DESIGNING *for* PEOPLE

USER EXPERIENCE & USER CENTERED DESIGN INTRODUCTION

JANUARY 2019

What is HCI and UX?

Human Computer Interaction (HCI):
Research in designing and understanding the way humans and technology interact.

User Experience (UX):
A person's perceptions of and attitudes about a particular product, system or service.

Both HCI and UX are part of a **design** tradition of building technology that **users value** and **find useful**.

We call this **user-centered design.**

2

How does HCI and UX Connect to Game Design?

- **Usefulness** is just one metric we research. What about **fun**? Engagement? Understandability?
- Fields and **philosophies** of **design** are deeply interconnected.
- Poor **UX design** can prevent players from **experiencing** your games as you intend.

3

LEARNING TOPICS FOR TODAY

- **Identify** core **UX** (user experience) **design concepts**.
- **Critique** game interfaces based on these concepts.
- Understand the importance of **users** and **context** in design**.**
- Understand the basic **process** of **user centered design**.
- Match **design** to the needs of the **users.**

4

THANK YOU TO THE CONTENT CONTRIBUTORS


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5

a place of mind FACULTY OF SCIENCE Department of Computer Science

Who am I - Izabelle Janzen

- PhD student in HCI and UX Research
  - VR Interaction, Software Personalization
- TA experience:
  - CPSC 314 (Graphics)
  - CPSC 344 (Intro to HCI)
  - CPSC 444 (Advanced Methods in HCI)
- And yes, I also play a lot of games
  - Warcraft, Warframe, MTG etc.

DESIGN CONCEPTS

Using design concepts in game design.

DESIGN PHILOSOPHY IN GAMES.

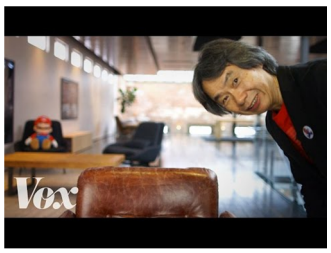
Shigeru Miyamoto

Most respected video game designer in industry.

8

Video source: https://youtu.be/K-NBcP0YUQI

KEY TAKEAWAY



- Revolutionized games with a more **user-centered** approach (not an engineering approach).
- Puts what the player wants and would find enjoyable first.
- Believes good design is often invisible (e.g., how to play is subtly implied).

9

Video source: https://youtu.be/K-NBcP0YUQI

DESIGN CONCEPTS

Design concepts are basic ideas that help us understand, describe, critique and eventually design what's happening in a user interface.

Norman's Design Concepts

Affordances	Constraints
Mapping	Visibility
Feedback	Consistency

10

Norman, D. (2013). *The Design of Everyday Things: Revised and Expanded Edition*. Boulder, UNITED STATES: Basic Books.

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3. **Feedback**

Constraints

Visibility

Consistency

11

Norman, D. (2013). *The Design of Everyday Things: Revised and Expanded Edition*. Boulder, UNITED STATES: Basic Books.

1 AFFORDANCE

"A property in which the physical characteristics of an object or environment influences its function" (Butler, Holden, & Lidwell, 2010)

Chairs afford sitting, but so do tables, boxes, and floors.

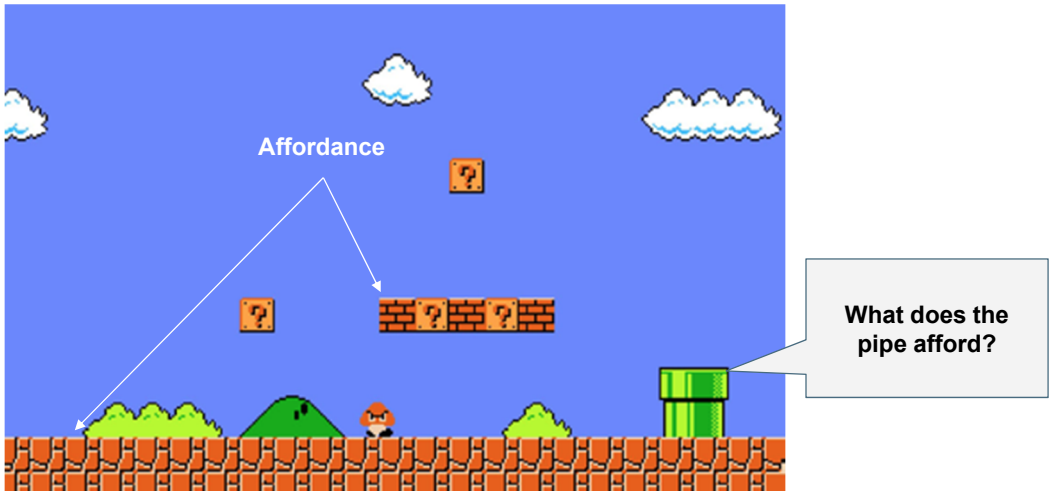



12

Butler, Holden & Lidwell (2010). Universal Principles of Design, O'Reilly

Image Source: People, Throne, Table, Box

AFFORDANCES IN GAMES

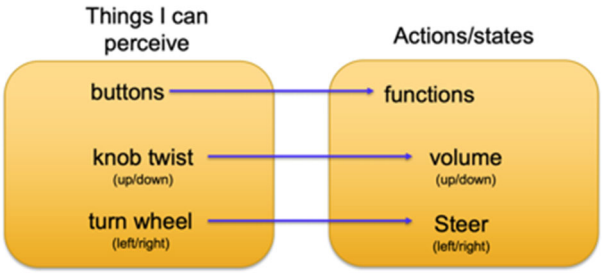


13

Image source: Pii89: YouTube

2 MAPPING

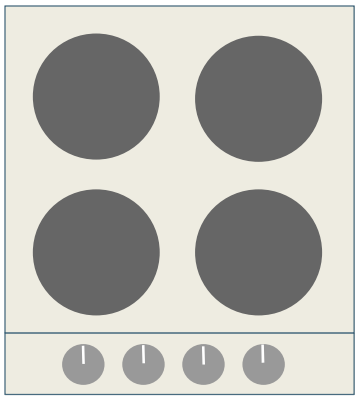
"A relationship between controls and their movements or effects. Good mapping between controls and their effects results in greater ease of use." (Butler, Holden & Lidwell, 2010)



14

UNDERSTANDING MAPPING

Stove A



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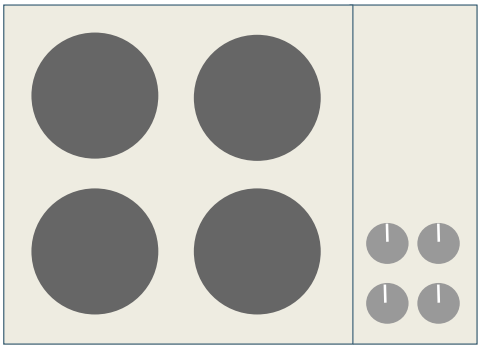
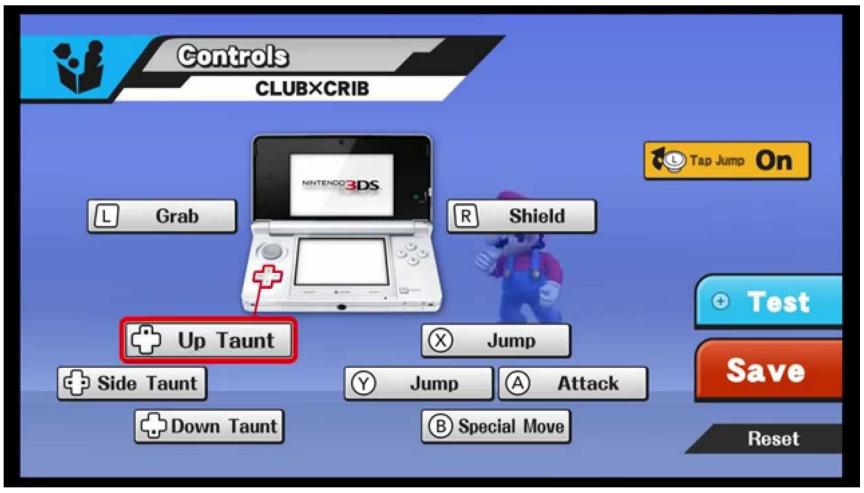


15

MAPPING IN GAMES



16

Image source: Controller Layout

3 FEEDBACK

"A relationship between variables in a system where the consequences of an event feed back into the system as input, modifying the event in the future." (Butler, Holden & Lidwell, 2010)

- The colour changes to inform us a connection has been made.
- The sound of a 'click' tells us if it connected to the port.

17

Image source: Apple

FEEDBACK IN GAMES

Feedback in games is <u>almost continual.</u>

Types of Feedback

- Aural
- Visual
- Haptic

18

Video Source: https://www.youtube.com/watch?v=rLI9XBg7wSs

It's very easy to get it wrong

19

Video Source: https://www.youtube.com/watch?v=Mt2ImZp25EU

5 mins

DISCUSSION: IDENTIFY DESIGN PRINCIPLES

Affordance: What action can be taken and how is it communicated to the player?

Mapping: What relationships exist between control and movement?

Feedback: How do we know the system acknowledges our action?

20

Video source: YouTube Typhlosion4President

USERS.

Who are they and why do they matter?

WHO IS PLAYING YOUR GAME?

Children

Adults

Animals

22

Image source: Melbourne Zoo, Children, Adults

WHERE ARE THEY PLAYING IT?

Commute

At home

On a plane

23

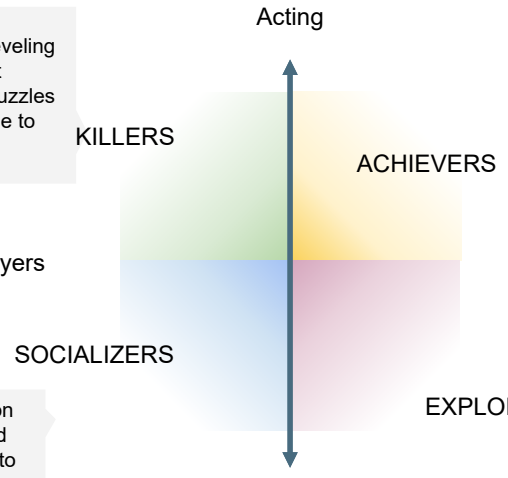
Image source: Commute, At home, Plane

WHAT MOTIVATES YOUR USERS?

Bartle's Player Types

Enjoy an extensive leveling system, difficult achievements, and puzzles that take a long time to complete.

Enjoy collections, badges, level indicators, and points.



Enjoy communication channels, hints, and amusing responses to their actions.

Motivated by curiosity and enjoy extended worlds.

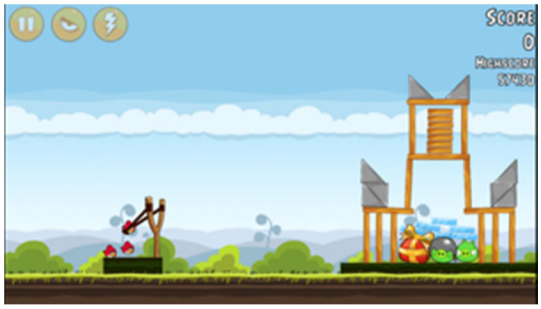
24

Bartle, R. (1996). Hearts, clubs, diamonds, spades: Players who suit MUDs. *Journal of MUD research* 1, 1: 19.

5 mins

DISCUSSION: WHO ARE THE USERS?

Who are these games designed for?



25

Image source: Angry birds, Fortnite

10 mins

ACTIVITY: WHO IS YOUR GAME DESIGNED FOR?

Take 10-minutes to discuss with your project group who you are designing your game for.

Which will have the most impact on your design? In what ways?

- Bartle's player types
- Age range
- Culture
- Gender identity
- Language skill
- Context of use
- Experience level (with platforms)
- Platforms (computer, mobile devices, TV game consoles)

User Handout

26

10 mins

TAKE A BREAK AND EXPLAIN TO SOMEONE ELSE

Reform discussion groups with people not in your project group.

Explain why your game would be engaging for your target audience, and which audiences it is not targeted at.

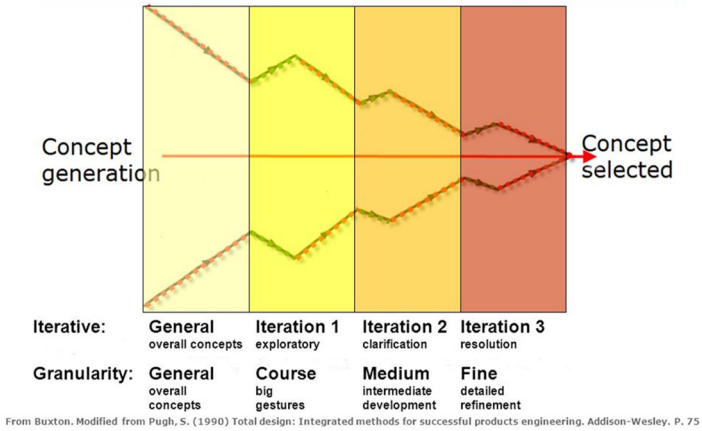
27

The Design Process.

How do you make something fun that your users will like?

BUXTON'S DESIGN FUNNEL

From
Sketch



From Buxton. Modified from Pugh, S. (1990) Total design: Integrated methods for successful products engineering. Addison-Wesley. P. 75

To
Prototype

29

The Goal: Fail Early, Fail Often, and Iterate on Feedback

Designing something that people will use is both an art and a science. Iteration is how you make it better.

Some reasons why:

- Early feedback ensures **design** meets **users'** needs.
- Throwing around ideas is **quick**. Fixing a bad design is **expensive**.
- **No idea** is perfect the first time around.

30

What Should I Design?

Use Brainstorming!

Rules to a Positive Brainstorming Session

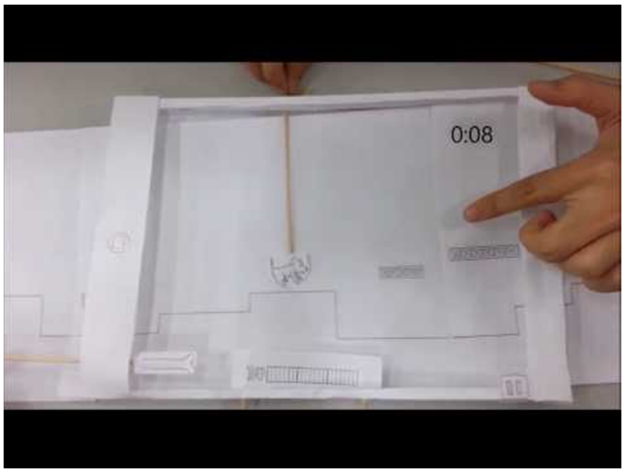
1. Set a time limit
2. Start with a goal and stay on topic
3. **Defer judgement or criticism**
4. Encourage weird, wacky, and wild ideas.
5. Aim for quantity
6. Build on others' ideas
7. Be visual
8. One conversation at a time

31

Sources: Interaction Design Foundation

How do I Start Designing?

Sketch it in a low fidelity prototype!



32

Sources: Paper Prototype, Greyboxing

How do I know if I'm going in the right direction?
Ask someone to play it and see what they think!

Principles for Testing Low-Fidelity Prototypes:

- Don't commit to **one** approach, design several and **compare**
- **Some** feedback is better than **no** feedback
- The point is that your **users** enjoy it, not you
- Try to drill down on feedback. If they just say it's "fun", ask **why?**

33

It seems to work. How do I take it to the next level?
Make the jump to a medium fidelity prototype!

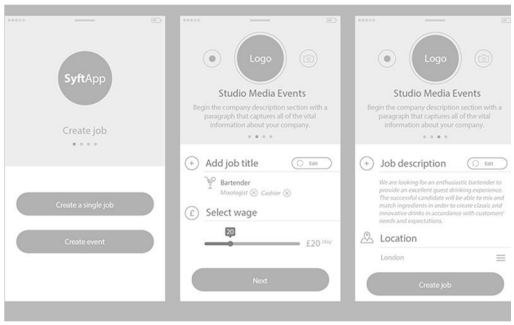
Principles for Medium Fidelity Prototyping:

- Identify **questions** about your design **before** starting to code.
- Build the **minimum viable prototype** to test those questions.
- Drill down and fully implement one aspect of the **design**, be **selective.**
- Get it right in **black and white** first.

34

Very Common Approaches: Greyboxing or Wireframing

If a game is fun without all the flashy art, it's definitely fun



35

Sources: Wireframing, Greyboxing

When Should I Design What?

Here are three critical elements of a user experience that need to be designed:

Player Journey: The mechanics and story should enhance each other.

Tone and Feel: The visuals and feedback should match the gameplay.

Real Players: Won't do what you expect (except find lots of bugs).

Let's talk about **when** and **how** they should be addressed.

36

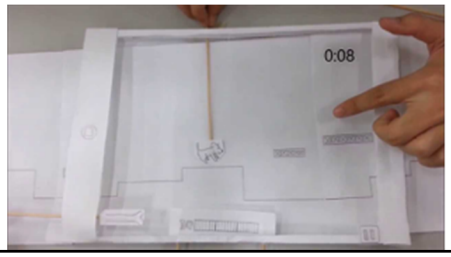
Sources: TinkerBot Games

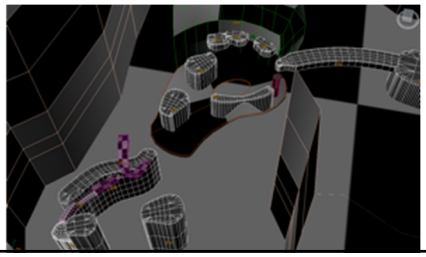
PLAYER JOURNEY

Question: How should your game take the player on a journey that you want them to experience? Consider core gameplay mechanics, high level setting and plot etc.

When: Early to mid design. This is the very first thing you should consider, but you'll continue to refine it.

How: Build several low-fidelity prototypes illustrating different approaches to a main game loop and/or story. e.g. using paper or greyboxing.
Use it to get people to play with it and give feedback on fun and engagement.





37

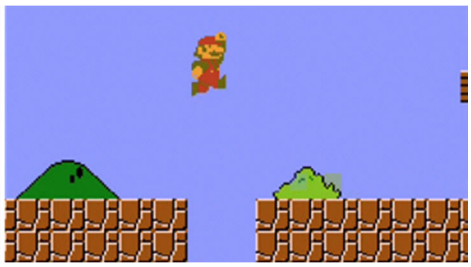
Sources: Paper Prototype, Greyboxing

TONE AND FEEL

Question– What 'tone' or 'feel' would enhance the experience for players? Consider visuals, audio, feedback, dialog, narrative etc.

When: Mid to late design.

How: Build wireframe esque **medium-fidelity prototypes** with limited interaction and some artwork but not very polished. Get feedback on how well it supports the journey.



38

Sources: Limbo, Mario

REAL PLAYERS

Question: How will the finished product be experienced by end users? Consider balancing gameplay, fine tuning difficulty, polishing art, fixing bugs etc.

When: Late design, in the lead up to project release.

How: Playtesting and evaluation of high-fidelity prototypes with a finished or close-to-finished game (e.g. alpha/beta versions).

39

Sources: Overwatch Terraria

Matching a Design to your Users.

How do you evaluate a design to be sure it is fun or engaging to your audience?

The Rub: Testing is a *lot* Harder than "Just" Asking Users to Play

Otherwise UX and HCI Research Wouldn't be an Entire Field!

Some Reasons Why:

- Who even **is** the **user**? What do they ***really*** care about?
- Interviews/playtests need careful structure -> **expensive**
- What **test** do we even run anyway?
- How can we be sure our **conclusions** reflect our **users**?

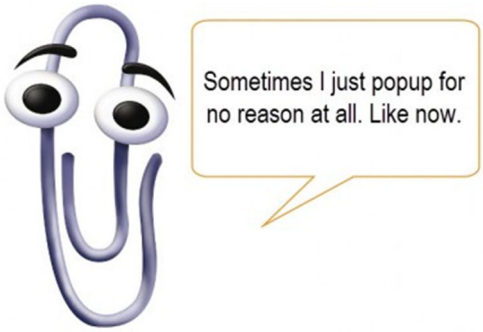
41

In Case you Don't Believe Me: Interviewing is *Hard*

42

Sources: Graham Gibbs

Getting UX Wrong is Easy and Expensive (Even for Big Companies)



Sources: Jim Hillier

43

Some Methods you Might Want to Look Up

Low cost (quick and cheap) and perfect for this course, but we are out of time

Cognitive Walkthrough: Pretend you're a new user. For every step in the interface, ask yourself questions like:

- Do I know what to do next?
- Can I see how to do that?
- Will I understand the effects of my action?

Heuristic Evaluation: Walk through each part of the interface. Rate each aspect on a series of design guidelines chosen ahead of time.

44

WHAT YOU LEARNED TODAY

- **Identified** a few core **UX** (user experience) **design concepts**.
- **Critiqued** game interfaces based on these concepts.
- Understood the influence of **users** and **context** on design**.**
- Understood the **user centered design process**.
- Started to Match your design to the **needs** of your **users.**

45

WANT TO KNOW MORE ABOUT UX?

CPSC 344

Introduction to Human Computer Interaction Methods

Basic tools and techniques, teaching a systematic approach to interface design, task analysis, analytics and empirical evaluation methods.

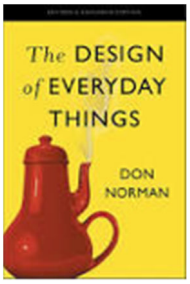
CPSC 444

Advanced Methods for Human Computer Interaction

Design and evaluation methodologies and theories; formal models of the user including visual, motor, and information processing; advanced evaluation methods including laboratory experiments and field studies; HCI research frontiers.

46

REFERENCES



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Desurvire, H., & Wiberg, C. (2009, July). Game usability heuristics (PLAY) for evaluating and designing better games: The next iteration. In International Conference on Online Communities and Social Computing (pp. 557-566). Springer, Berlin, Heidelberg.

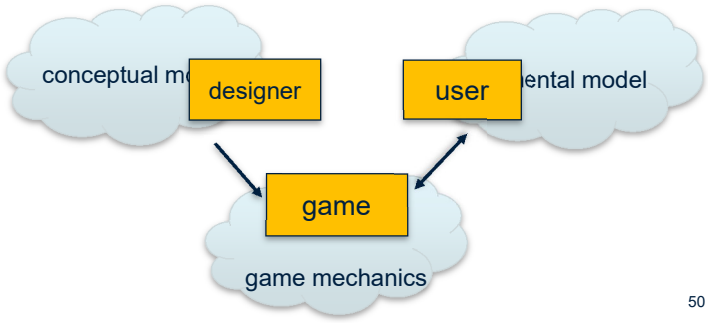
47

THE UNIVERSITY OF BRITISH COLUMBIA

APPENDIX

COGNITIVE WALKTHROUGH

mental model: what the USER thinks the system works
conceptual model: how DESIGNER wants to portray system to user
task examples: design-independent descriptions of tasks that representative users will want to perform.



50

COGNITIVE WALKTHROUGH

An expert evaluator (you!) evaluates the design in the context of your tasks. Does the interface design communicate the conceptual model? How well does it support forming a good mental model?

Steps:

1. break task down into steps of user actions
2. carry out each step on the existing interface and ask:
    - Q1: will the user know what to do?
    - Q2: will the user see how to do the action?
    - Q3: will the user correctly understand the system response?
3. if you locate a problem, mark it & pretend it has been repaired; then go on to next step.

51

HEURISTIC EVALUATION

A type of user interface (UI) or usability inspection where an individual, or a team of individuals, evaluates a specification, prototype, or product against a brief list of succinct usability or user experience (UX) principles or areas of concern.

Gameplay	Entertainment	Game Mechanics
Enduring Play	Emotional Connection	Documentation or Tutorial
Challenge, Strategy, & Pace	Coolness & Entertainment	Status & Score
Consistency in Game-world	Humour	Feedback
Game Goals	Immersion	Terminology
Variety of Players & Game Styles		Burden on Player
Players		Screen Layout
		Navigation
		Error Prevention
Source: Game Heuristics		Game Story Immersion

10 mins

ACTIVITY: HEURISTIC EVALUATION

1. Look at this simple online game. http://www.foddy.net/Athletics.html
1. Go through the handout provided and select a relevant category.
1. Review the game using these heuristics.
1. If we have time, we'll discuss why you chose those heuristics and what you discovered during the process.

Heuristics Handout

53

5 mins

DISCUSSION: HEURISTIC EVALUATION

WHAT HEURISTICS DID YOU CHOOSE? WHY?

WHAT DID YOU LEARN? DID YOU FIND ANY ISSUES?

54

PLAYER JOURNEY

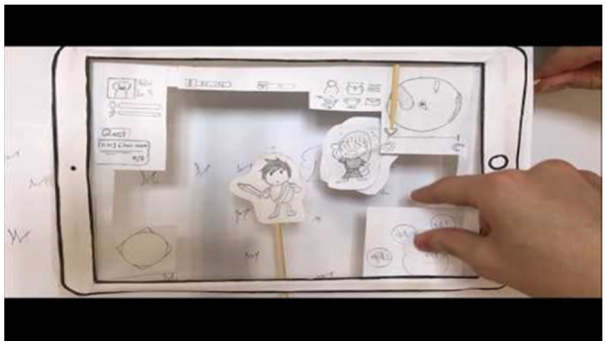
need link to this video.

55

15 mins

ACTIVITY: YOUR TURN!

BUILD A QUICK PAPER PROTOTYPE (15 MIN) THAT INCLUDES YOUR MAIN GAME LOOP.



56

SIGNIFIERS

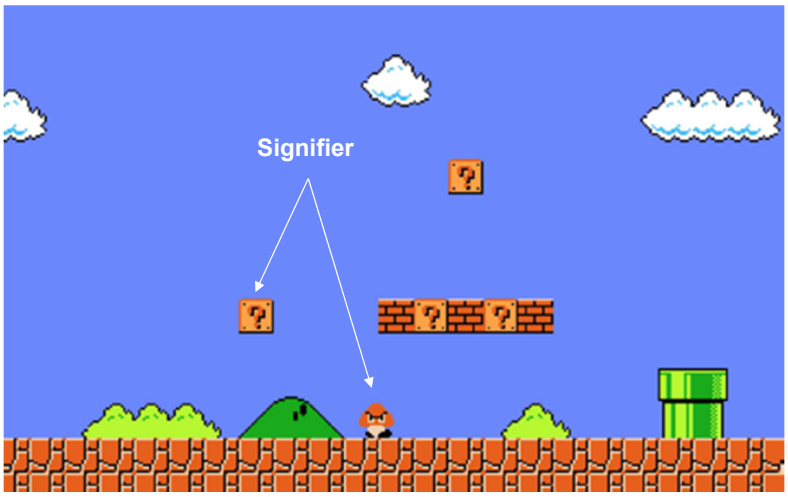
"Any mark or sound, any perceivable indicator that communicates appropriate behavior to a person…. Signifiers are signs, perceptible signals of what can be done." (Norman, 2013)

A button on a keyboard affords pressing, but the letter (signifier) is what communicates to the user what can be done.

57

Image Source: Noun Project

SIGNIFIERS IN GAMES



A flashing question mark in the game prompts inquiry and a player may attempt to interact with it.

58

image source: Pii89: YouTube