

CS5760

# Heuristic Evaluation

## Team 1 – Programming Analogies

Kirk Thelen, UX Consultant

### Team

Ketan Patil  
Grayson Wagner  
Emilie Rummer  
Dee Paulson  
Ethan Jones  
Jack Grant  
Josh Staples  
Kevin Kulich

*UX Consultant*  
*Product Owner*  
*Technical Lead*  
*Developer*  
*Developer*  
*Developer*  
*Developer*  
*Developer*

## Undergraduate Design

The Programming Analogies application (“the App”) should store analogies for computing concepts, allowing users to search, add, and review analogies. The analogies should be presented in a way that allows them to be intuitively used by users to understand programming concepts (i.e., a “clean” / “non-confusing” presentation of analogies).

The undergraduate prototype of the App is as a web page where misconceptions are listed alongside desired knowledge and popularity. In this way, users of the App can see a misconception they may have (e.g., a user might be helping a student who has the misconception that the assignment operator “=” is used to compare whether two values are equal) and compare it to the desired knowledge (recognizing the difference between assignment and comparison) and the popularity of a misconception (gauging how other users feel about the analogy). Users can create accounts, add new analogies, and search and compare analogies.

## UI Domain

The UI domain for the App is best described as a **web application for translating ideas**.

Although our team is focused on using the App to translate programming analogies into programming concepts specifically, the basic misconception/desired knowledge design of the analogies (called the *analogy context*) is broadly applicable to any analogy and not exclusive to *programming* analogies. If we change the analogy context, we could redesign the system to, for example, translate syntax from one programming language to another without altering the rest of the system/UI.

## Heuristic Usability Principles for UI Domain

### **Visibility of App status:**

- Is it clear to the user where in the App they reside and what is currently being displayed?
- Is it clear to the user what (if anything) the App is doing?

### **User control and freedom:**

- Can users appropriately control the App status and interact with the App as expected in all circumstances?
- Are there appropriate options to return to the home screen, cancel the creation of a new “translation” (analogy), etc.?

### **Constancy and standards:**

- Do similar acts perform the same?
- Are elements consistently located in expected places, or do they move around between pages?

### **Flexibility, efficiency, and ease of use:**

- Is the App streamlined?
- Does the App allow users to navigate between pages easily or does it require multiple buttons/redirects?

### **Aesthetic, minimalist design and relevancy to user’s need:**

- Does the App suffer from presenting too little or too much to users?
- Are there options for users to display more or less of any “optional” information?
- Are the aesthetics clean, or do they distract and cause the content to be confusing to navigate?

### **Help users recognize, diagnose, and recover from errors:**

- Does the App appropriately acknowledge errors such as incorrect credentials, missing inputs, etc., and assist users in resolving them?

### **Help and documentation:**

- Are new users, unfamiliar with the App, able to interact with it using only the information provided on the App itself? (It is especially important that there are resources available to the user for understanding the process for creating a new analogy.)

### **High quality content and accuracy:**

- Is there a way to vet user-submitted analogies that are spam, incomplete, low quality, inaccurate, or otherwise detract from the purpose of the App?

## Potential Usability Problems

Summary: The App tends to violate problems related to **user control and freedom** and **help and documentation**. Most problems I found involve either a user being unable to perform an expected action, or a user not being provided with enough information/resources to perform the action that they want.

Note: It is unclear which page is the “Home” page. For this analysis, I assume that the “Browsing” page is the “Home” page, but a user looking at the prototype likely would not know which page is meant to be “Home,” despite there being a “Home” button displayed on each page. (Violates **visibility of app status** and **flexibility, efficiency, and ease of use**).

### Overall:

- It is not clear at any given point where a user “is” in the App, violating **visibility of app status**.

### Browsing Page:

- Option for users to “search,” but unclear “what” they are searching (misconception, desired knowledge, all of the above, etc.). Violates **user control and freedom**, as users don’t know what to expect from this feature.

### Analogy Page and Analogy Comparison Page:

- Does not provide tools to users to filter the information (“wall of text”), violating **aesthetic, minimalistic design and relevancy to user’s need**.
- Look similar to each other without a clear distinction between them, violating **visibility of app status**.

### Create Analogy Page:

- Separates the form into multiple parts without providing any information about what these parts are, violating **help and documentation**.
- Does not specify which (if any or all) of the input fields are required, violating **help users recognize, diagnose, and recover from errors** and **help and documentation**.
- “Create Analogy” button moves between tabs on the same page, violating **constancy and standards**.

### Sign Up Page:

- Does not specify which (if any or all) of the input fields are required, violating **help users recognize, diagnose, and recover from errors** and **help and documentation**.

### User Info Page:

- The button UI for the “Analogies” section (presumably the section for analogies that this specific user has created) is not consistent with the buttons used for other UI elements on other pages, violating **constancy and standards**.

## Critical Usability Concerns

- It is NOT clear how a user:
  - o <sup>1</sup>Accesses the “Log in” and “Sign up” pages from the “Home” page (violates **user control and freedom**).
  - o <sup>2</sup>Accesses the “User Info” page, in any capacity (violates **user control and freedom**).
    - The UI for my “username” in the top right implies that it is not a button at all but rather just text that says my username.
  - o <sup>3</sup>Logs out from the App (violates **user control and freedom**).
- <sup>4</sup>User Info Page: Does not provide options for a user to change their information, or it’s unclear how to do so violating **user control and freedom** and **help and documentation**.
- <sup>5</sup>Login Page: Does not provide an option for users to reset or recover their accounts, which violates **help users recognize, diagnose, and recover from errors** as well as **user control and freedom**, as all users expect to be able to recover their accounts, but users of the App in with this prototype cannot.
- <sup>6</sup>Create an Analogy Page and Sign Up Page: Do not provide a cancel option, instead relying on the user to close or navigate from the page themselves and “hope” that the App will know that they’ve canceled creating an analogy/signing up, violating **user control and freedom**.

## Critical Usability Concerns (Example)

- **[1]** Dr. Brockmeier opens the App for the first time and is greeted by the “Home” screen. Dr. Brockmeier wants to sign up for a new account but is unable to figure out how because the UI is unclear.
  - o Dr. Brockmeier either must figure this out on his own, use the App without an account (and forego certain features), or choose not to use the App at all.
- **[2, 4]** Alaina, who has already logged into the App before, wants to change her password. Alaina is unable to figure out how to navigate to her profile just by looking at the UI, but she discovers that she can access her user profile by clicking on her “username” in the top right corner. On the “User Info” page, however, Alaina is completely unable to change her password—in fact, she can’t change any of her information at all and she doesn’t know why.
- **[3]** Alaina wants to access the App on a lab computer to show to the entire class she is TAing for. After the class, she realizes that she can’t log out of the App!
- **[5]** Alaina’s technologically savvy background tells her that if she resets her password, it will likely sign her out of the App on the lab computer. However, when Alaina opens the App on yet another computer, she realizes that she doesn’t have the ability to reset her password at all!

- [6] Tyler visits the App to help him do some independent studying, and mistakenly believes that he needs to sign up for an account to use the App. On the “Sign Up” page, he remembers that the person who told him about the App said he could use it without an account. However, Tyler doesn’t see any option to cancel his account creation.