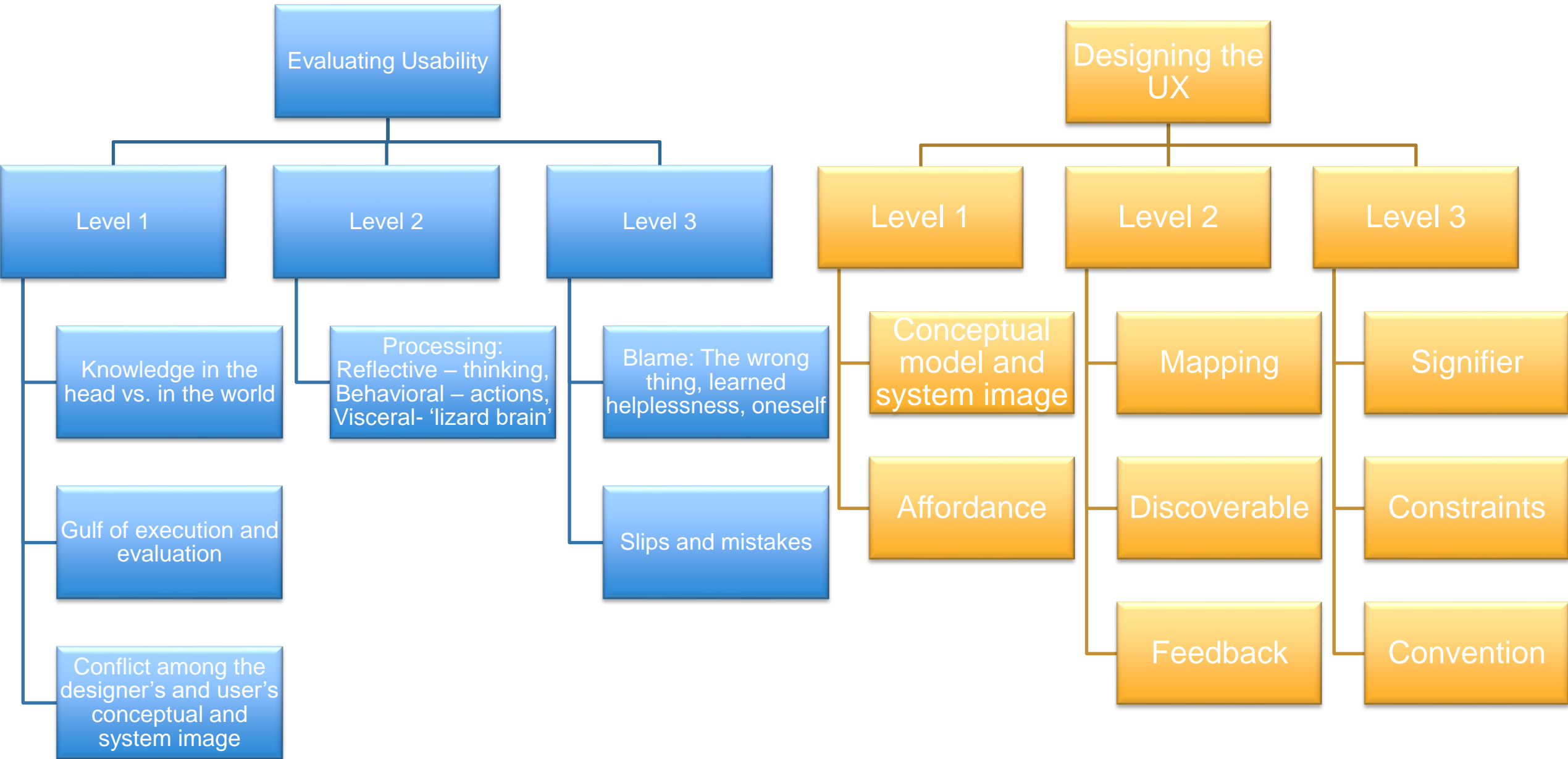


Human Error? No Bad Design; Slips & Mistakes

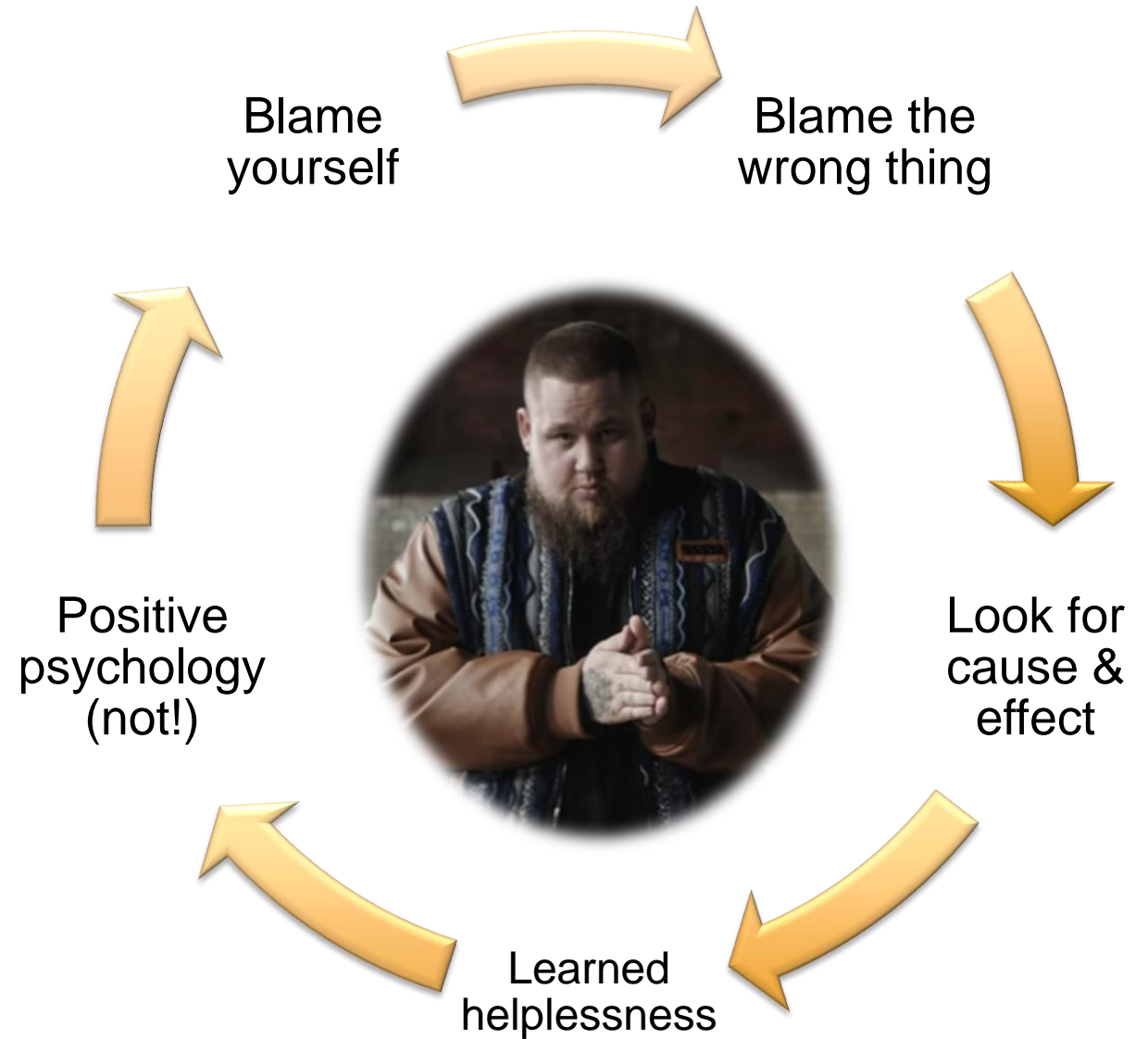
MIS3506 * Lavin * Spring 2024



I Am Only Human (after all)

What do we mean by being “human”?

- What is “human error”?



When an accident is thought to be caused by people, we blame them and continue to do things just as we've always done.

Norman, p. 162



Defining the Problem

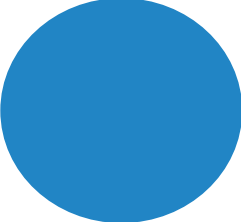
Understanding **WHY** there is error

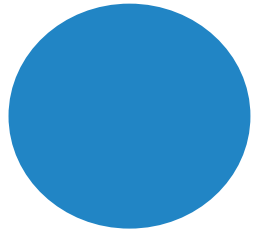


Diagnosing Error

What is the role of each of these in understanding a process so that it can be improved?

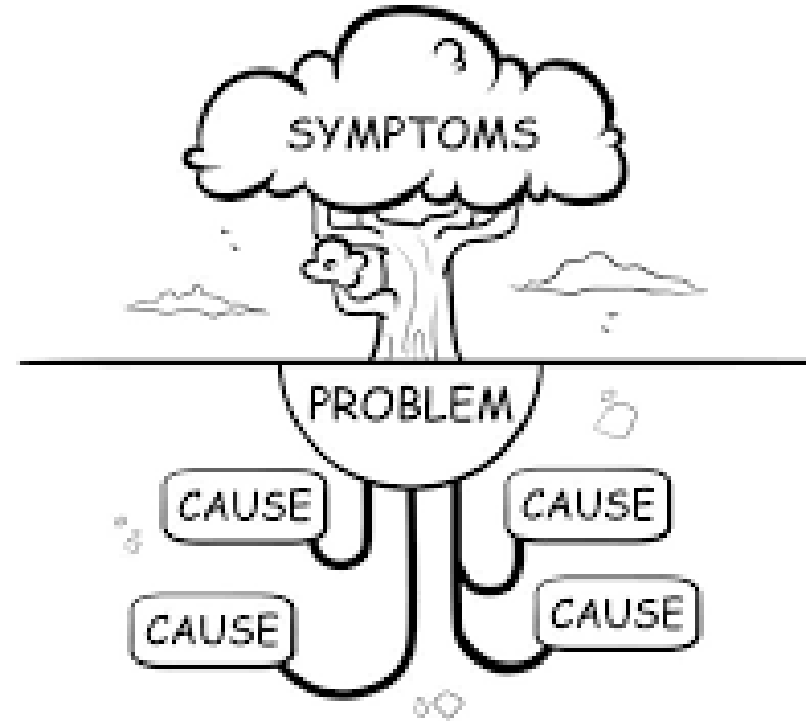
 **Five Whys**

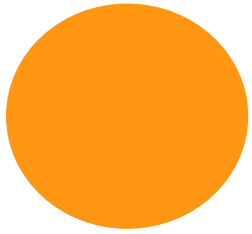
 **Root Cause Analysis**



Root Cause Analysis

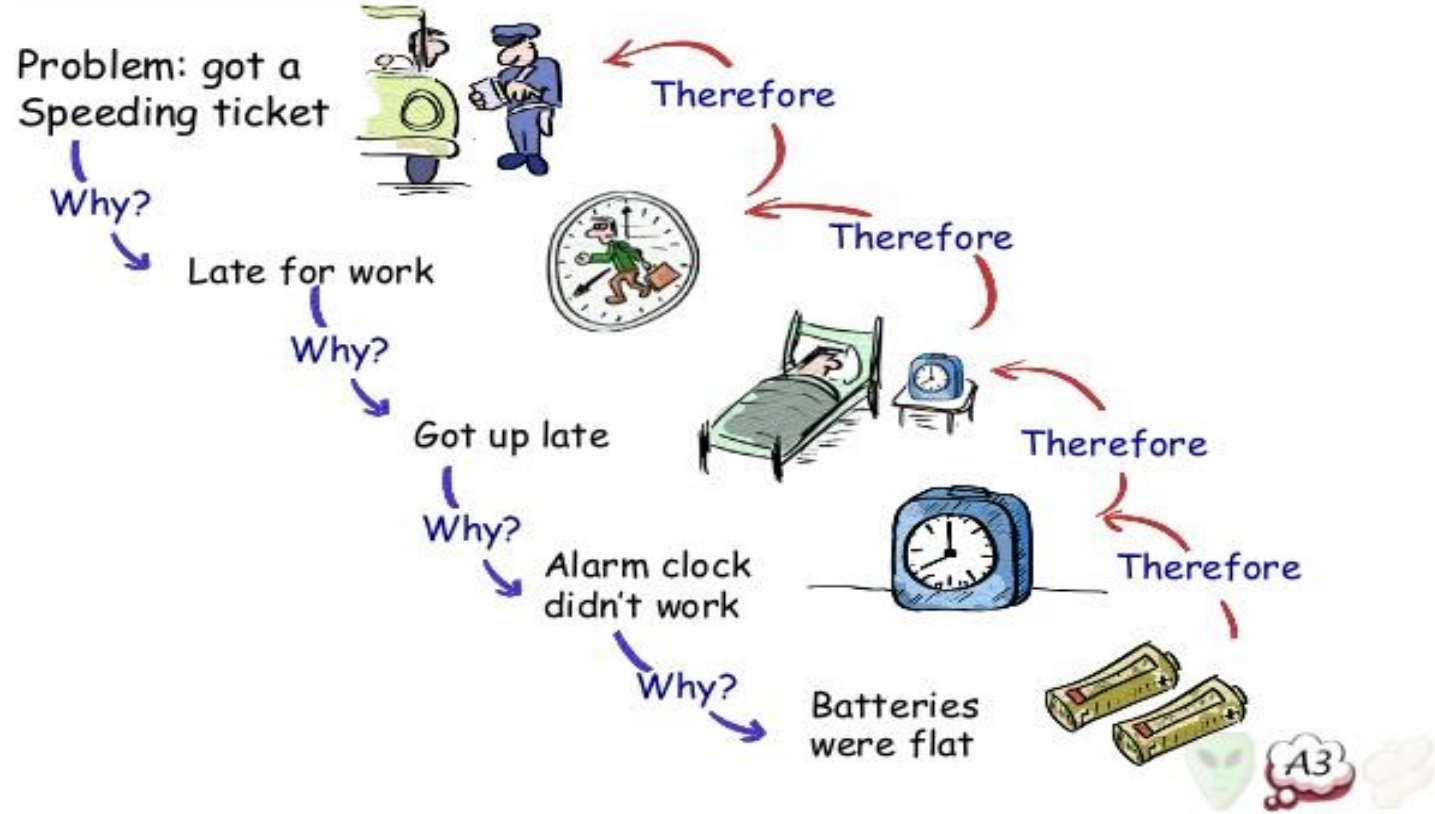
- **More than putting out fires**
- Identify the problem
- Define the problem
- Collect Data
- Identify Possible Causal Factors
- Identify the Root Cause
- Recommend & Implement Solutions/Changes





Five Whys

... AND 5-WHYS



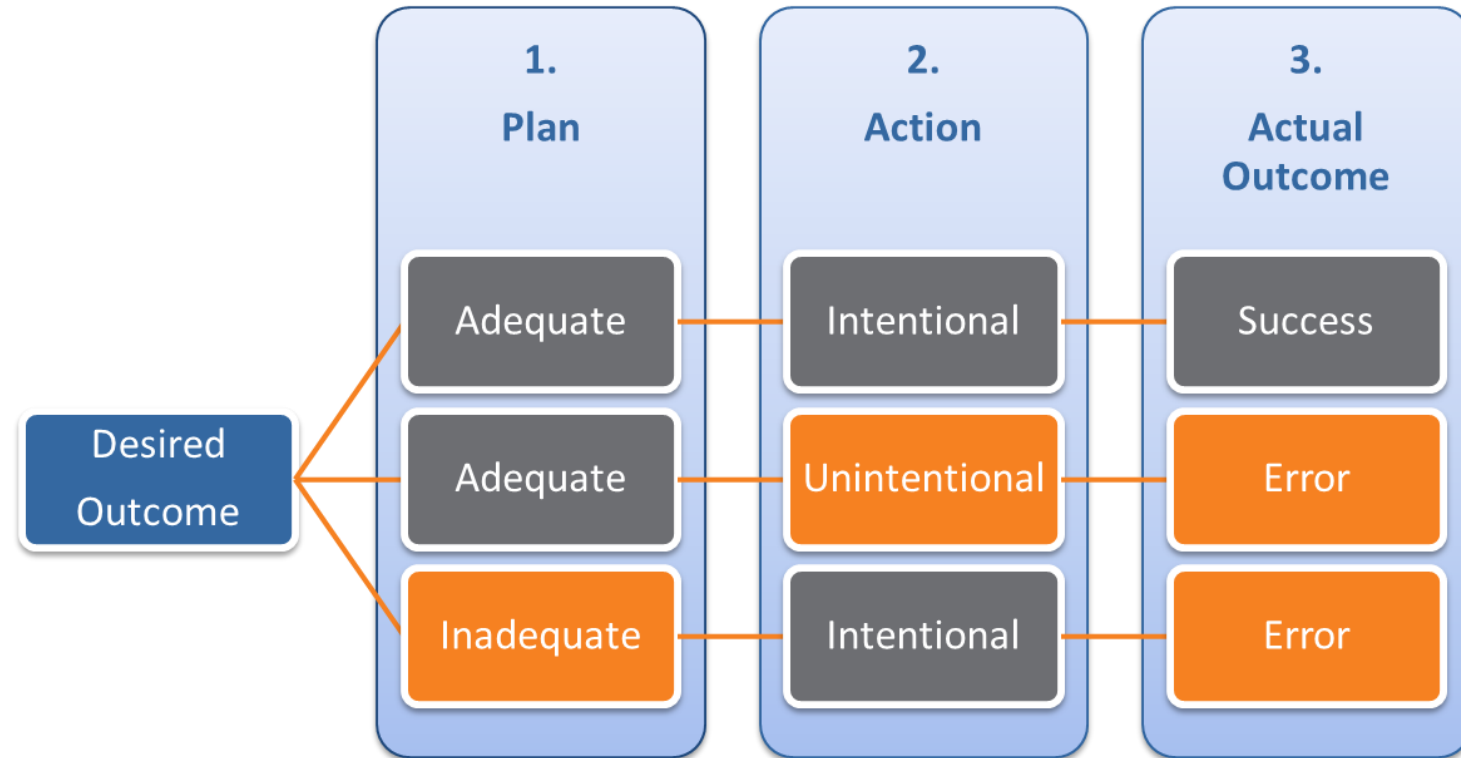
Diagnosing Error

If the system lets you make the error it is badly designed...



Diagnosing “Human” Error

Failures can occur in planning & execution



3.

Do Users Suck?

Mistakes vs. Slips vs. Choice
& Usability

The image shows a Zoom web interface in a browser window. The main content area is titled "Contacts" and features a sidebar with navigation options: "My Contacts" (with sub-categories: Starred, External, Apps, Cloud Contacts) and "All Contacts" (with sub-categories: Zoom Rooms, Company Contacts). A modal dialog box is centered on the screen, displaying a loading spinner and the text "Connecting...". The browser's address bar shows a search bar and a profile icon. The bottom of the page has navigation tabs for "Home", "Meetings", and "Contacts". The Windows taskbar at the bottom contains icons for search, microphone, task view, Edge, Word, Chrome, File Explorer, Teams, Excel, PowerPoint, and Zoom. The system tray shows the time as 12:03 PM on 9/8/2020.

Academic Calendar

Academic Year: 2004 Term: Fall Session: 01 - Session

Start Date: 08/20/2004	Online Mid Session Grade Start Date: 08/20/2004
End Date: 12/15/2004	Online Mid Session Grade End Date: 12/15/2004
Pre-Registration Date: 07/01/2004	Online Final Grade Start Date: 08/20/2004
Registration Date: 08/20/2004	Online Final Grade End Date: 12/15/2004
Last Registration Date: 12/15/2004	
Grade Withdrawal Date: 12/01/2004	(First day when a withdrawal grade is given without penalty)
Grade Penalty Date: 12/02/2004	(First day when a withdrawal grade is given with penalty)
Fiscal Year: 2004	(For Student Billing)
Number of Weeks: 17	
Number of Months: 4	
Number of Courses: 0	(Valid for Nontraditional Program Sessions)
Financial Aid Award Year: 2004	
Financial Aid Award Term: 9	

Calendar Record # 13

An anecdote....

Understanding “Why”

What are the causes?

What are the results?

- Financial loss
- Injury

What are the reasons?

- Alertness
- Specifications
- Interruptions

Who is to blame?



Error: any action that differs from the general understanding of appropriate behavior

Slip – An error of execution

We have the right goal, but end up performing a different action

Unconsciously – *error of doing*

Mistake – An error of evaluation

Action is executed correctly, but the goal, plan or understanding of the situation is wrong

Consciously – *error of thinking*



Slip

- Action Based
- Memory Lapse



Slips – Everyday Errors

- Intending to do one thing and doing another
- Occur more frequently to skilled people?

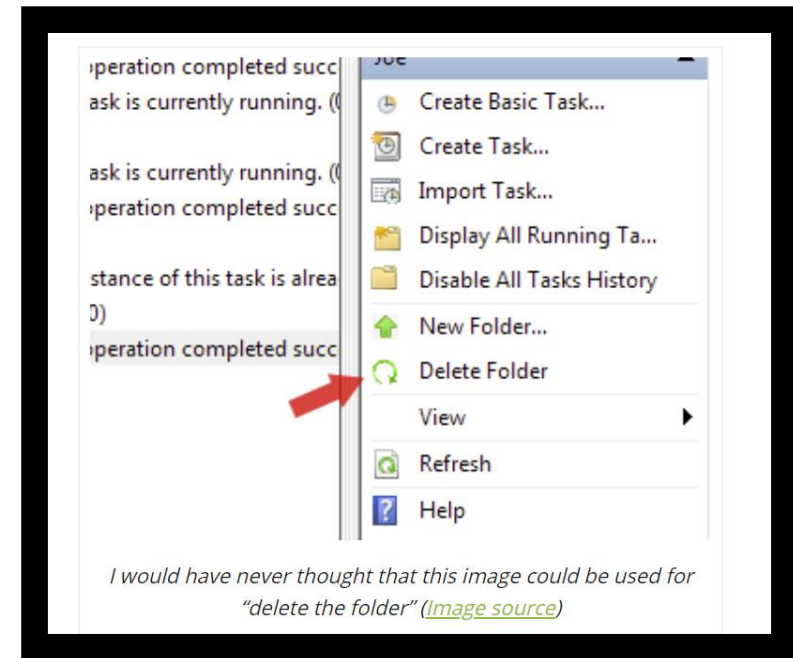
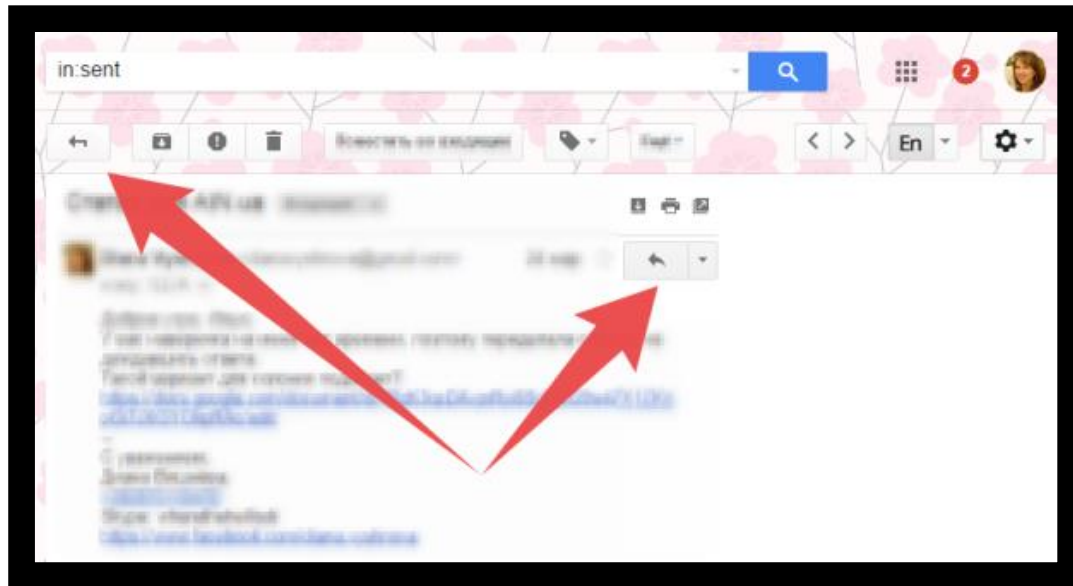
Slips – Capture Slips

- Perform a frequent activity
- Partial memory-lapse



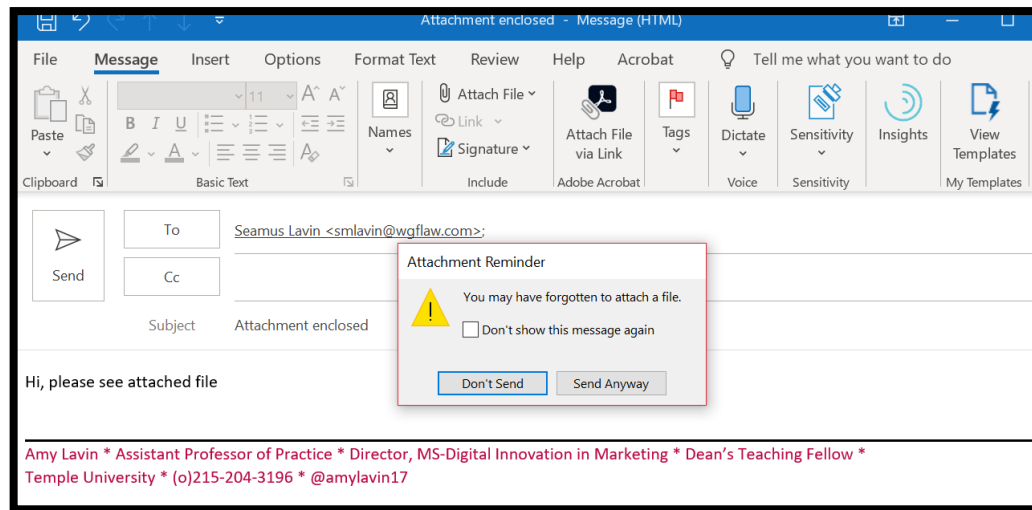
Slips – Description-Similarity

- Wrong & Right Items Look Similar



Slips – Memory-Lapse

- Failure to perform all steps
- Interruption of steps



Amy Lavin * Assistant Professor of Practice * Director, MS-Digital Innovation in Marketing * Dean's Teaching Fellow *
Temple University * (o)215-204-3196 * @amylavin17



Slips – Mode Error

- Different states – different meanings



Mistake

- Rule Based
- Knowledge Based
- Memory Lapse



Mistakes - Rule Based

- Experience
- Formal Procedures

Mistakes – Knowledge Based

- New situation – can't relate a similar experience



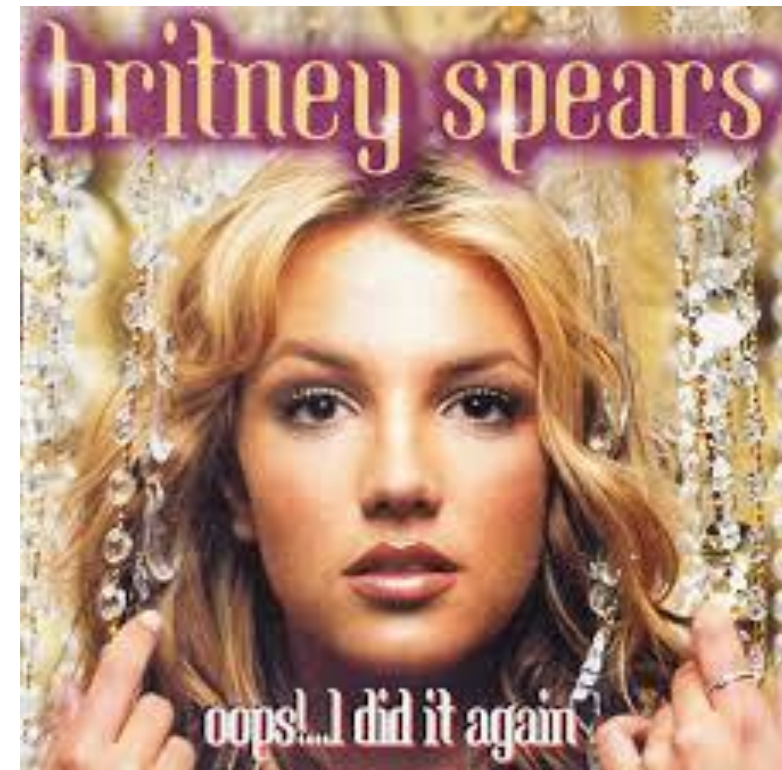
Mistakes – Memory Lapse

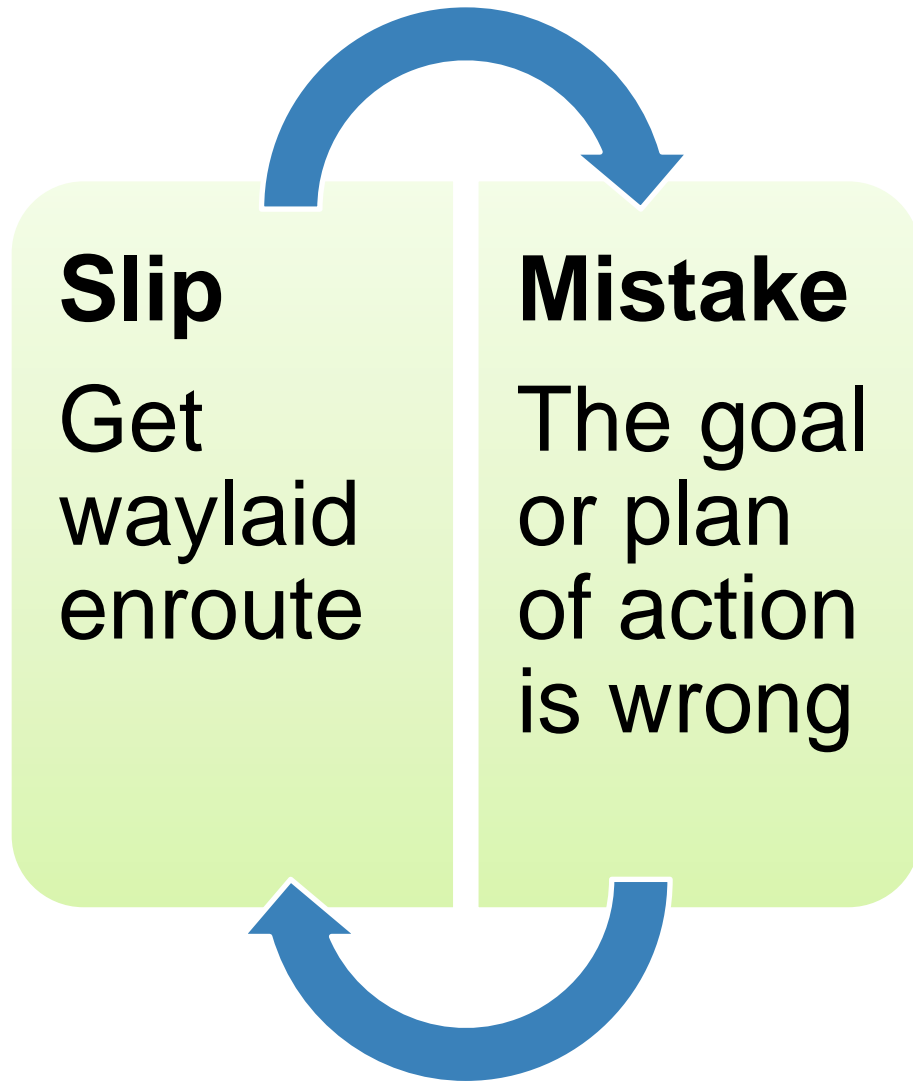
- Memory failure leads to forgetting the goal or plan of action



Memory Lapse

- **Mistakes** are errors in choosing an objective or specifying a method of achieving it whereas **slips** are errors in carrying out an intended method for reaching an objective








How can the designer combat these?

- Understand the design and the user
- Usability testing
- Discoverability of errors
- Availability of help
- Checklists
- Provide assistance to users through visual clues, feedback



Human error - slips and mistakes

slip

-  understand system and goal
-  correct formulation of action
-  incorrect action

mistake

-  may not even have right goal!

Fixing things?

- slip – better interface design
- mistake – better understanding of system

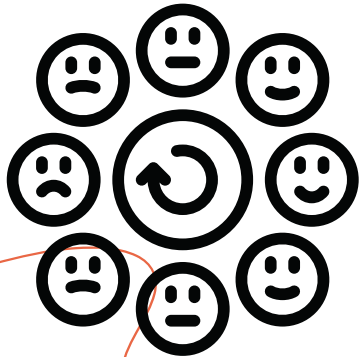
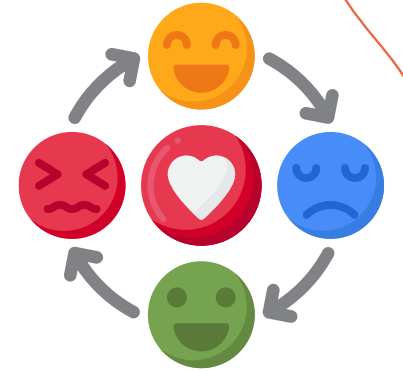
4.

Usability Testing

Tools to conduct your test

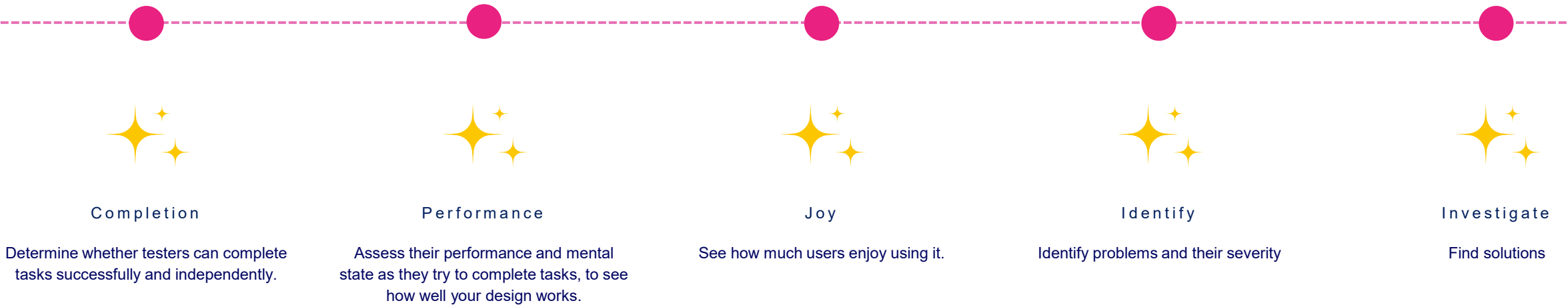
What is Usability Testing?

the practice of testing how easy a design is to use with a **group of representative users**. It usually involves observing users as they attempt to complete tasks and can be done for different types of designs. It is **often conducted repeatedly**, from early development until a product's release.



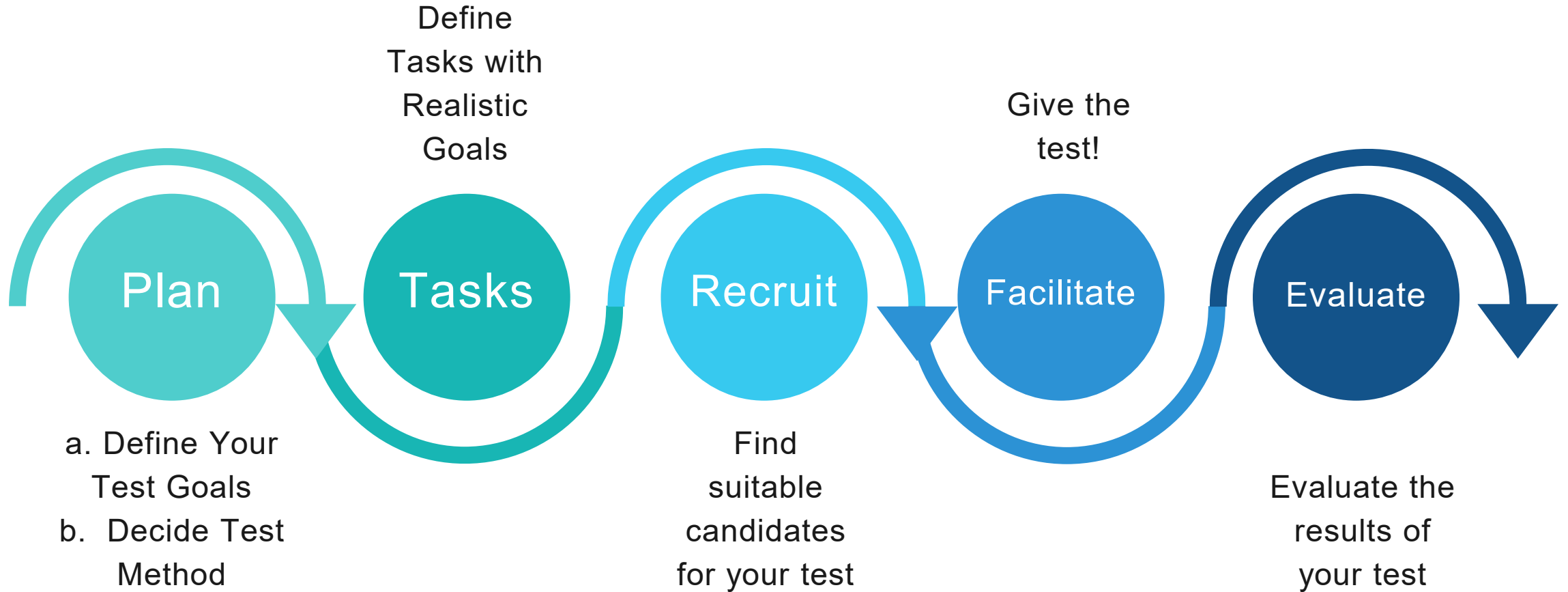
Usability Test Objectives

Chief objectives of a Usability Test



USABILITY TESTING

Steps in delivering the usability test



Usability Testing Methods

In-person

Formal, live testing of representative users requires an empathetic moderator to note testers' experiences.

Remote

Catching users in their own environments can reveal more-accurate "field" insights.

Guerrilla

Testing your design informally on passers-by/colleagues; risks include inaccurate data.

What you choose depends on your product, your audience and where you are in the design process

Pros?

Cons?

Tips for Moderating Usability Tests

How to Keep Tests Smooth

- Let users struggle, don't over moderate
- Use pauses and silence if you need to
- Do not leave too much silence during task – say okay often
- Say "Okay" and "uh-huh" to fill in gaps
- Use a monotone tonality with users
- Ask "reverse questions": Is this what you expect to find there?

Not just functionality, but the overall experience of using your site



Scenarios

Building the Test



Step
01

Consider your
personas and
audience

Step
02

What is their
motivation for using
your application?

Step
03

What are the goals of
your application?

Step
04

What tasks should
users be able to
complete?

TEST METRICS -

Assess the user behavior



Quantitative

Time on Task
Success and Failure Rates
Effort (number of clicks, confusion)



Qualitative

Facial Reactions
Body Language
Satisfaction levels



Ask for feedback

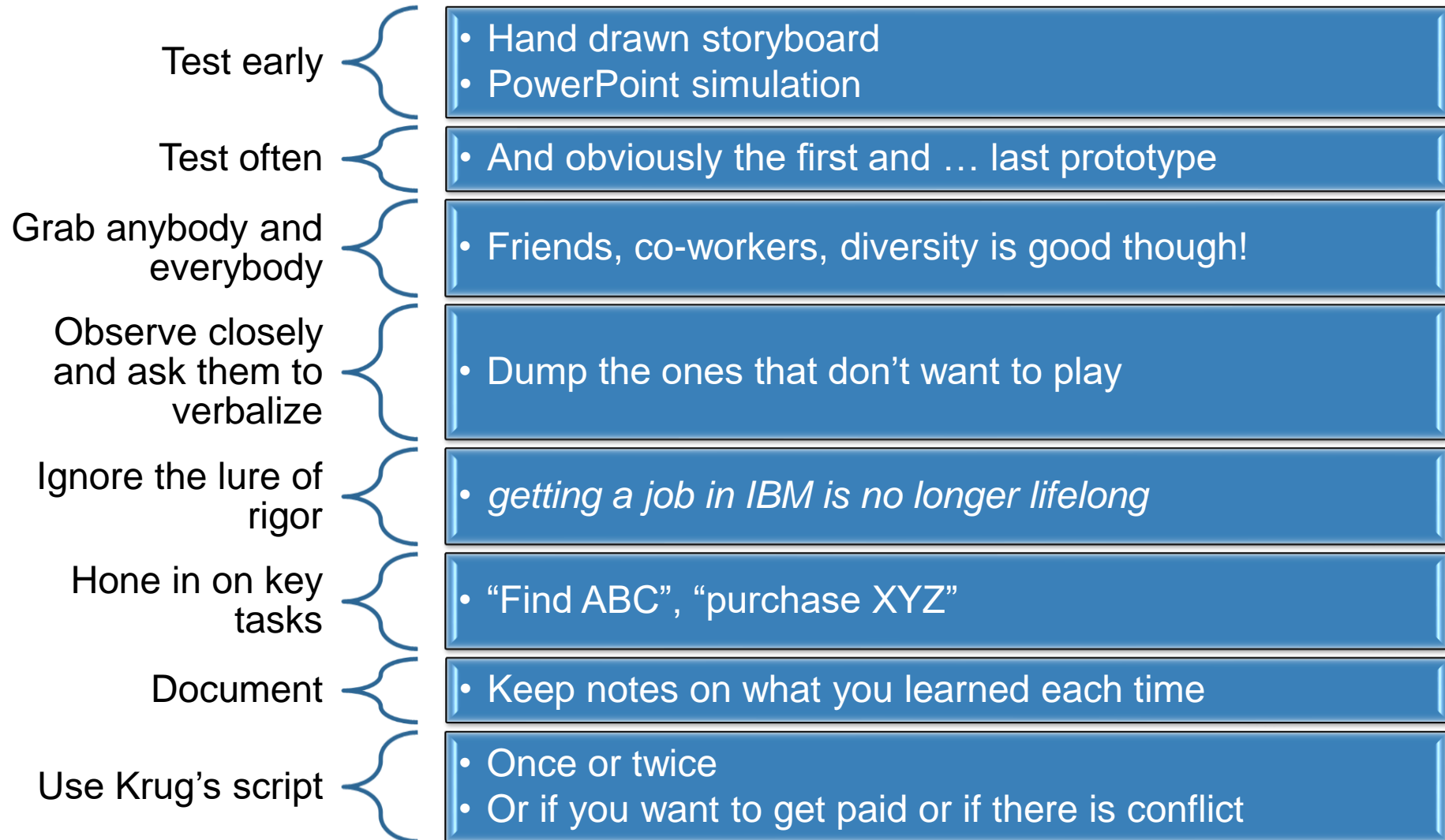
Provide a follow up questionnaire that would enable honest feedback



Report

Clearly define design issues and best practices to share with the team

Usability Testing



Usability testing

Typically
one
'expert'
user

- Cognitive walkthrough
- Heuristic evaluation

Multiple
'normal'
users

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

Test 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?

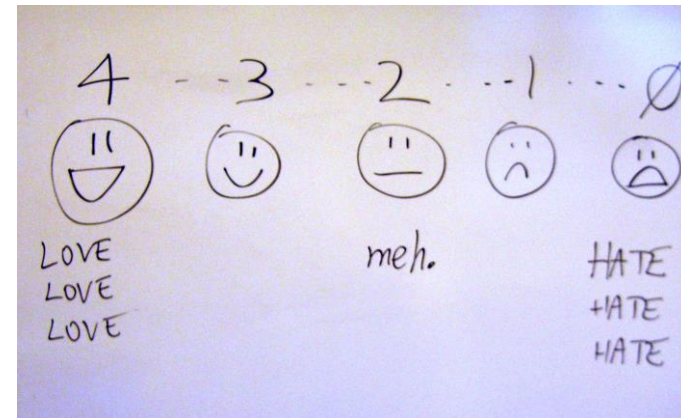
Observational test in a lab



Observational test in a Café (Café testing)



“Heuristics simply means guidelines. In [user experience design](#), it is nearly impossible to define rigid rules. There is no fool-proof way to create experiences that are guaranteed to work. Instead, you can refer to principles to guide you in your [design process](#), to help you evaluate your work before you [test](#) it with real users.”



HEURISTIC REVIEW – UX – NIELSEN

Visibility of System Status

Match Between the System & Real World

User Control and Freedom

Consistency and standards

Error prevention

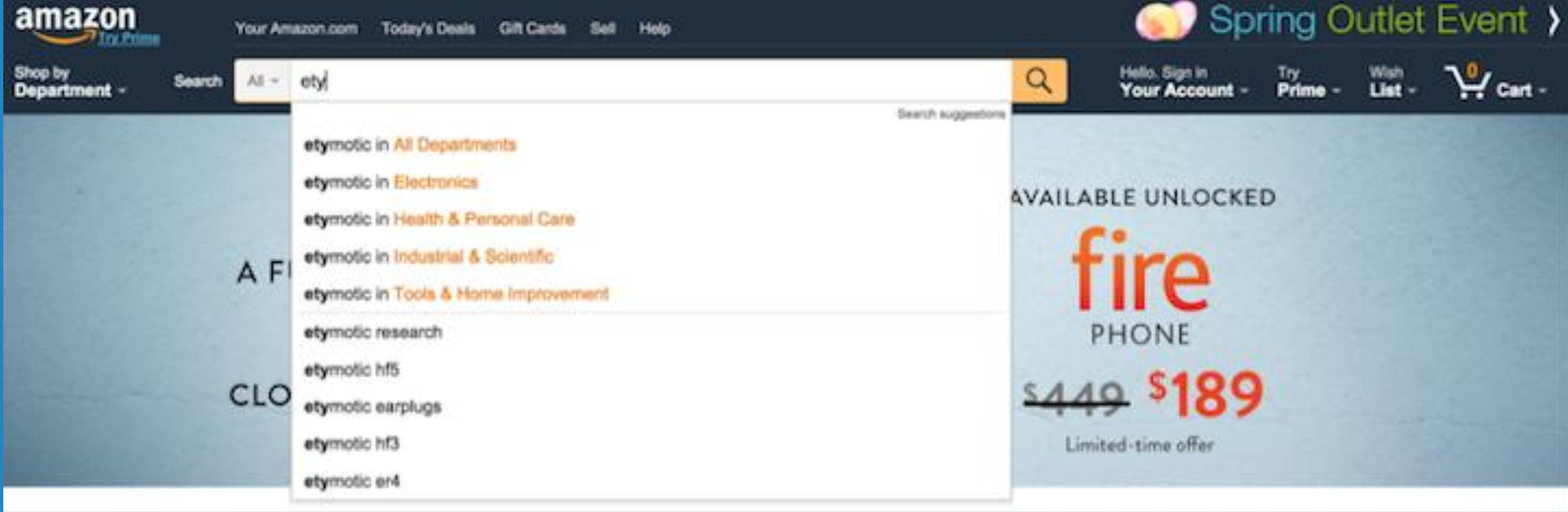
Recognition rather than recall

Flexibility and Efficiency of Use

Aesthetic and minimalist design

Help users recognize, diagnose and recover from errors

Help and Documentation



Usability

In-class Activity – Usability Dry Run

Source: <https://www.nngroup.com/articles/slips/>

Class activity

<https://owlsports.com/>

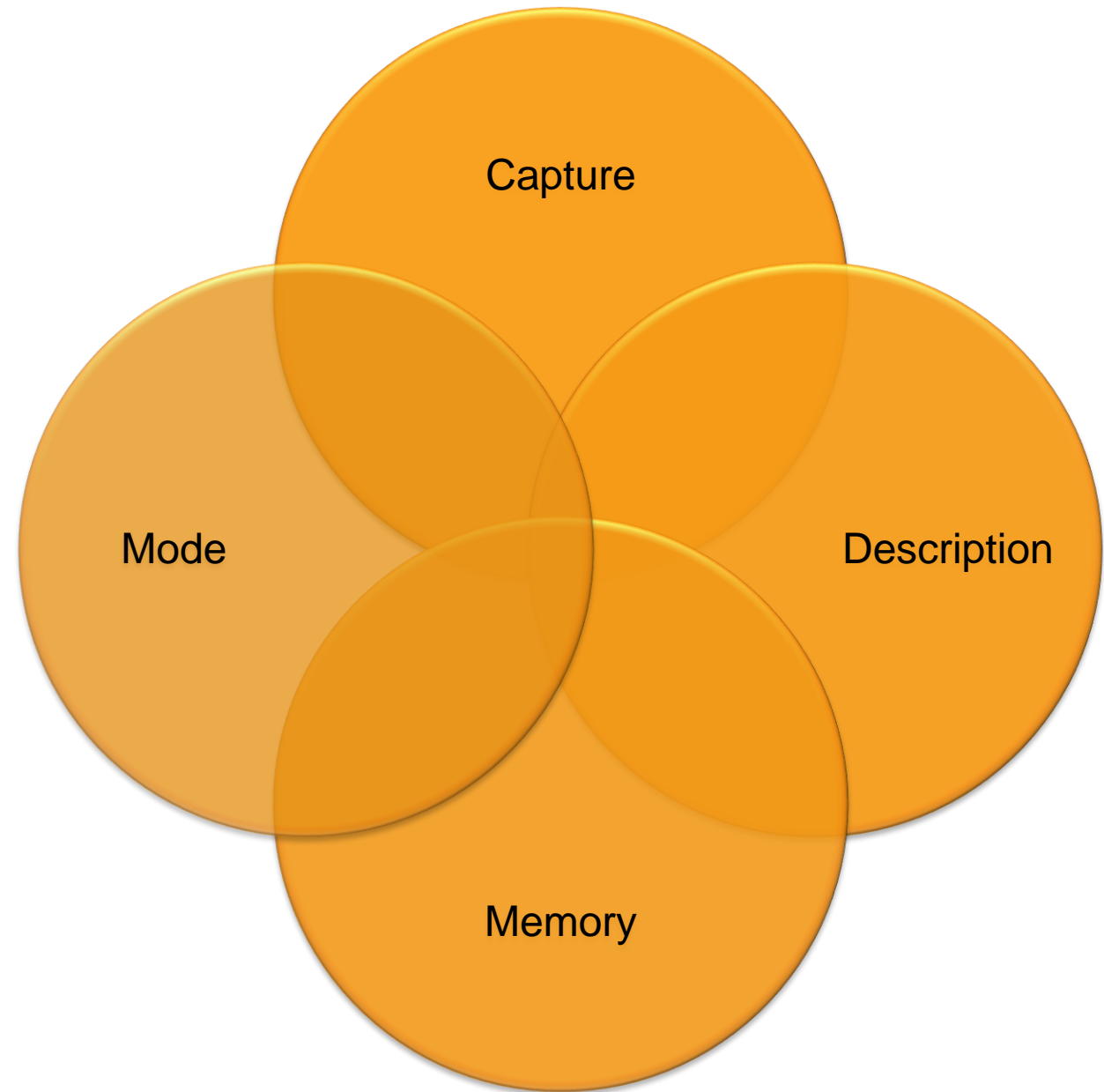
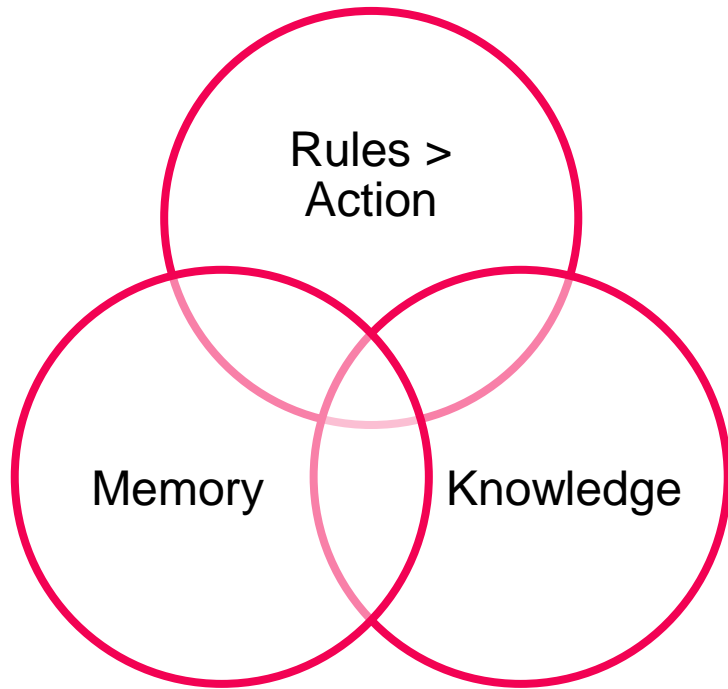
Heuristic evaluation

- Team member 1: Apply first five heuristic evaluation items
- Team member 2: Apply second five heuristic evaluation items

Café test

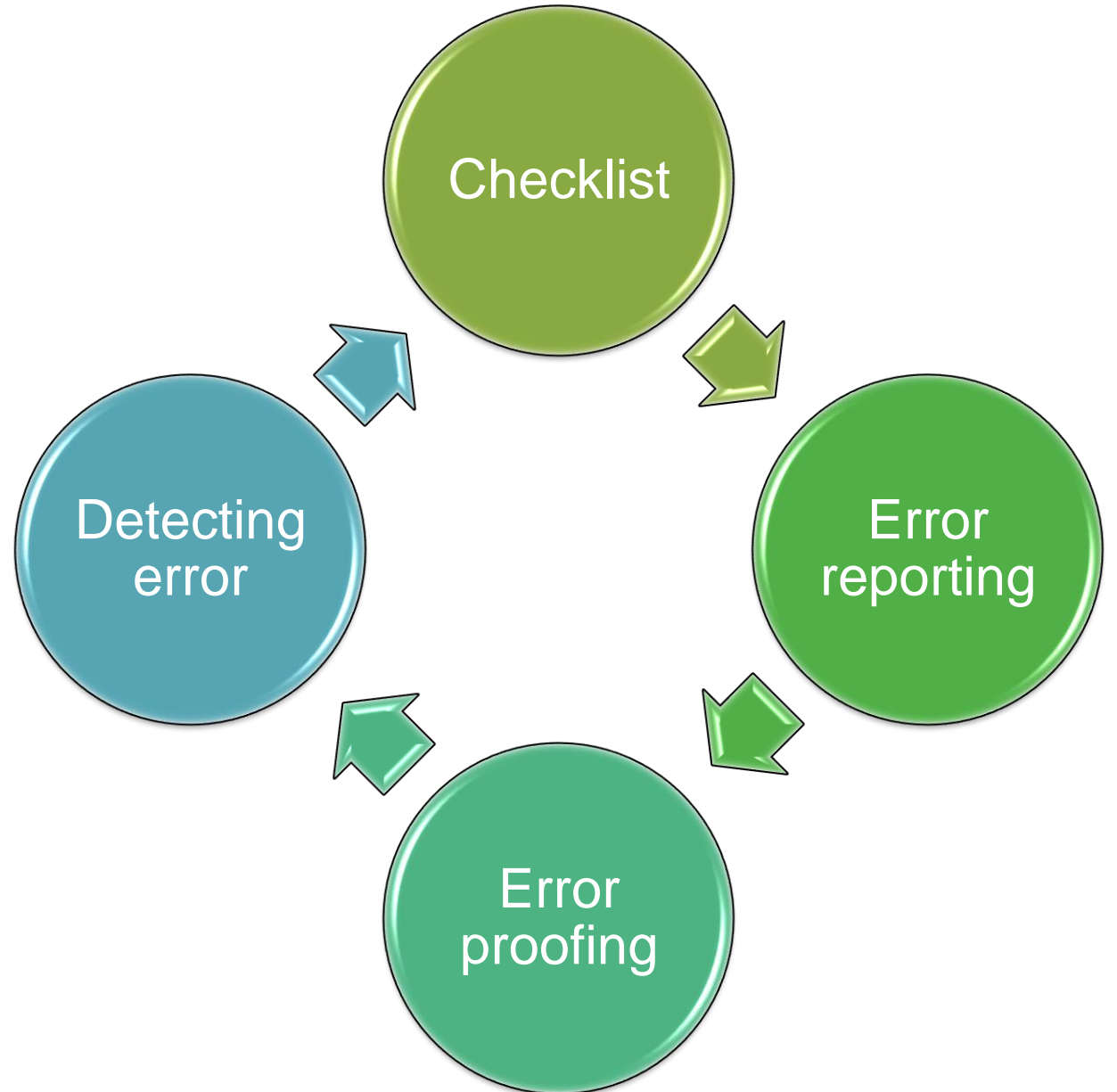
- Team member 1 – task: Join the owl club
- Team member 2 – task: Purchase a ticket to a future b-ball game

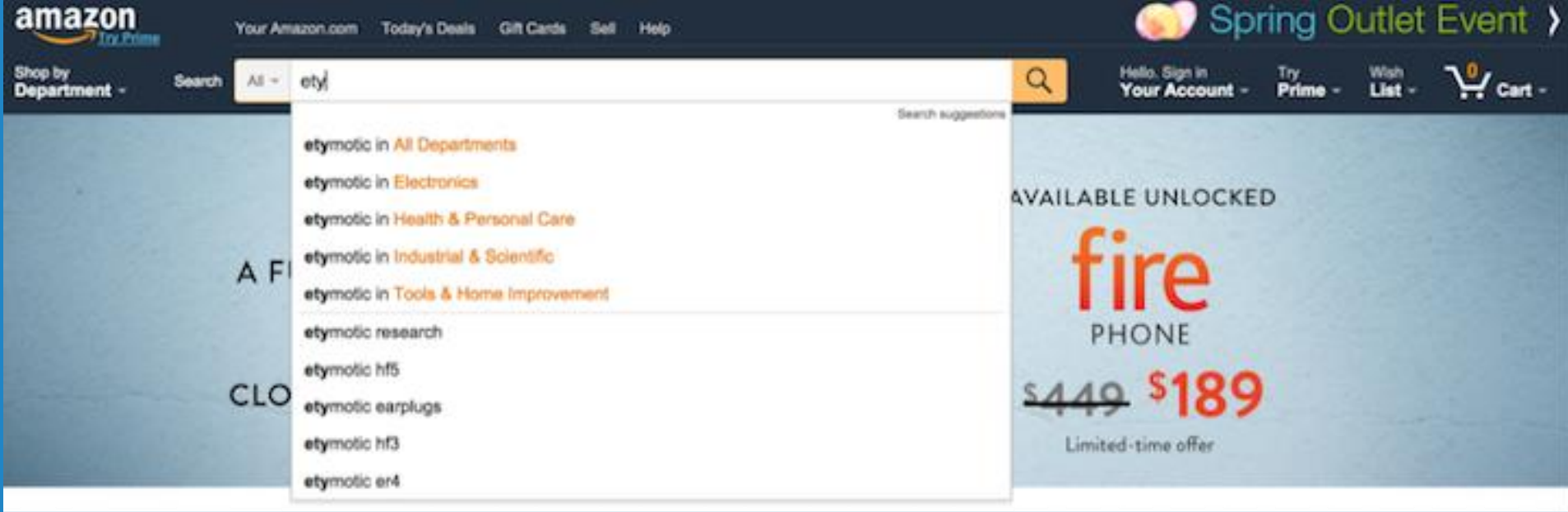
Slips vs. Mistakes



Tools

How do we ensure safe/good practices & behaviors?





Classes of Errors

In-class Activity – Slips & Mistakes

Source: <https://www.nngroup.com/articles/slips/>

Breakout

Go back to selected site

Identify the 3 most important issues
using Norman's terms

One person reports back to the class