Explain what you are seeing as you looked for the correct page.
3. Explain what you are thinking about as you are going through this process.
4. Explain how you would get back to the game at this point.
Usability Study

- Instruments
- Post-Study survey
Results

- Participant demographics
Results

- Participant demographics
Results

- Participant demographics
Results

• Quantitative results
Results

• Quantitative results
Results

• Quantitative results
Results

• Qualitative results-Round 1
Results

• Qualitative results-Round 1
Results

• Qualitative results
  – Helpful feedback

  • “I would like if there was an option to hear voice recordings for each passage.”
  • “I think the option to listen to or read is a good feature.”
  • “Changing text to audio.”
  • “The directions weren’t very clear.”
Results
• Qualitative results
  – Issues and revisions from Round 1
Results
• Qualitative results
  – Issues and revisions from Round 1

Kuali‘i, there will be great changes to this place. You will feel powerless to be able to stop The Great Mahele or stop people who want to change our ways but don’t despair.

Move on
Results

- Qualitative results
  - Issues and revisions from Round 1
Results

• Qualitative results
  – Issues and revisions from Round 1

Touch CONTINUE on the bottom of the screen and you may see a conversation page. You will have to make a choice. Your goal is to collect puzzle pieces to form a complete puzzle at the end. If you don’t get a puzzle piece, you will get a letter instead.

When you are on a MAP, the 3 bars in the upper left corner will give you a menu. You will use the MAP, INVENTORY and NOTEBOOK on this journey. Puzzle pieces and letters are kept in the INVENTORY.

Continue
Results

• Qualitative results
  – Issues and revisions from Round 1

Touch CONTINUE on the bottom of the screen and you may see a conversation page. You will have to make a choice. Your goal is to collect puzzle pieces to form a complete puzzle at the end. If you don’t get a puzzle piece, you will get a letter instead.

Continue

When you are on a MAP, the 3 bars in the upper left corner will give you a menu. You will use the MAP, INVENTORY and NOTEBOOK on this journey. Puzzle pieces and letters are kept in the INVENTORY.

Continue

BEFORE YOU TOUCH AN ICON on a MAP page, touch the 3 bars and put something in your NOTEBOOK. Add written notes, audio or photos to your personal notebook AT EACH STOP on the MAP.

Continue
Results

- Quantitative results
Results

• Quantitative results
Results

• Qualitative results-Round 2
Results

• Qualitative results-Round 2
Results

• Quantitative results
Results

• Quantitative results
Why Usability?

• Helped identify problems
• Helped identify and confirm target audience
• It’s all about the user
• Don’t get attached
What Are My Next Steps?

• Since I created a very game simple design, I would:
  – Use more audio and text throughout
  – Have a person who knows ARIS, help me design Quests, the next level
  -- Use the GPS function with more purpose
Why Usability?

• “If you want a great site, you’ve got to test. After you’ve worked on a site for even a few weeks, you can’t see it freshly anymore. You know too much. The only way to find out if it really works is to test it.”

—Steve Krug

Don’t Make Me Think: A Common Sense Approach to Web Usability
QUESTIONS?