

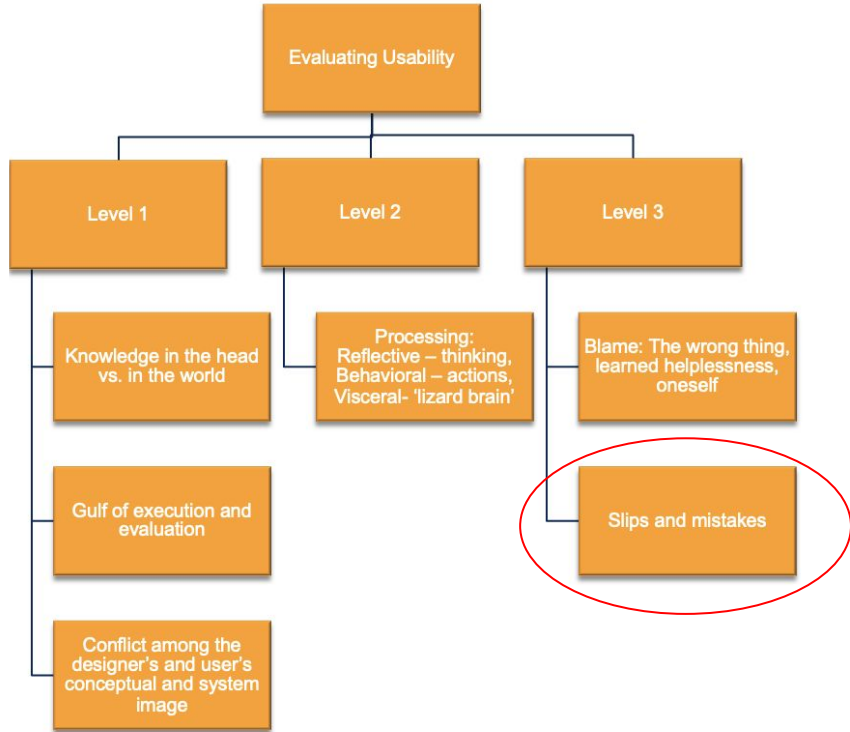


Class 3 / September 7, 2022

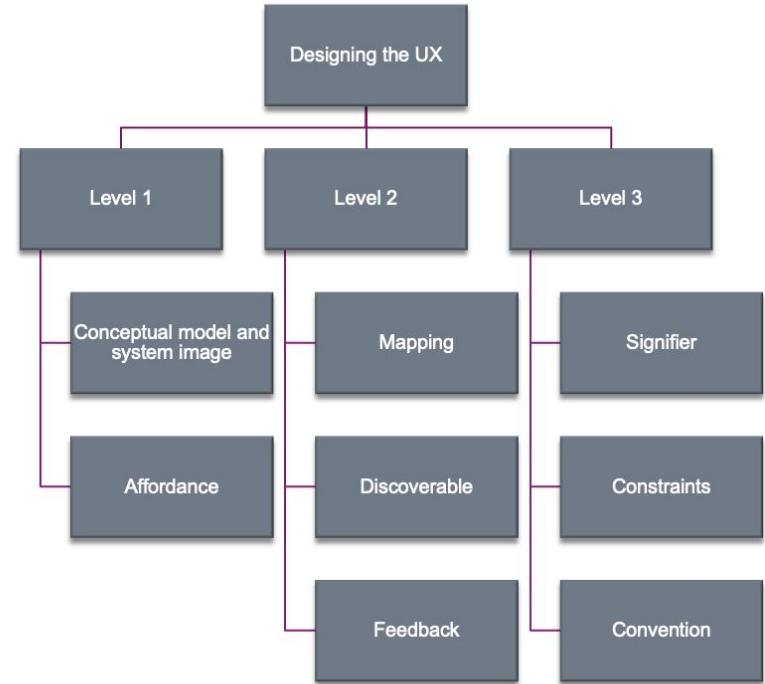
MIS 3506 / SECTION 2

User Experience Design: **Usability Testing & Errors**

Review the Foundation Principles



EVALUATION



DESIGN

Part 1

Usability Testing Overview

What is Usability Testing?

- Usability testing refers to evaluating a product or service by testing it with representative users.
- Typically, during a test, participants will try to complete typical tasks while observers watch, listen and takes notes.
- The goal is to identify any usability problems, collect qualitative and quantitative data and determine the participant's satisfaction with the product.

How to Run an Effective Usability Test

1. **Develop a solid test plan**
2. **Recruit participants**
3. **Analyze and report your findings**

Usability Testing of Fruit



Watch Video: <https://youtu.be/3Qg80qTfzgU>

Tips for Usability Testing

Test early Use a hand drawn storyboard or PowerPoint simulation

Test often Test, refine, test again. Use the first prototype through the last one

Grab anybody and everybody Friends, co-workers, diversity is good though!

Observe closely & ask them to verbalize Dump the ones that don't want to play

Ignore the lure of rigor You don't have to go overboard with the testing

Hone in on key tasks Clearly define what to do...“Find ABC”, “purchase XYZ”

Document Keep notes on what you learned each time

Use a Script We'll use Steve Krug's script for our class and amend to our needs

Types of Usability Tests

One 'Expert' User

- Cognitive walkthrough
- Heuristic evaluation

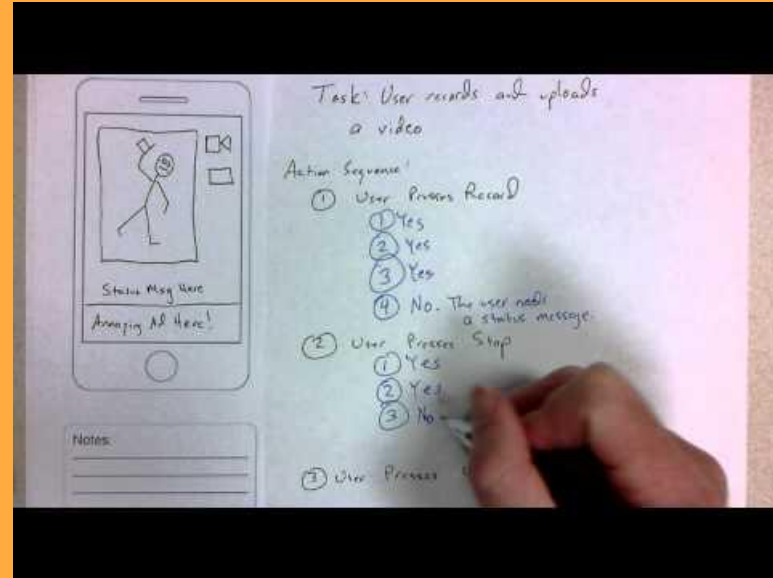
OR

Multi 'Normal' Users

- Observational test lab
- Hallway café test
- A/B test

EXAMPLE:

Cognitive Walkthrough



Watch Video: <https://youtu.be/Edqjao4mmxM>

EXAMPLE: Observational Test Lab



Watch Video: <https://youtu.be/VGqxVYrE9d8>

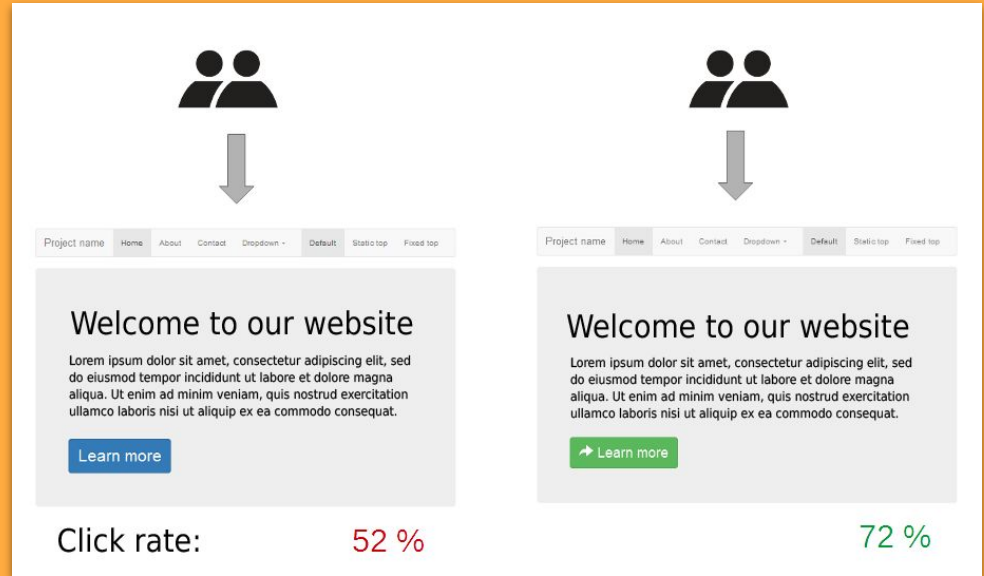
EXAMPLE:

Café Testing



Watch Video: <https://youtu.be/0YL0xoSmyZI>

EXAMPLE: A/B Testing



Usability Testing Goals

- Identify if users are able to complete specific tasks successfully
 - ◆ Determine how long it takes to complete tasks
- Establish how efficiently users can undertake predetermined tasks
- Identify changes required to improve user performance and satisfaction
- Running a usability test helps you to make subjective findings too:
 - ◆ Do users enjoy using the product?
 - ◆ Does the product work effectively?

**How many
users do you
need for an
effective test?**

1

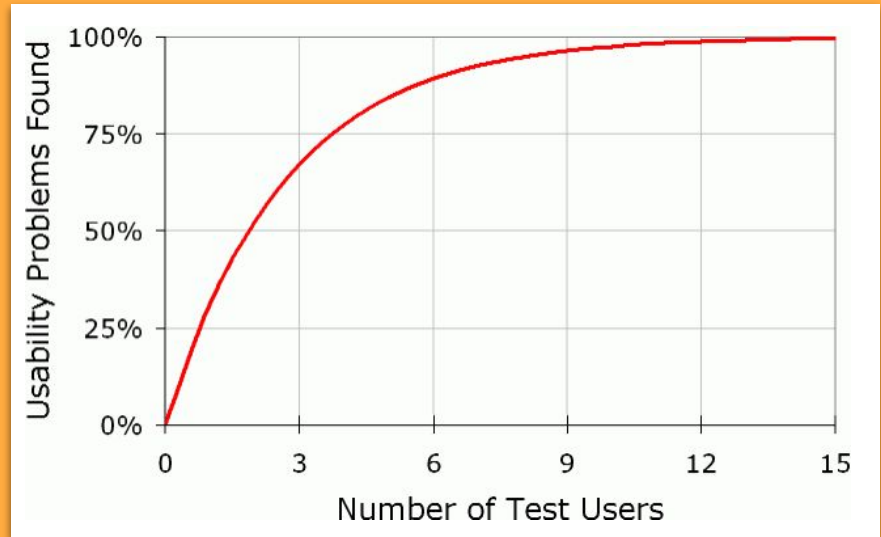
5

12

>100

5

How many users do you need for an effective test?



Part 2

Heuristic Evaluations

What is a Heuristic Evaluation?

A process where experts use rules of thumb to measure the usability of user interfaces in independent walkthroughs and report issues.



Visibility of System Status

1



Match Between System & Real World

2



User Control And Freedom

3



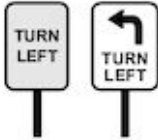
Consistency And Standards

4



Error Prevention

5



Recognition Rather Than Recall

6



Flexibility And Efficiency of Use

7



Aesthetic And Minimalistic Design

8



Help Users With Errors

9



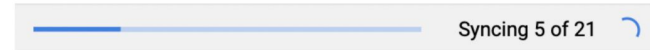
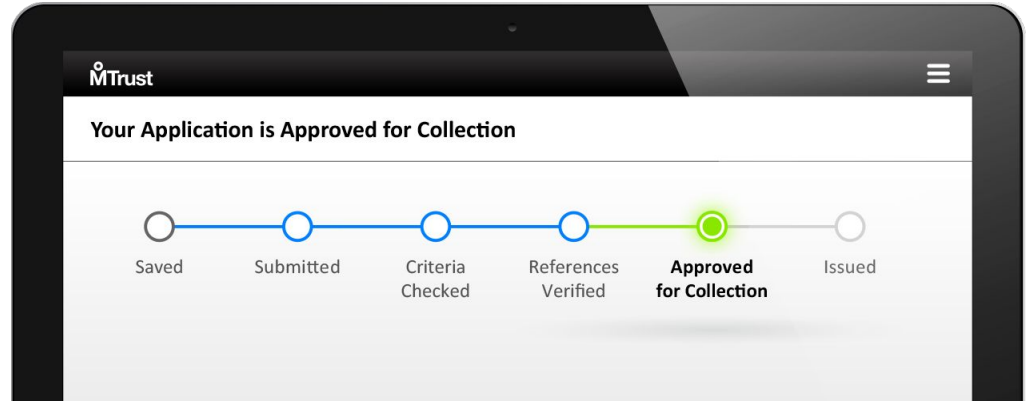
Help And Documentation

10

Visibility of system status

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

Image source: <https://uxplanet.org/a-new-usability-heuristic-evaluation-checklist-259f588da308>



Processing uploaded file...



Uploading: 77%
Example Data.csv

Image source: <https://medium.com/nyc-design/1-visibility-of-system-status-with-examples-5e3bc9adfe7b>

Match between the system and real world

The system should speak the user's language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

Real World



System



User control and freedom

User should be able to reverse their action if they make a mistake

Image source: <https://www.nngroup.com/articles/user-control-and-freedom/>

The screenshot shows a CVS pharmacy shopping basket. At the top left is the CVS logo. At the top right is a user profile icon and a 'Sign In' link. Below the logo is a 'Continue Shopping' link with a back arrow. The main heading is 'Shopping Basket' with '1 item' next to it. A promotional banner says 'Save more with ExtraCare®! Sign in, look up or enter your card number.' The item is 'Homeopathic Similasan Kids Allergy Eye Relief Drops, 0.33 OZ' with a price of '\$11.29'. The quantity is set to '1' with a 'Remove' link. Below the item is the text 'Item Removed: CVS Health Eye Itch Relief Antihistamine Eye Drops'. On the right, a summary table shows: Subtotal \$11.29, Shipping \$5.49, Tax calculated at checkout, and Total \$16.78. A red 'Checkout now' button is below the summary. At the bottom right, there is a field for 'Add your coupon code' and an 'Apply' button.

The screenshot shows a document editor interface. At the top left is a blue document icon. To its right is the text 'value proposition template' followed by three icons: a star, a folder, and a cloud. Below this is a menu bar with 'File', 'Edit', 'View', 'Insert', 'Format', 'Tools', 'Add-ons', and 'Help'. At the bottom is a toolbar with several icons. The first two icons, representing undo and redo, are circled in red. Other icons include a printer, a checkmark, a document with a checkmark, a percentage dropdown set to '100%', a dropdown menu set to 'Heading 1', and a font dropdown set to 'Poppins'.

Image source: <https://bootcamp.uxdesign.cc/4-examples-of-user-control-and-freedom-in-ux-design-6095c6d04f3b>

Consistency and standards

Similar system elements should look similar

Image source: <https://www.nngroup.com/articles/consistency-and-standards/>

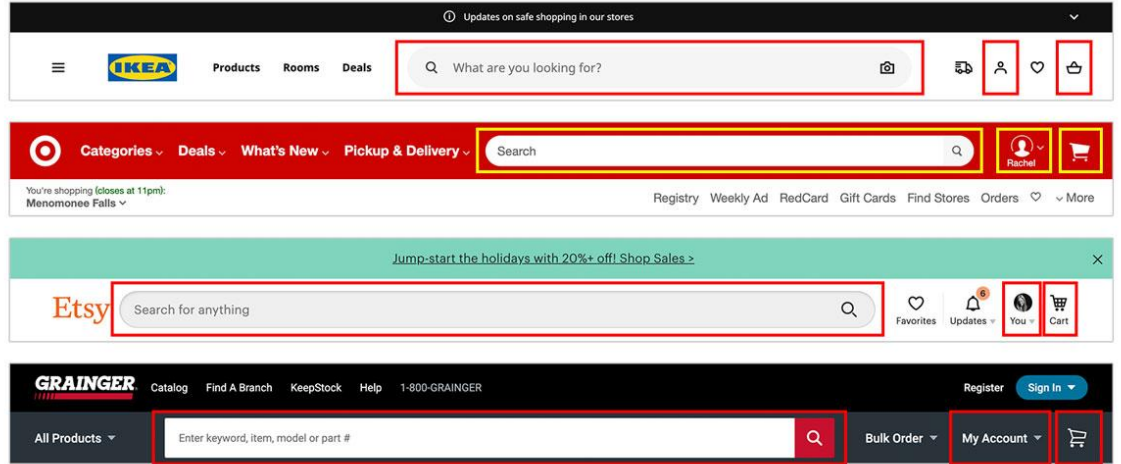
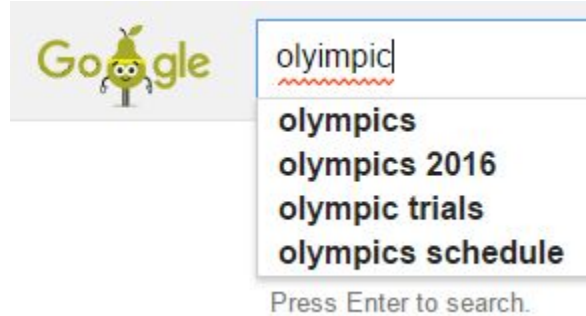


Image source: <https://blog.prototypr.io/10-usability-heuristics-with-examples-4a81ada920c>



Error prevention

Minimize the likelihood of making mistakes. The best “error message” is preventing the mistake in the first place

Choose your username

Your username is how other community members will see you. This nam

CHOOSE A USERNAME

FirmExplanation ✓

PASSWORD

....

Password must be at least 6 characters long

Recognition rather than recall

You should be able to interact without any prior knowledge - make the action clearly visible

Image source: <https://uxplanet.org/heuristics-6-recognition-rather-than-recall-simplified-by-the-examples-eb8b84fb04c6>

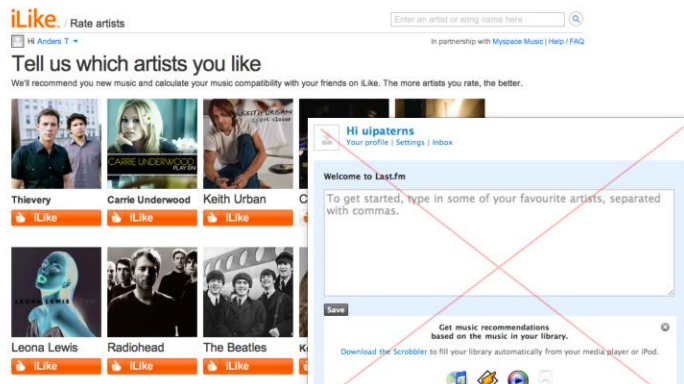
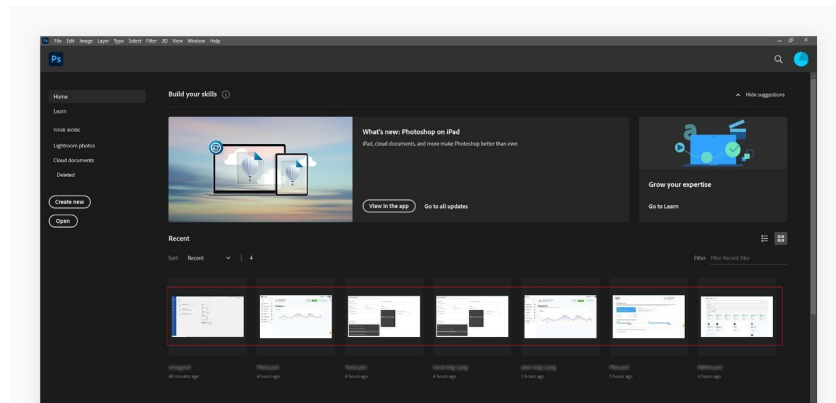
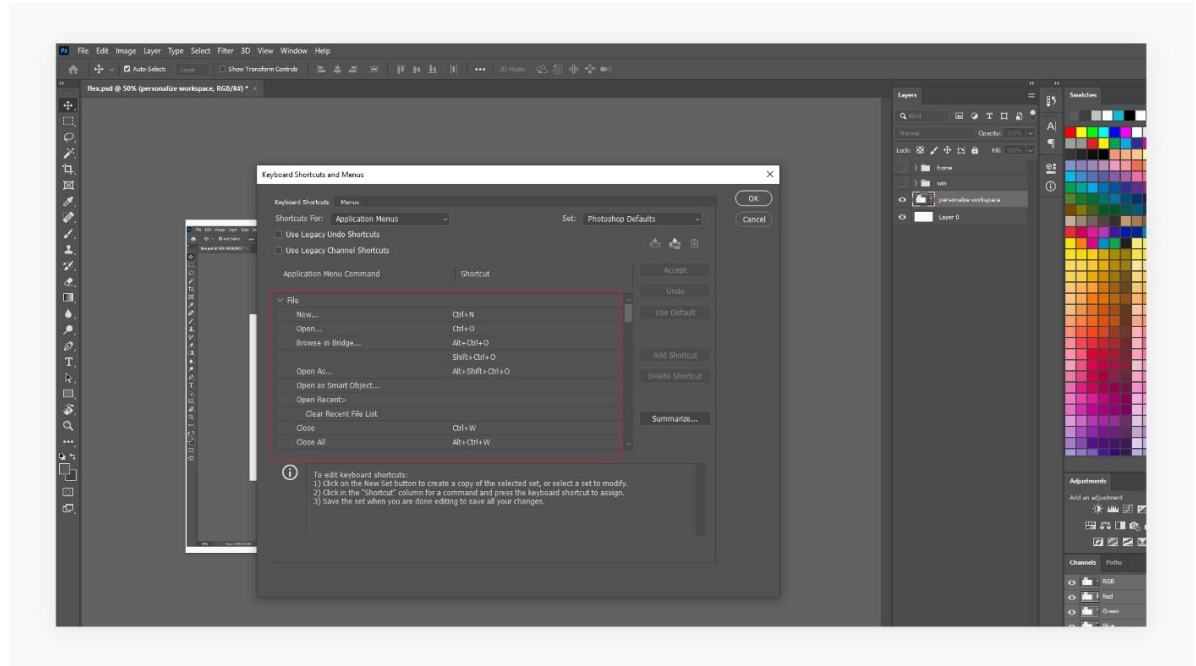


Image source: <https://ui-patterns.com/patterns/Recognition-over-recall/examples/2715>

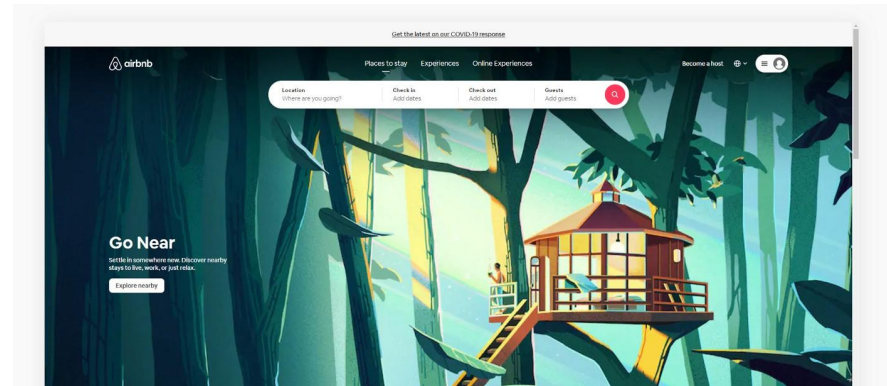
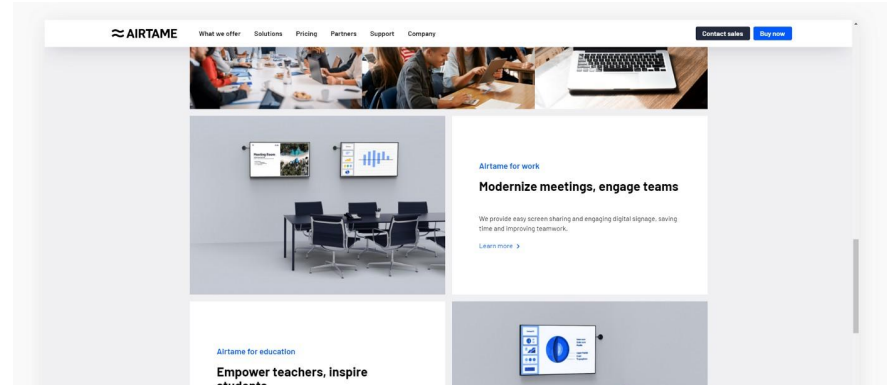
Flexibility and efficiency of use

Both new and experienced users should be able to efficiently use the system



Aesthetic and minimalist design

Keep the information to as
minimal as possible and to the
point, do not overwhelm the user.



Help users recognize, diagnose and recover from errors

Make error messages understandable, and suggest ways to fix an error. Don't leave the user hanging.

Image source: <https://blog.prototypr.io/10-usability-heuristics-with-examples-4a81ada920c>

The image shows two side-by-side login forms. Both forms feature a monkey mascot icon at the top. The left form displays an error message: "Sorry, we couldn't find an account with that username. Can we help you recover your username?" with a "I forgot" link. Below the message are input fields for "Username" (containing "freshsparks") and "Password" (with a "Show" toggle). There are "Log In" and "Stay logged in" buttons, and links for "Create an account" and "Trouble logging in?". The right form displays a different error message: "Sorry, that password isn't right. We can help you recover your password." with a "I forgot" link. It has similar input fields and buttons as the left form.

The image is a screenshot of the Department of Labor Search DOL page. The header includes the Department of Labor logo and the text "Search DOL". Below the header are navigation tabs for "Home", "Individuals", and "Businesses". The main content area shows a search bar with the text "Search" and a dropdown menu with options "Home", "Individuals", and "Businesses". Below the search bar, the text "Did you mean: baklava" is displayed, with a red arrow pointing to the word "baklava". A second red arrow points to a search input field containing the text "bakleva".

Image source: <https://apps.labor.ny.gov/ux/doc/v1/principles-recognize-diagnose-recover-from-errors.html>

Help and documentation

Make sure help is easily accessible and there is documentation especially if the conceptual model is complex.

Image source: <https://blog.prototypr.io/10-usability-heuristics-with-examples-4a81ada920c>

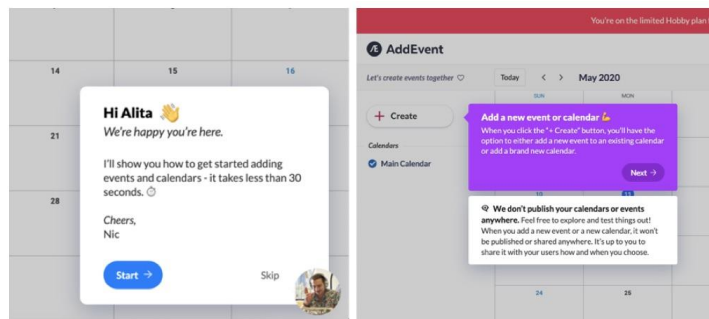
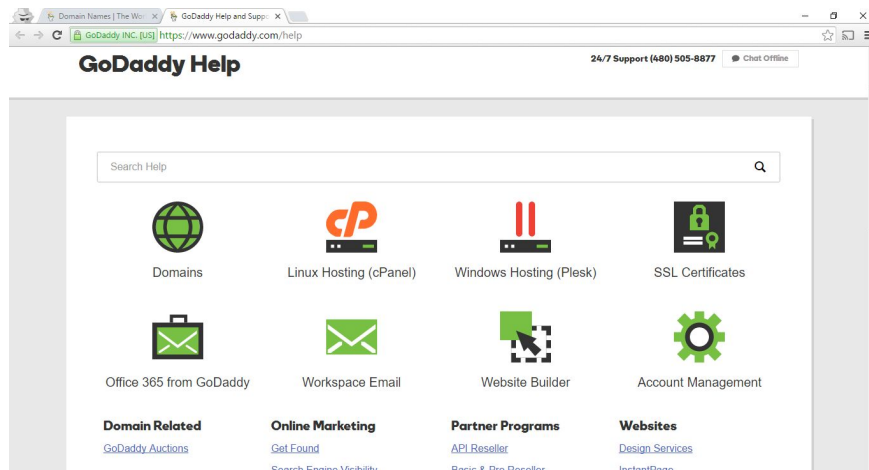


Image source: <https://www.nngroup.com/articles/help-and-documentation/>

GO TO: <https://owlsports.com>

In Class Exercise

Performing a Heuristic Evaluation

Performing a Heuristic Evaluation

- ❑ Work on your assigned Heuristic Evaluation Tasks together using the “adamfard” template (download from Canvas)
- ❑ We’ll come together as a class and share your results and discuss

BREAK

10 Minutes

Part 3

Analyzing Errors

Reasons that Errors are Made...

**Staying alert for
unreasonable time**

Multitasking

Interruptions

Time Constraints

Can you think of any others?

BLAME

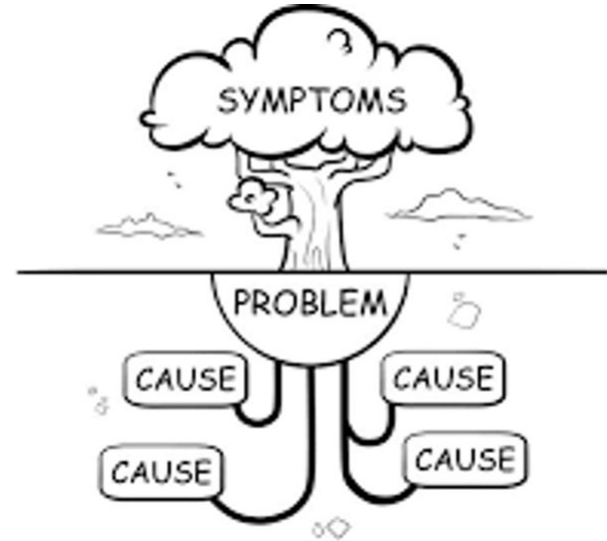
**We tend to
blame people
instead of
finding the
real problem**



Root Cause Analysis

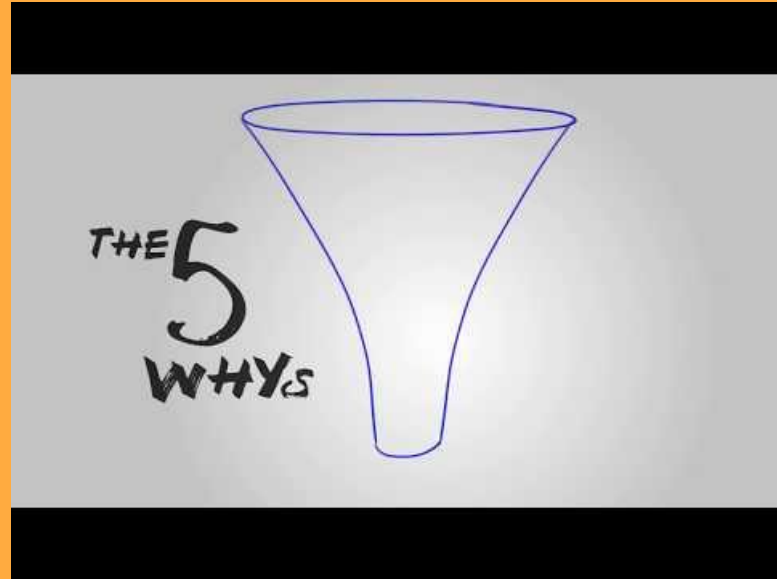
A systematic process for identifying “root causes” of problems or events and an approach for responding to them.

- More than putting out fires
- Identify the problem
- Define the problem
- Collect Data
- Identify Possible Causal Factors
- Identify the Root Cause
- Recommend & Implement Solutions/Changes



Solving Problems

Using the 5 Whys



Watch Video: <https://youtu.be/SrlYkx41wEE>

EXAMPLE:

The 5 Whys



Watch Video: <https://youtu.be/BEQvq99PZwo>

Two Types of Errors

Slips

Slips are unconscious errors—you do something you didn't intend to do

VS

Mistakes

Mistakes are conscious errors—you make an intentional choice that turns out to be wrong

Types of Slips

Action Based

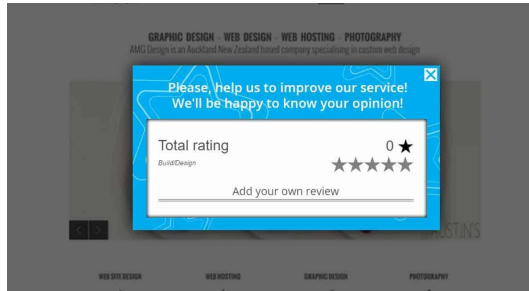
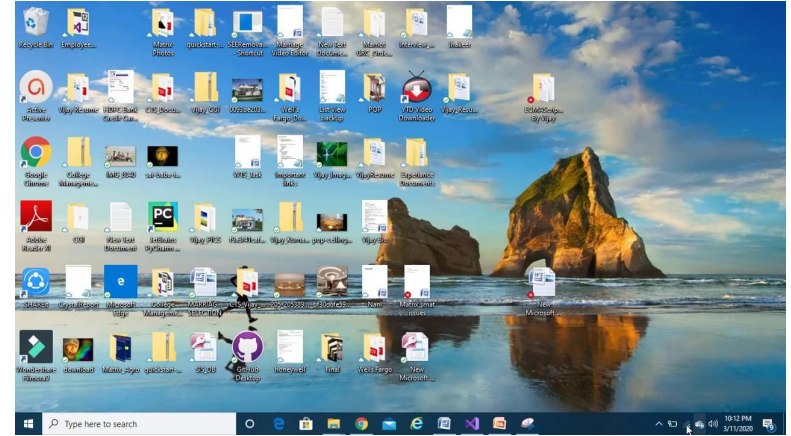
- The wrong action is performed
- Correct action, applied to the wrong object

Memory Lapse

- The intended action is not done or its results not evaluated
- I forget to do something

Image source: <https://blog.prototypr.io/10-usability-heuristics-with-examples-4a81ada920c>

Action Based



Memory Lapse



Slips Relevant to Design

Capture slip

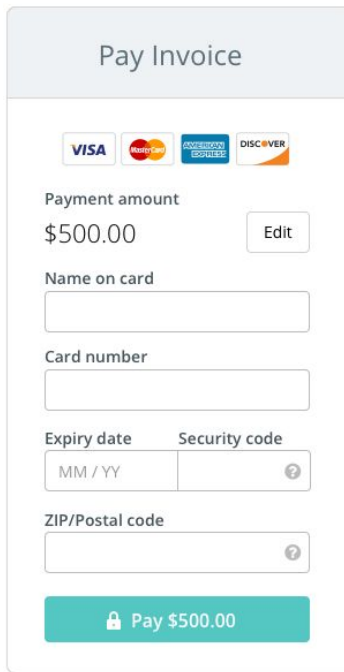
- Perform a frequent activity

Description slip - similarity

- Wrong & right items look similar

Mode error

- Different states – different meanings



Pay Invoice

VISA MasterCard AMERICAN EXPRESS DISCOVER

Payment amount
\$500.00

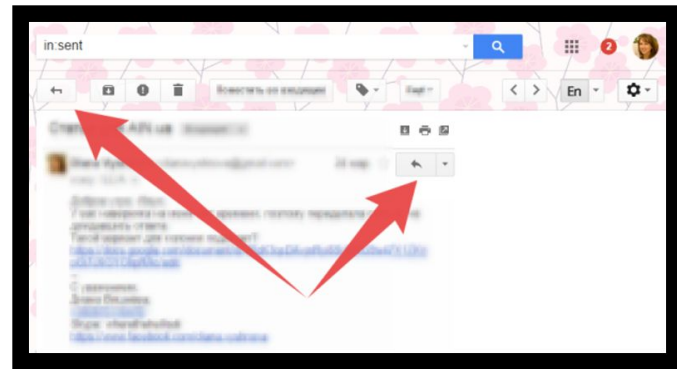
Name on card

Card number

Expiry date Security code
MM / YY

ZIP/Postal code

Capture Slip



Description Similarity



Mode Error

Types of Mistakes

Rule based

- **Appropriately diagnosed the situation but chose a bad course of action (wrong rule is followed)**

Knowledge based

- **Problem is misdiagnosed because of incorrect or incomplete information**

Memory lapse

- **Happens when you forget the stages of goals, plan or evaluation**

Rule Based



Complete registration

Please enter this confirmation code in the window where you started creating your account:

650050

From your mobile device use the code to confirm email.

Memory Lapse

Knowledge Based



Recap

Preventing Slips and Mistakes



Watch Video: https://youtu.be/s0hStSMc_Rs

GO TO: <https://owlsports.com>

In Class Exercise

Café Testing

Performing Café Testing

- ❑ Person 1: Go through the motions of *purchasing tickets for a future Basketball game*. You should say everything you are doing out loud.
- ❑ Person 2: Quietly observe and take notes from the process

Switch Roles

- ❑ Person 1: Go through the steps you might take to *join the Owl Club*.
- ❑ Person 2: Quietly observe and take notes from the process

Come together and discuss

Review

Part 2 of Assignment 1

Due Next Week...

Reading (Due Wednesday for Class)

- ❑ Book: Norman, Chapter 6

Project - Part 1 (Due Sat., Sept 10 @ 11:59 p.m.)

- ❑ Complete all items in part 1 with your group

Start making a plan for executing part 2 of the assignment.