

# Pixecola Usability Testing

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## Abstract

This document presents the findings of a usability testing study conducted on Pixecola, an educational game developed to teach cyber security fundamentals and concepts.

The purpose of the testing was to assess the game's user interface, mechanics, learning curve, engagement level, and overall effectiveness in providing an enjoyable learning experience. A diverse group of students from the University of West Florida participated in the study, representing the game's target audience.

The testing protocol was designed to capture both qualitative and quantitative data. Students were observed and recorded while playing the game, allowing the researchers to note direct interactions, behaviors, and expressions. After the gameplay session, participants were asked to complete a questionnaire and participate in a group interview to collect subjective feedback and personal impressions.

The usability testing aimed to identify strengths and weaknesses in the game design. It also sought to understand the players' experiences, uncover any usability issues, and gather insights into how the game could be improved to better meet educational objectives and maintain engagement. The collected data was analyzed to provide a set of actionable recommendations for refining the game.

Key findings indicated that while [Game Name] showed promise in educational engagement, there were specific areas such as [Example: level difficulty, character controls, feedback mechanisms] that could be improved. This document discusses these findings in detail and offers a roadmap for the next development phase of [Game Name], ensuring that the game not only educates but also captivates our young audience.

# Game 1 - Word Scramble

## Trent Wells

### **Ease of Use:**

- How easy was it to understand how to play the game?

It was pretty straightforward, just knowing vocabulary with the scrambled words as the hint,

- Did you encounter any difficulties in navigating the game?

No it was very easy to figure out.

### **Gameplay Experience:**

- Did you find the game enjoyable and engaging?

It was alright, it served its purpose well and it felt good when I got it right.

- Were the game objectives clear to you?

Yes it clearly said what to do on the screen.

- Were there any parts of the game that were confusing or frustrating?

Some of the questions were pretty hard but I guess that showed where I was rusty.

### **Performance:**

- Did the game run smoothly without lag or crashes?

Yeah it worked fine.

- Were there any performance issues that affected your experience?

No.

### **Visual Design:**

- How would you rate the overall visual design of the game (e.g., graphics, color scheme)?

It looked good, I really liked the login screen animations and the florida map.

- Were the game elements (e.g., characters, obstacles) visually appealing?

Yeah it looked professional.

- Did the visual design enhance your gaming experience?

It was nice that it looked nice.

### **Difficulty Level:**

- Was the game too easy, too difficult, or just right for your skill level?

It was pretty hard, I thought I would have been better at it.

- Were there any specific challenges you found particularly hard or easy?

The scrambled words did help but I definitely would need to study.

### **Bugs and Issues:**

- Did you encounter any bugs or technical issues while playing?

No, it worked fine.

- Please describe any issues you encountered.

### **Suggestions for Improvement:**

- Do you have any suggestions for improving the game?

Maybe make it so two word answers are scrambled individually.

- Are there any features or changes you would like to see added?

### **Overall Satisfaction:**

- On a scale of 1 to 10, how satisfied are you with the game (1 being very dissatisfied, 10 being very satisfied)?

10

- Would you recommend this game to others?

Yeah it would have been nice to have when I was studying for Security+

**Additional Comments:**

- Is there anything else you would like to share about your experience with the game?

Good job guys, your project looks nice.

## Regan O'Donnell

**Ease of Use:**

- How easy was it to understand how to play the game?

I felt it was straightforward.

- Did you encounter any difficulties in navigating the game?

No

**Gameplay Experience:**

- Did you find the game enjoyable and engaging?

Yeah much harder than I thought.

- Were the game objectives clear to you?

Yes

- Were there any parts of the game that were confusing or frustrating?

No, the questions were hard.

**Performance:**

- Did the game run smoothly without lag or crashes?

Yes

- Were there any performance issues that affected your experience?

no

**Visual Design:**

- How would you rate the overall visual design of the game (e.g., graphics, color scheme)?

I liked the map.

- Were the game elements visually appealing?

Yes it looked good.

- Did the visual design enhance your gaming experience?

Yes.

### **Difficulty Level:**

- Was the game too easy, too difficult, or just right for your skill level?

It was easy but Ive also been studying for my security+

- Were there any specific challenges you found particularly hard or easy?

No.

### **Bugs and Issues:**

- Did you encounter any bugs or technical issues while playing?

No,

- Please describe any issues you encountered.

### **Suggestions for Improvement:**

- Do you have any suggestions for improving the game?

No

- Are there any features or changes you would like to see added?

### **Overall Satisfaction:**

- On a scale of 1 to 10, how satisfied are you with the game (1 being very dissatisfied, 10 being very satisfied)?

10

- Would you recommend this game to others?

Yes

**Additional Comments:**

- Is there anything else you would like to share about your experience with the game?

## Beri Peric

**Ease of Use:**

- How easy was it to understand how to play the game?

It made sense

- Did you encounter any difficulties in navigating the game?

No

**Gameplay Experience:**

- Did you find the game enjoyable and engaging?

Yes it was fun

- Were the game objectives clear to you?

Yes

- Were there any parts of the game that were confusing or frustrating?

No

**Performance:**

- Did the game run smoothly without lag or crashes?

Yes

- Were there any performance issues that affected your experience?

no

**Visual Design:**

- How would you rate the overall visual design of the game (e.g., graphics, color scheme)?

It looked simple but good.

- Were the game elements visually appealing?

Yes it looked good.

- Did the visual design enhance your gaming experience?

Yes.

**Difficulty Level:**

- Was the game too easy, too difficult, or just right for your skill level?

It was easy but Ive also been studying for my security+

- Were there any specific challenges you found particularly hard or easy?

No.

**Bugs and Issues:**

- Did you encounter any bugs or technical issues while playing?

No,

- Please describe any issues you encountered.

**Suggestions for Improvement:**

- Do you have any suggestions for improving the game?



No

- Are there any features or changes you would like to see added?

**Overall Satisfaction:**

- On a scale of 1 to 10, how satisfied are you with the game (1 being very dissatisfied, 10 being very satisfied)?

10

- Would you recommend this game to others?

Yes

**Additional Comments:**

- Is there anything else you would like to share about your experience with the game?

## Game 2 - Portris

### Trent Wells

#### **Ease of Use:**

- How easy was it to understand how to play the game?

Very easy

- Did you encounter any difficulties in navigating the game?

No

#### **Gameplay Experience:**

- Did you find the game enjoyable and engaging?

Yes it actually helped me remember ports.

- Were the game objectives clear to you?

Yes, as a computer science major, someone brand new may not understand why were matching ports and protocols.

- Were there any parts of the game that were confusing or frustrating?

I tried using the arrow keys at first, it took me a minute to realize I needed WASD.

#### **Performance:**

- Did the game run smoothly without lag or crashes?

Yes

- Were there any performance issues that affected your experience?

no

#### **Visual Design:**

- How would you rate the overall visual design of the game (e.g., graphics, color scheme)?

It looked simple but good.

- Were the game elements visually appealing?

Yes it looked good.

- Did the visual design enhance your gaming experience?

Yes.

**Difficulty Level:**

- Was the game too easy, too difficult, or just right for your skill level?

It was a good difficulty level.

- Were there any specific challenges you found particularly hard or easy?

No.

**Bugs and Issues:**

- Did you encounter any bugs or technical issues while playing?

No,

- Please describe any issues you encountered.

**Suggestions for Improvement:**

- Do you have any suggestions for improving the game?

No

- Are there any features or changes you would like to see added?

**Overall Satisfaction:**

- On a scale of 1 to 10, how satisfied are you with the game (1 being very dissatisfied, 10 being very satisfied)?

10

- Would you recommend this game to others?

Yes

**Additional Comments:**

- Is there anything else you would like to share about your experience with the game?

Regan O'Donnel

**Ease of Use:**

- How easy was it to understand how to play the game?

It was simple, like tetris

- Did you encounter any difficulties in navigating the game?

No

**Gameplay Experience:**

- Did you find the game enjoyable and engaging?

Yeah I really like this idea.

- Were the game objectives clear to you?

Yeah this could actually help me study for Security +

- Were there any parts of the game that were confusing or frustrating?

Not really, I was confused about the WASD controls for a second.

**Performance:**

- Did the game run smoothly without lag or crashes?

Yes

- Were there any performance issues that affected your experience?

no

**Visual Design:**

- How would you rate the overall visual design of the game (e.g., graphics, color scheme)?

Lookin good

- Were the game elements visually appealing?

Yes

- Did the visual design enhance your gaming experience?

Yes.

**Difficulty Level:**

- Was the game too easy, too difficult, or just right for your skill level?

Perfect difficulty

- Were there any specific challenges you found particularly hard or easy?

No.

**Bugs and Issues:**

- Did you encounter any bugs or technical issues while playing?

No,

- Please describe any issues you encountered.

**Suggestions for Improvement:**

- Do you have any suggestions for improving the game?

No

- Are there any features or changes you would like to see added?

**Overall Satisfaction:**

- On a scale of 1 to 10, how satisfied are you with the game (1 being very dissatisfied, 10 being very satisfied)?

10

- Would you recommend this game to others?

Yes

**Additional Comments:**

- Is there anything else you would like to share about your experience with the game?

## Beri Peric

### **Ease of Use:**

- How easy was it to understand how to play the game?

Easy

- Did you encounter any difficulties in navigating the game?

No

### **Gameplay Experience:**

- Did you find the game enjoyable and engaging?

It was a good experience.

- Were the game objectives clear to you?

Yes, it was simple to match the ports to the protocols

- Were there any parts of the game that were confusing or frustrating?

No

### **Performance:**

- Did the game run smoothly without lag or crashes?

Yes

- Were there any performance issues that affected your experience?

no

### **Visual Design:**

- How would you rate the overall visual design of the game (e.g., graphics, color scheme)?

I liked the design, it was very appealing.

- Were the game elements visually appealing?

Yes

- Did the visual design enhance your gaming experience?

Yes.

**Difficulty Level:**

- Was the game too easy, too difficult, or just right for your skill level?

It was a fair difficulty level.

- Were there any specific challenges you found particularly hard or easy?

No.

**Bugs and Issues:**

- Did you encounter any bugs or technical issues while playing?

No,

- Please describe any issues you encountered.

**Suggestions for Improvement:**

- Do you have any suggestions for improving the game?

No

- Are there any features or changes you would like to see added?

**Overall Satisfaction:**

- On a scale of 1 to 10, how satisfied are you with the game (1 being very dissatisfied, 10 being very satisfied)?

10

- Would you recommend this game to others?

Yes



**Additional Comments:**

- Is there anything else you would like to share about your experience with the game?

## Game 3 - Hangman

Trent Wells

### **Ease of Use:**

- How easy was it to understand how to play the game?

It was simple.

- Did you encounter any difficulties in navigating the game?

No

### **Gameplay Experience:**

- Did you find the game enjoyable and engaging?

Yeah I liked the hangman drawing.

- Were the game objectives clear to you?

Yes, if you've played hangman before this game makes sense.

- Were there any parts of the game that were confusing or frustrating?

No

### **Performance:**

- Did the game run smoothly without lag or crashes?

Yes

- Were there any performance issues that affected your experience?

no

### **Visual Design:**

- How would you rate the overall visual design of the game (e.g., graphics, color scheme)?

I liked the design, especially the virtual keyboard.

- Were the game elements visually appealing?

Yes

- Did the visual design enhance your gaming experience?

Yes.

**Difficulty Level:**

- Was the game too easy, too difficult, or just right for your skill level?

Normal

- Were there any specific challenges you found particularly hard or easy?

No.

**Bugs and Issues:**

- Did you encounter any bugs or technical issues while playing?

No,

- Please describe any issues you encountered.

**Suggestions for Improvement:**

- Do you have any suggestions for improving the game?

No

- Are there any features or changes you would like to see added?

**Overall Satisfaction:**

- On a scale of 1 to 10, how satisfied are you with the game (1 being very dissatisfied, 10 being very satisfied)?

10

- Would you recommend this game to others?

Yes

**Additional Comments:**

- Is there anything else you would like to share about your experience with the game?

# Regan O'Donnel

## **Ease of Use:**

- How easy was it to understand how to play the game?

Easy

- Did you encounter any difficulties in navigating the game?

No

## **Gameplay Experience:**

- Did you find the game enjoyable and engaging?

It was very enjoyable.

- Were the game objectives clear to you?

Yes I love hangman.

- Were there any parts of the game that were confusing or frustrating?

No

## **Performance:**

- Did the game run smoothly without lag or crashes?

Yes

- Were there any performance issues that affected your experience?

no

## **Visual Design:**

- How would you rate the overall visual design of the game (e.g., graphics, color scheme)?

I liked the design, it was very appealing.

- Were the game elements visually appealing?

Yes

- Did the visual design enhance your gaming experience?

Yes.

**Difficulty Level:**

- Was the game too easy, too difficult, or just right for your skill level?

Easy

- Were there any specific challenges you found particularly hard or easy?

No.

**Bugs and Issues:**

- Did you encounter any bugs or technical issues while playing?

No,

- Please describe any issues you encountered.

**Suggestions for Improvement:**

- Do you have any suggestions for improving the game?

No

- Are there any features or changes you would like to see added?

**Overall Satisfaction:**

- On a scale of 1 to 10, how satisfied are you with the game (1 being very dissatisfied, 10 being very satisfied)?

10

- Would you recommend this game to others?

Yes

**Additional Comments:**

- Is there anything else you would like to share about your experience with the game?

## Beri Peric

### **Ease of Use:**

- How easy was it to understand how to play the game?

Easy

- Did you encounter any difficulties in navigating the game?

No

### **Gameplay Experience:**

- Did you find the game enjoyable and engaging?

It was so much fun. 😊

- Were the game objectives clear to you?

Yes

- Were there any parts of the game that were confusing or frustrating?

No

### **Performance:**

- Did the game run smoothly without lag or crashes?

Yes

- Were there any performance issues that affected your experience?

no

### **Visual Design:**



- How would you rate the overall visual design of the game (e.g., graphics, color scheme)?

I liked the design, it was very appealing.

- Were the game elements visually appealing?

Yes

- Did the visual design enhance your gaming experience?

Yes.

### **Difficulty Level:**

- Was the game too easy, too difficult, or just right for your skill level?

Easy

- Were there any specific challenges you found particularly hard or easy?

No.

### **Bugs and Issues:**

- Did you encounter any bugs or technical issues while playing?

No,

- Please describe any issues you encountered.

### **Suggestions for Improvement:**

- Do you have any suggestions for improving the game?

No

- Are there any features or changes you would like to see added?

### **Overall Satisfaction:**

- On a scale of 1 to 10, how satisfied are you with the game (1 being very dissatisfied, 10 being very satisfied)?

10

- Would you recommend this game to others?

Yes

**Additional Comments:**

- Is there anything else you would like to share about your experience with the game?

## Results

Pixecola was found to have a high level of playability, users did not have issues figuring out how to play or the objectives of each game. However some players experienced issues with the word scramble citing that the two word answers were very difficult because the letters of the first and second word would scramble together, this is something currently being worked on.

Reaction to portris was very positive, players noted that they thought this could be a great tool for memorization of ports and protocols. Some stated they would like to see improvements like definitions of those protocols. In terms of user friendliness, I noticed that many players would opt to try the arrow keys at first but soon realized that this game uses WASD controls and corrected themselves after the first attempt.

Hangman was well received but some players felt the content was a little too similar to first word scramble game. This is something that is currently being worked on.