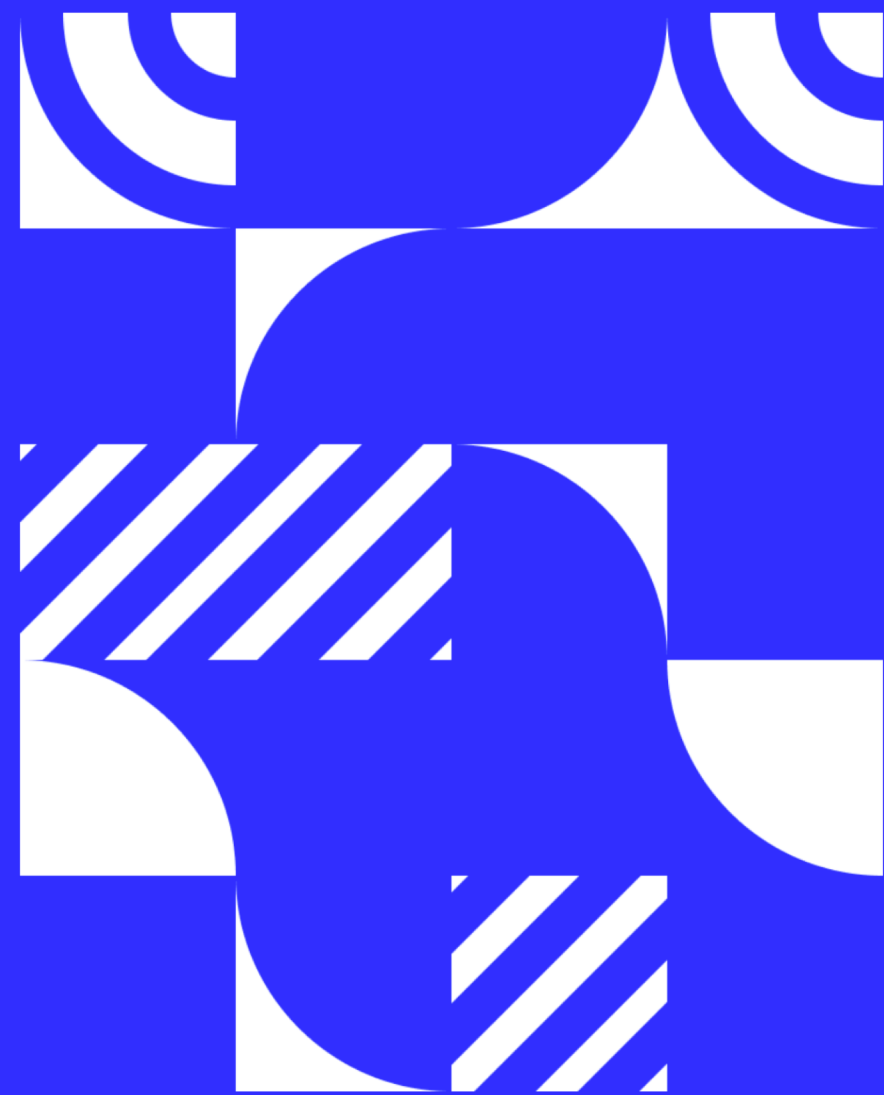
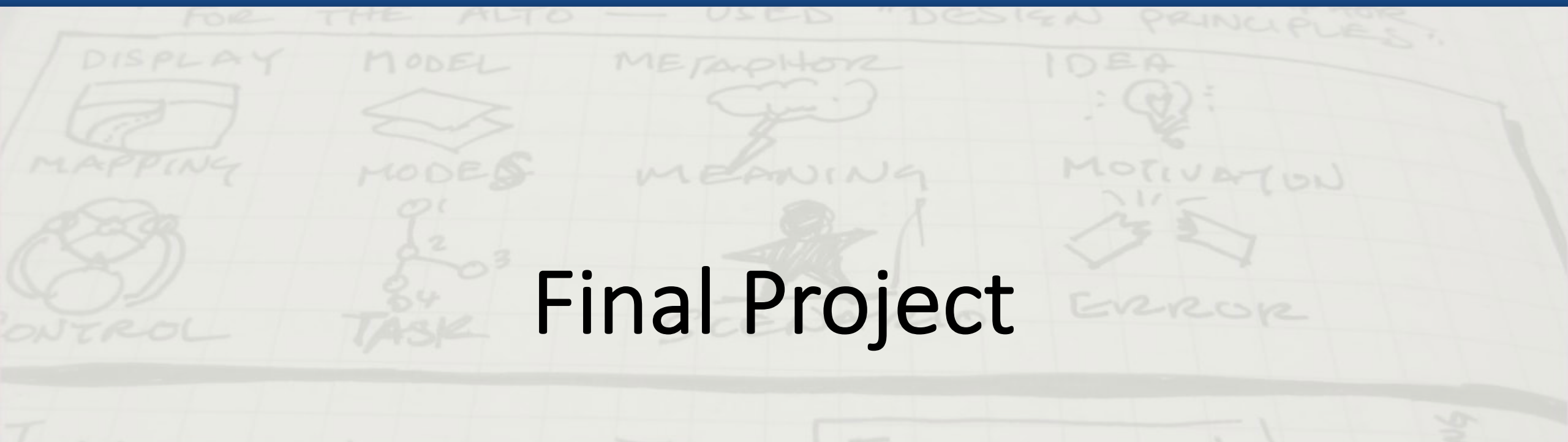


Welcome to Columbia's Design Community!

From the team that brought you design day, we are launching a **summer session** of workshops, projects, design challenges, and more!

[Join Us!](#)





Final Project

No screens



Prof. Lydia Chilton
COMS 4170
4 May 2020

Say your name



Information Hierarchy

Websites display information in a way that helps users accomplish a goal.

```
i:Exit --PrevPg <Space>NextPg v:View Attach. d:Del r:Reply j:Next ? :Help
624 Aug 03 T Martinez ( 37) Loans with tiny points are here now
625 0 Jul 01 R. Jackson ( 123) Loans with tiny rates are here now
626 Aug 05 Benjamin E. Mag ( 50) Long time no hear
627 May 17 Krista Aaron ( 44) long time no see....
628 0 Jun 03 Josiah House ( 35) Looking for a hot date tonight, tomorrow, or next week?
629 Jul 03 Brigitte I. Hay ( 63) Looking for a N.ew H.0me?
630 May 17 Joe Burns ( 58) Looking for you
631 Jun 01 Save in a poor ( 145) Low Rate Consolidation Mortgage Loan
632 + Jul 02 Igiel@virtualig ( 2) LowCost SoftWare OnCD
+ Mult: Mail/junk/spam (Msgs:950 Old:142 10M) -- (subject/date) (66%)
Date: Mon, 17 May 2004 03:40:09 +0100
From: Krista Aaron <Christinefeminine@highstream.com>
Subject: long time no see....

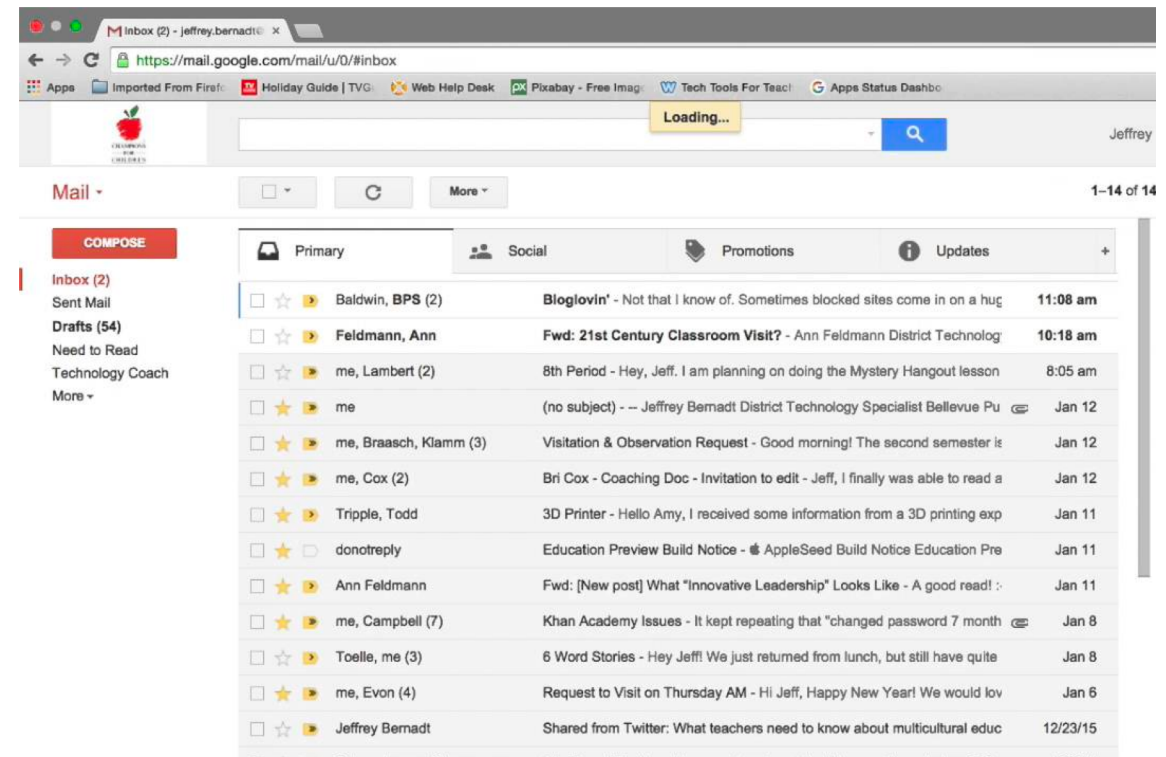
[--- Autoview using /usr/bin/elinks -force-html -dump '/tmp/mutt.html' ---]
My name is Jen and I'm new to this dating thing. I've checked out your profile
you put up and it's interesting. => I just want to get to know you a little
better if you don't mind, come check my profile out at:

www.livejen.com/chat.html

I also got a webcam so we can make it interesting, anyways hope you get back to
me.
bye :)

gxsnkxxgnduvy.jwyceudc.jobxs
zcozccrociiesbehgbpow
rnxlfnjqbplipdkgwuyqofracsz
xmqaubxsbjrppoibvlpfhqowldtp
bixhghvrxrtggfcoqcofzycb
hugzffaffulsklpzhrfxbtt
btpztlfotqmmoaiwlosqv
- 627/950: Krista Aaron long time no see.... (66%)
Key is not bound. Press '?' for help.
```

Pine text-based email client



GMail

No walls of text!

You are cordially invited to Robert and Alexandra's delectable after dinner party. Wine and nibbles will be served.
When: February 20th, 2019 at 9:30pm.
Where: the pad. If you need directions, ping us. Kindly let us know if you will be attending by February 1st.

You are cordially invited to

**Robert and Alexandra's
delectable after dinner party.**

Wine and nibbles will be served.

When: **February 20th, 2019 at 9:30pm.**

Where: **the pad.** If you need directions, ping us.

Kindly let us know if you will be attending
by **February 1st.**

Users have a spotlight of attention.
Designers use a visual information hierarchy
to guide users' attention

You are cordially invited to
Robert and Alexandra's
delectable dinner party.

Wine and nibbles will be served.

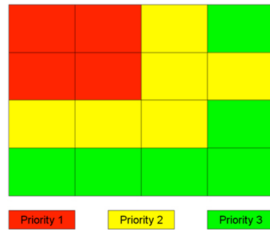
When: **February 20** at 9:30pm.
Where: **the pad.** If you need directions, ping us.

Kindly let us know if you will be attending
by Feb 15.

Seven tools for visually indicating importance

You are cordially invited to
Robert and Alexandra's delectable after dinner
party.
Wine and nibbles will be served.
When: February 20th, 2018 at 9:30pm.
Where: the pad. If you need directions, ping us.
Kindly let us know if you will be attending by
February 1st.

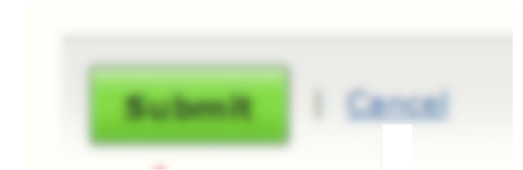
Conceptual grouping



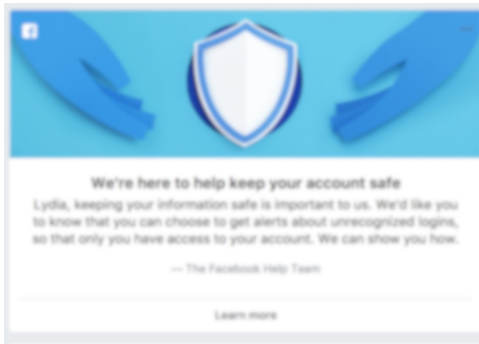
Location



Whitespace



Size



Images

You are cordially invited to
**Robert and Alexandra's
delectable after dinner party.**
Wine and nibbles will be served.

Contrast



Color

Use multiple tools. Use color last.
Use **size, whitespace** and **contrast** instead.

You are cordially invited to Robert and Alexandra's delectable after dinner party. Wine and nibbles will be served.
When: February 20th, 2019 at 9:30pm.
Where: the pad. If you need directions, ping us. Kindly let us know if you will be attending by February 1st.

You are cordially invited to
Robert and Alexandra's delectable after dinner party.
Wine and nibbles will be served.

When: **February 20th, 2019 at 9:30pm.**
Where: **the pad.** If you need directions, ping us.

Kindly let us know if you will be attending by **February 1st.**

Home

Impressionism

Post Impressionism

Quiz

1. explain goal of site
(help user decide if
they are interested)

Welcome to (Post)-Impressionism!

Learn to differentiate impressionist paintings from
post-impressionist paintings

2. Start now!
(entice them to start)

Explore the art
movements

Test yourself

3. Test yourself
(Roadmap to future)

Welcome to (Post)-Impressionism!

Learn to differentiate impressionist paintings from
post-impressionist paintings

1. explain goal of site
(help user decide if
they are interested)

2. Start now!
(entice them to start)

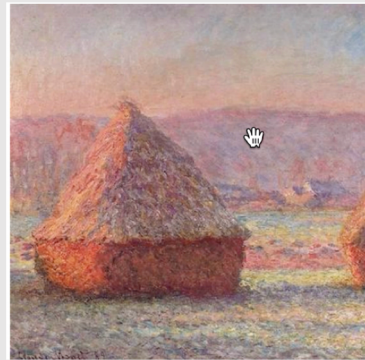
Explore the art
movements

Test yourself

3. Test yourself
(Roadmap to future)

(Post)-Impressionism

Learn to differentiate impressionist paintings
from post-impressionist paintings

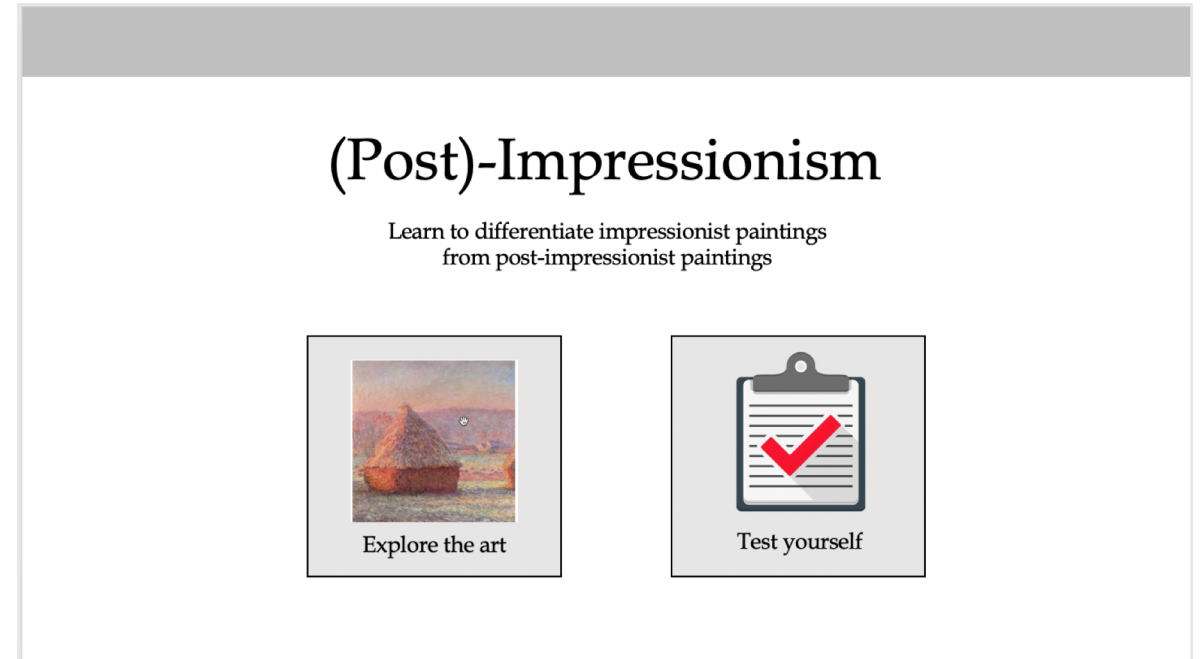
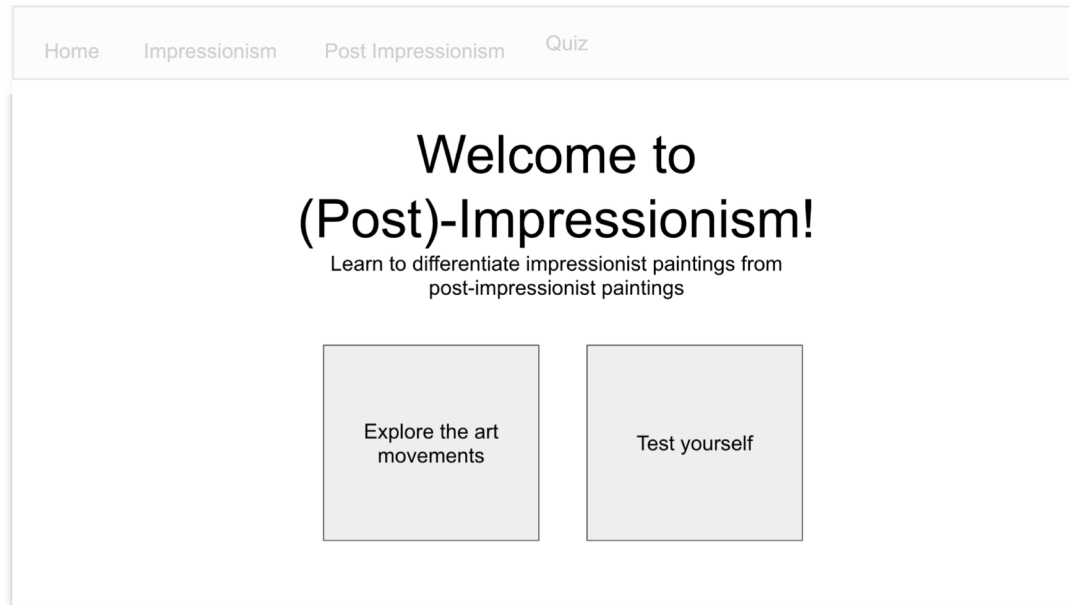


Explore the art



Test yourself

Much better! What did I do to improve it?



How do we know it's better?



It passes the squint test.

Simulated User Experience Video

How not to explain your site:

(Post)-Impressionism is a website for student in Columbia University's Art Hum class who are struggling to recognize the difference between impressionism and post impressionist paintings. These are the hardest two kinds of paintings to tell apart. It's fairly easy to tell realism apart from surrealist painters like Dali, but the Impressionism and Post-Impressionism movements are close together in time, and share many of the same ideas. However, there are subtle differences between them like type of brushstrokes, subject matter, and color choice that can help you differentiate them.

Advice on narrative

“Show don’t tell”

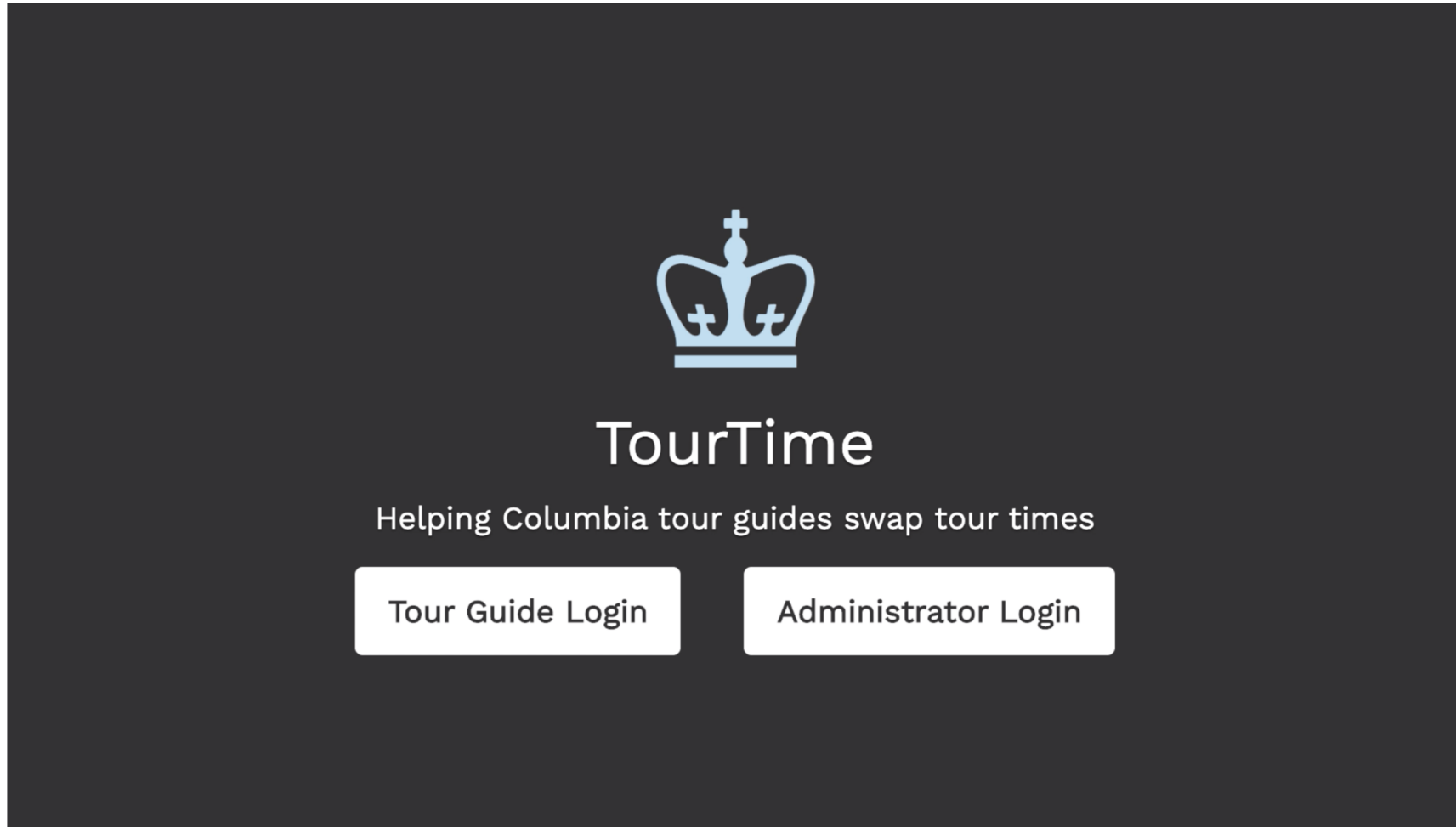
Why?

Simulated User Experience Video

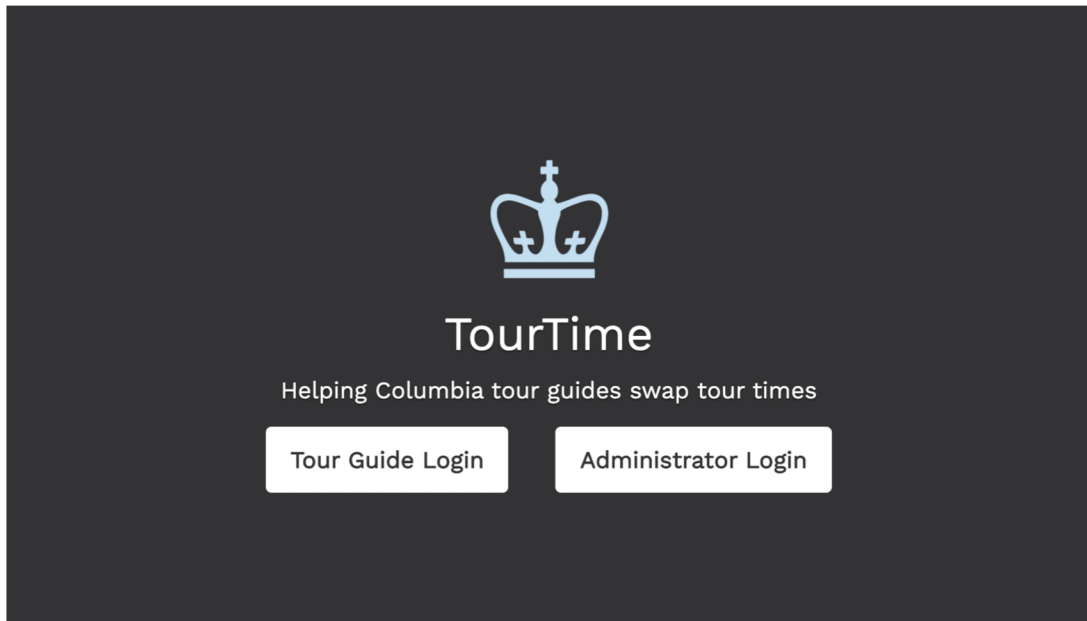
- **Don't tell** us what your site is trying to do.
- **Show** a user going through the site and experiencing it.

This is hard!

Flawed example #1



Could work on:



To much exposition up front

I like:

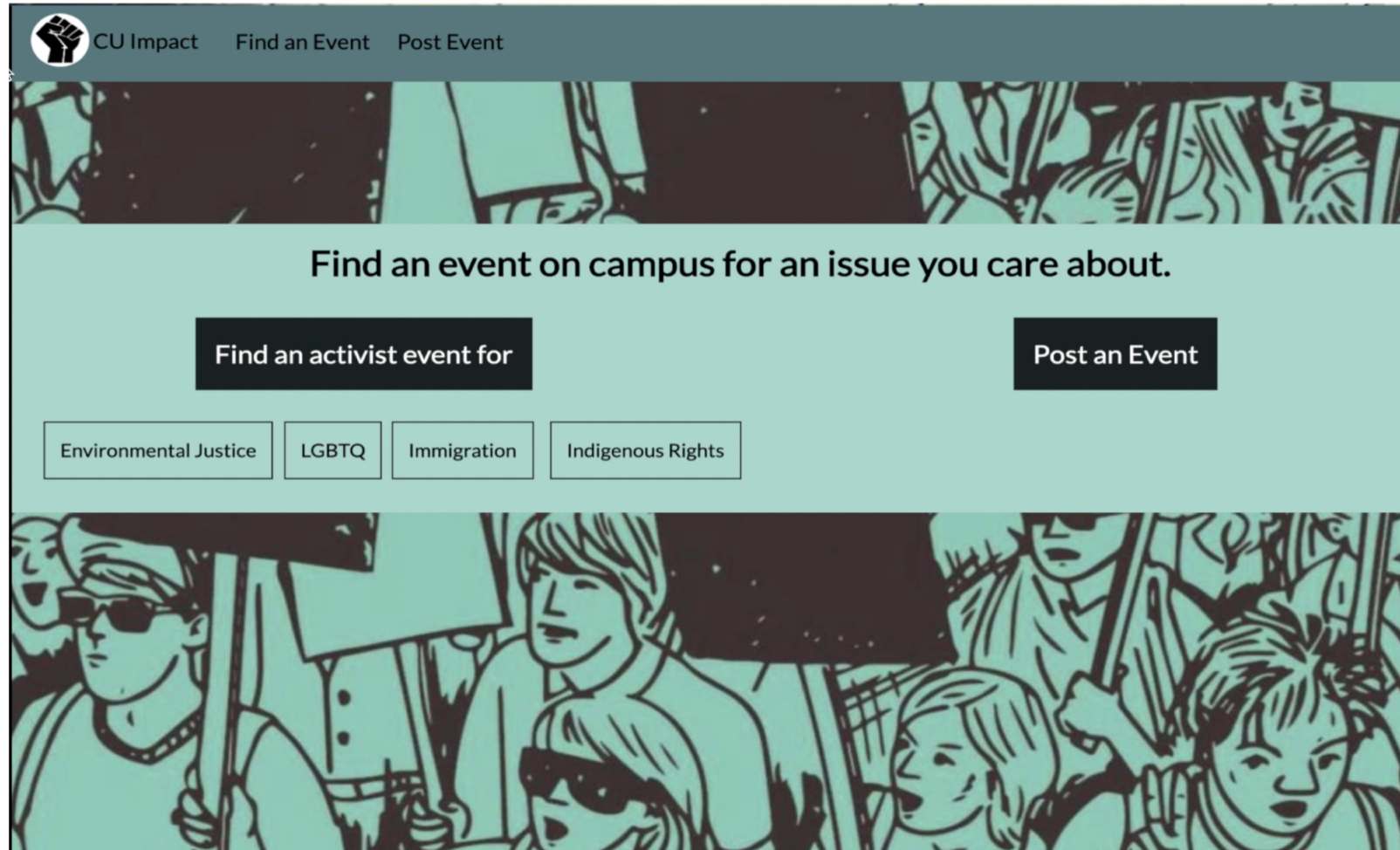


This is Sophie.
She is a tour guide at Columbia.

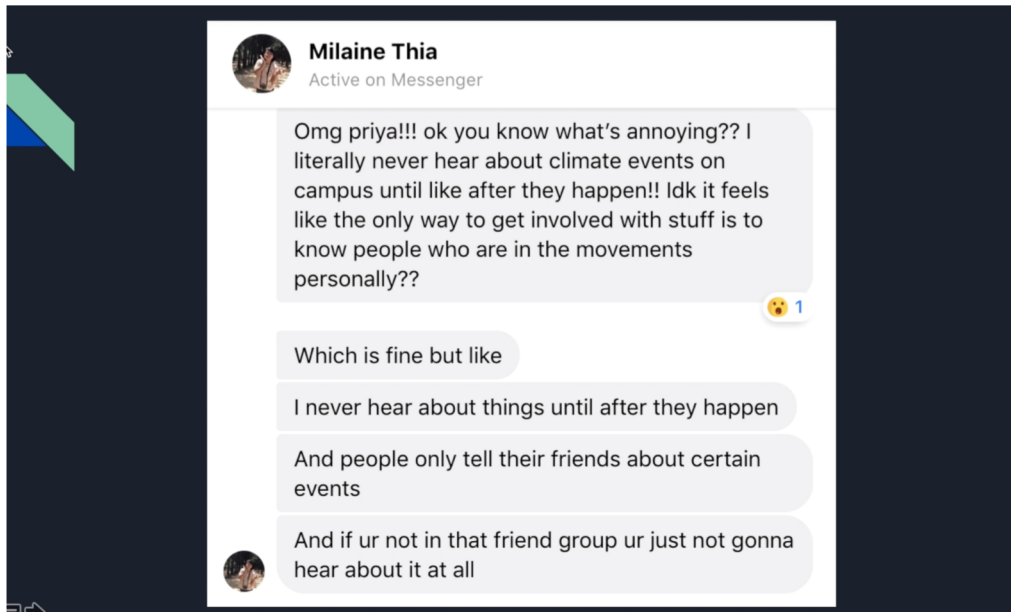


User-based narrative easy to follow

Flawed example #2



Could work on:



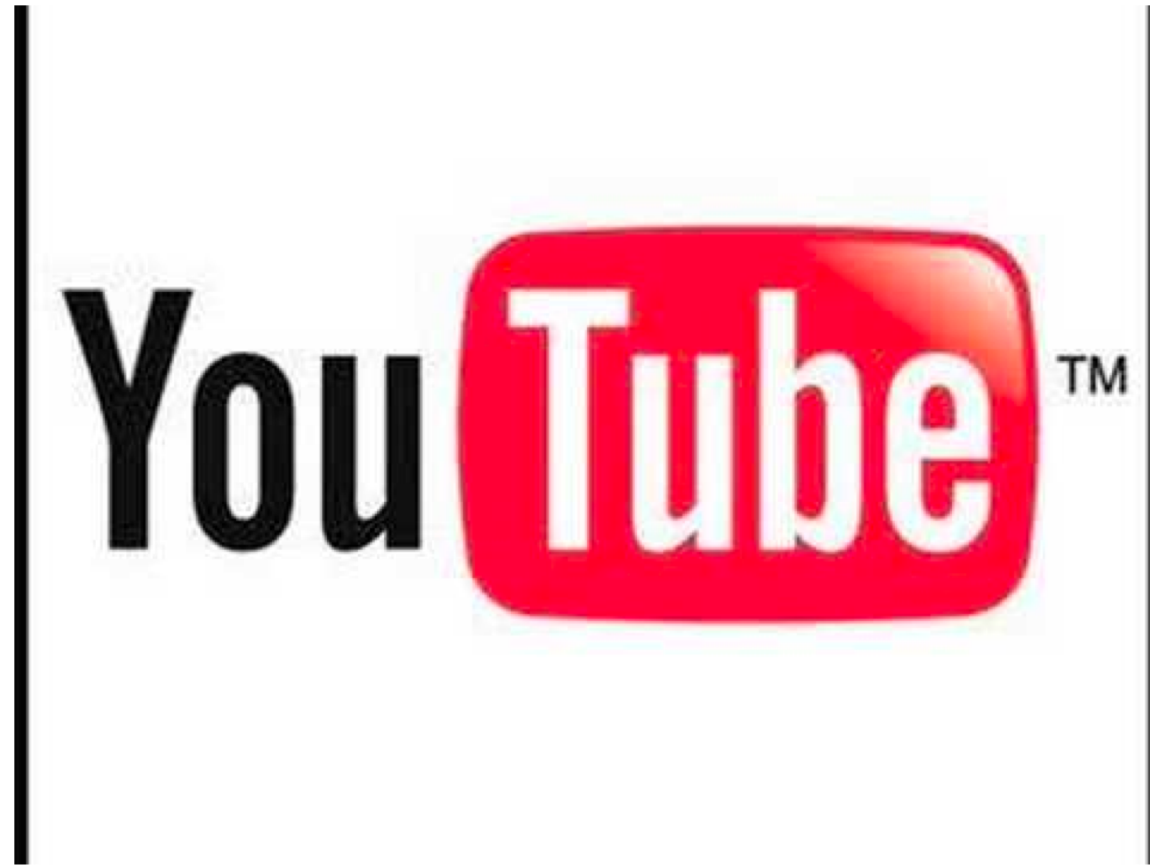
To much exposition up front

I like:



User-based narrative easy to follow

Upload your video to YouTube





Review

No screens



Prof. Lydia Chilton
COMS 4170
4 May 2020

Say your name



Part 1:

Build websites that suit
the needs and abilities of users.

Users interact with a system to accomplish a goal

Buy a book

The Design of Everyday Things: Revised and Expanded Edition and millions of other books are available for



The Design of Everyday Things: Revised and Expanded Edition Paperback – November 5, 2013
by Don Norman (Author)
★★★★★ 569 customer reviews
#1 Best Seller in Data Modeling & Design

Qty: 1

Kindle \$11.99 Paperback \$12.92 ✓pri

Add to Cart

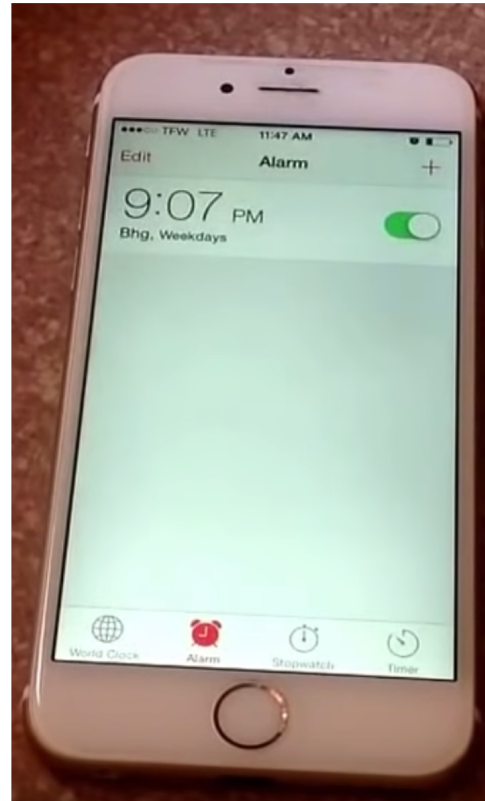
or 1-Click Checkout

Buy now with 1-Click®

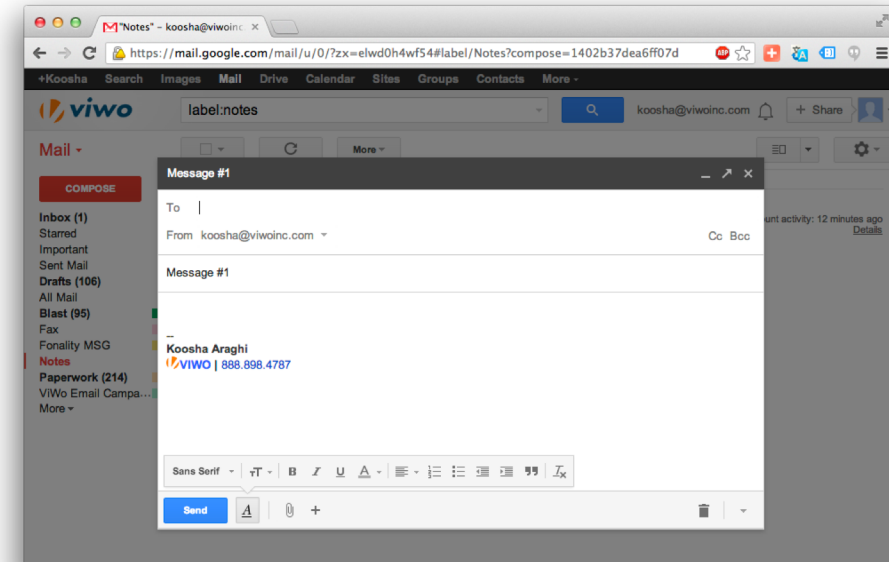
The ultimate guide to human-centered design. Even the smartest among us can feel inept as we fail to figure out which light switch or oven burner to turn on, or whether to push, pull, or slide a door. The fault, argues this ingenious—even liberating—book, lies not in ourselves, but in

[Read more](#)

Set an alarm



Send an email



User Interfaces should be designed to help users accomplish a goal.

Guide users' attention to important bits of information



Interact with the system in ways that provide clear actions and feedback.



Allow users to navigate through the system in to meet their goal.



The designer must create the subgoals and interactions to help them accomplish it.

Goal: Buy a book

Subgoal:

Find it

Add to cart

Enter payment info

Place order

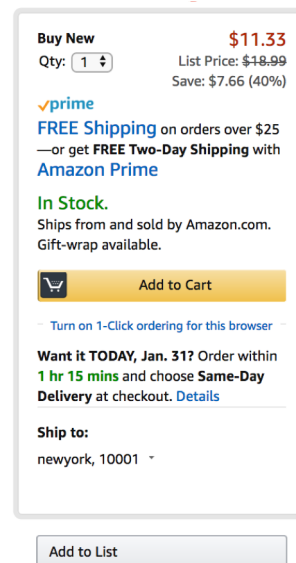
Interaction:

Type, click

click

Type, click, point

Click

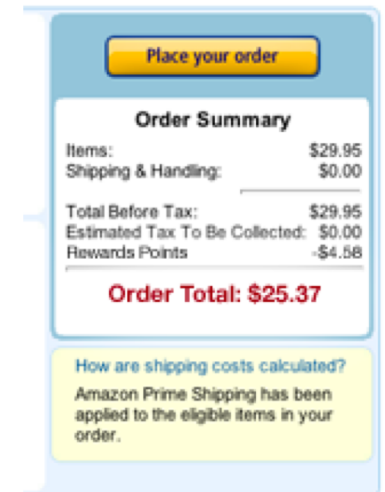


Name (as it appears on your card)

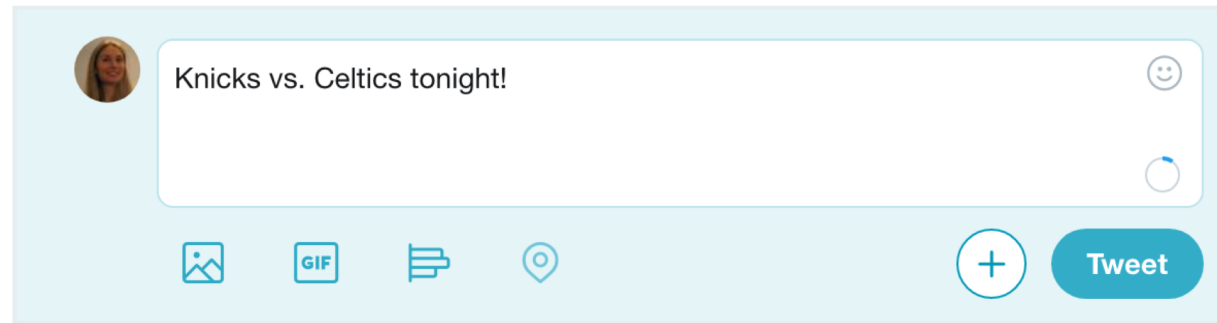
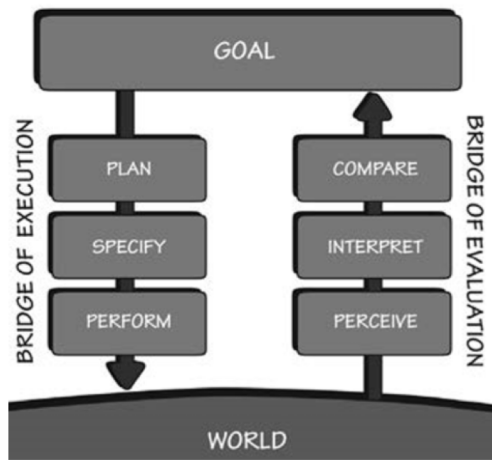
Card number (no dashes or spaces)

Expiration date

Security code (3 on back, Amex: 4 on front)

Know the users' goals and design interactions as: **execution and evaluation**

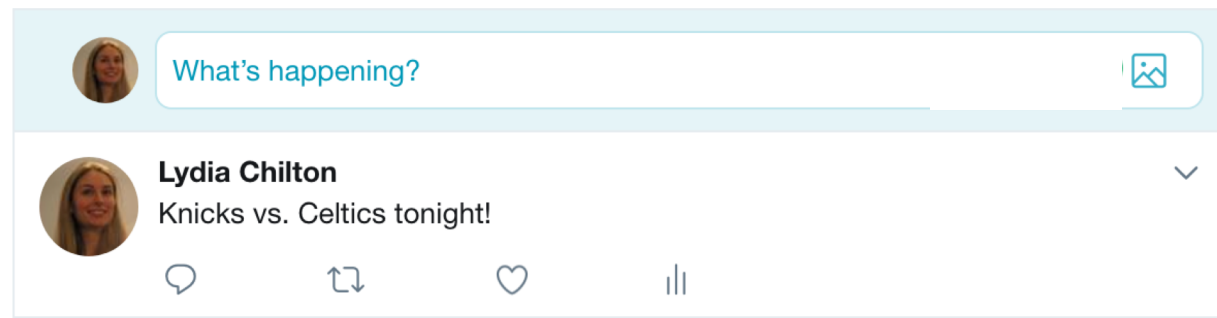


Execution

Plan the action

Specify the action sequence

Perform the action sequence





Evaluation

Perceive the state of the world

Interpret the perception

Compare the outcome with the goal

Following instructions sux. Why?

how to setup windows  

All Videos Images Shopping News More Settings Tools

About 22,600,000 results (0.59 seconds)

Clean Install

1. Enter your computer's BIOS. ...
2. Find your BIOS's boot options menu. ...
3. Select the CD-ROM drive as the first boot device of your computer. ...
4. Save the changes and restart the computer. ...
5. Shut off your computer. ...
6. Power on the PC and the Windows 7 installation disc in your CD/DVD drive.
7. Start your computer from the disc.

More items...

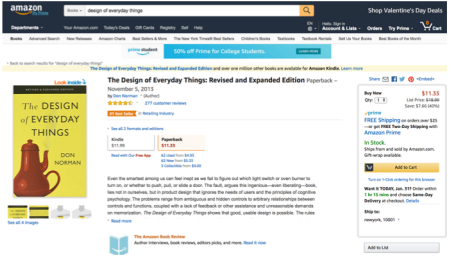
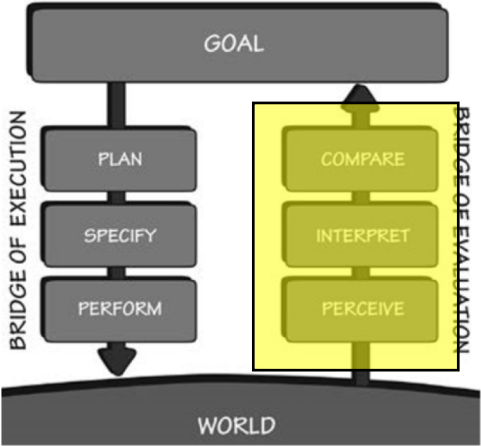
[How to Install Windows 7 \(Beginners\) \(with Pictures\) - wikiHow](https://www.wikihow.com/Install-Windows-7-(Beginners))
[https://www.wikihow.com/Install-Windows-7-\(Beginners\)](https://www.wikihow.com/Install-Windows-7-(Beginners))

Unexpected things happen.

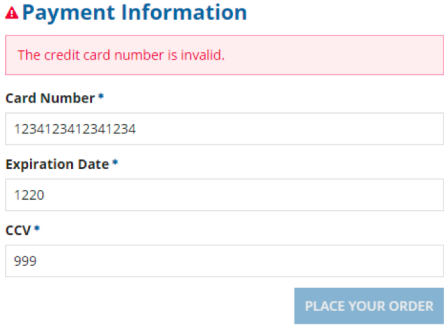
Instructions are rigid.

Feedback allows people to make mistakes and adapt.

Every time the user executes an action, the interface should provide feedback



High-level actions, like buying a book

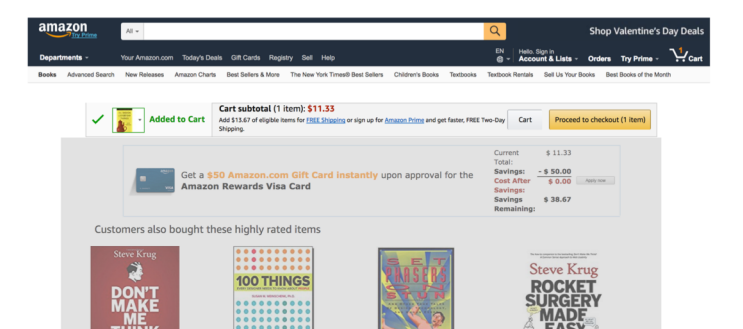
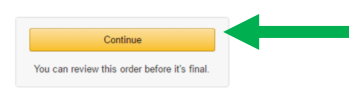
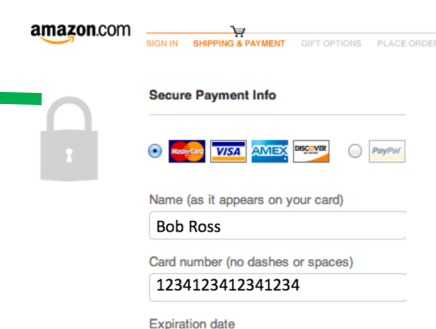
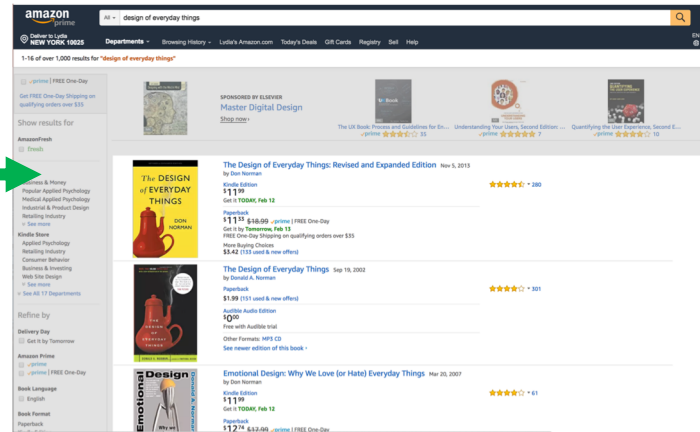
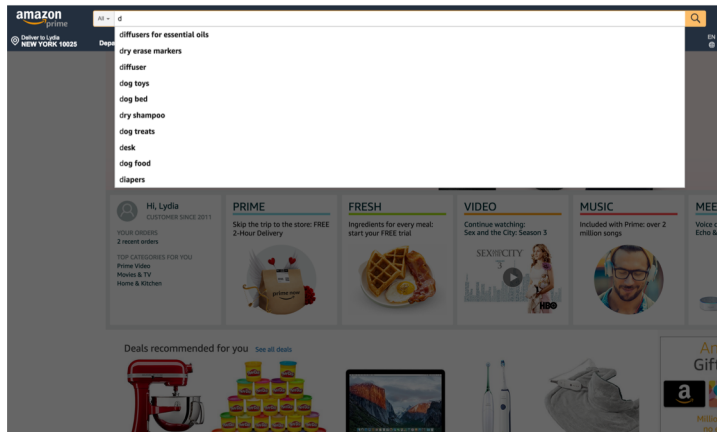


Mid-level actions, entering paying information



Low-level virtual actions, like clicking a button

For complex goals, break the task into states, options, and transitions to new states.



Low-level interactions take time and effort.
Minimize them because you do them a lot.



Secure Payment Info

MasterCard VISA AMEX DISCOVER PayPal

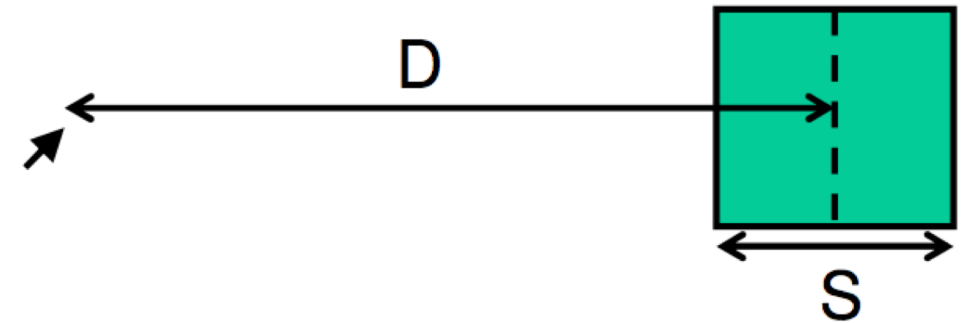
Name (as it appears on your card)

Card number (no dashes or spaces)

Expiration date
01 - January 2013

Security code (3 on back, Amex: 4 on front)

Move
Click
Move Click
TypeTypeTypeType
Move Click
TypeTypeTypeType
Move Tunnel Click
Move Tunnel Click
TypeTypeTypeType



Time to move your
pointer to a target

$$= a + b * \log (D/S)$$

Part 2:

When the needs and abilities of users are unclear, learning from iteration.

Given specifications, you can create interactions

Part 1 – Usable Functionality:

1. Menu/Navigation.

- For consistency, all the templates should be rendered with a shared template that contains a navbar.
- The navbar should contain:
 - A home link (at the "/" route)
 - A text box to enter a search query and a "go" button (at the "/search" route). When the user presses enter on the search bar it should also "go".
 - A create link (at the "/create" route)

2. Home. The home link should render at the "/".

- It should contain a one sentence summary of the mission of the site. This mission should make it clear who the intended user is and what specific goal it helps them achieve.
- It should show the latest 10 entries added to the database to entice the viewer to click on something and start exploring.
- Each of the 10 entries should be formatted as a Bootstrap Card that contains an image and the title of the item. If there is some other essential field, it can show that too, but it should not show all the data fields – it's meant to be a summary.
- When you click the image, it should take you to the page for viewing the item.

3. Search. When the user presses "go" on the search link (or presses enter), it should search for the items and return a list of all matching results.

- Flexibility.** The query must do substring matching that is not case sensitive on the title and one other text field.
- Feedback.** In addition to returning the results, the page must say how many results there are. If there are zero results, you don't need to do anything other than say there are zero results.
- Feedback.** When you present the results to the user, the bit that matches the substring must be easy to scan for, according to gestalt principles.

4. State/Options/Transitions. On the template for creating a new database item, you will still have input boxes for all the fields the user must input. In addition:

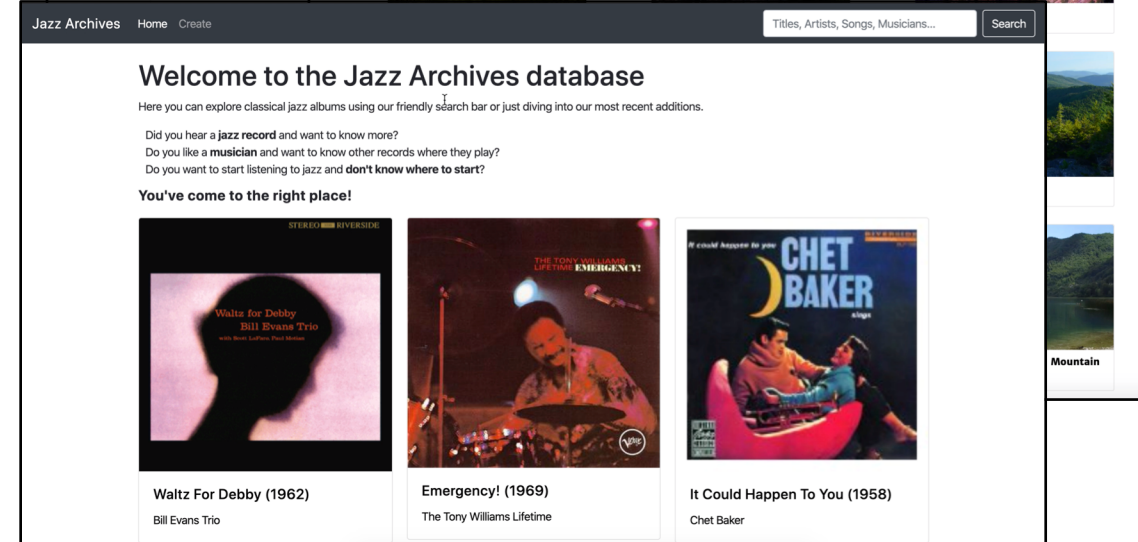
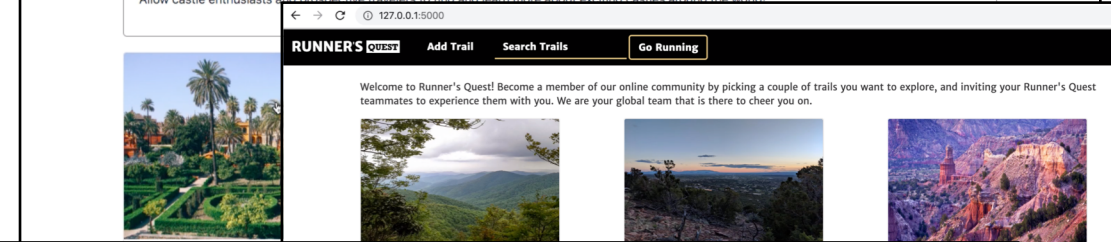
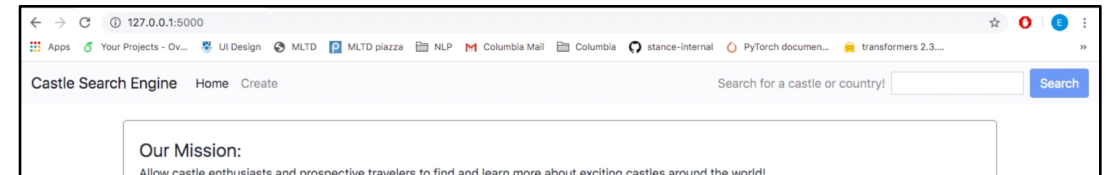
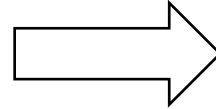
- Error Detection.** When creating a new database entry, there must be error handling on all the fields. If the field must be a number, then ensure it is a number. At the very least, you can check that the field is not blank (remember to trim the text to test if it's blank). Design the error feedback so that it directs the user's attention to the right place to correct the error.
- Transitions.** After the user presses "submit" and the data successfully submits, allow the user to either view the item or enter a new item.
 - At the top of the page it should say, "New item successfully created." With a button or link that says "see it here" (or words to that effect). This links to a page for viewing the item.
 - Additionally, the input boxes should clear and the focus should be placed on the first text box so the user is ready to submit another item.

5. State/Options/Transitions. There will no longer be a separate /edit/<id> route. Editing will now be done in /view/<id>

- For each field that can be edited, create a small edit icon next to it. (at least two fields must be editable – including one that is involves changes the text)
- State Change.** When the user presses the "edit" icon the field to be edited, it must immediately turn editable with a "submit" and "discard changes" option.
- Options.** The chosen text must disappear, and in its place, there should be a textbox or text input with the text they way to edit, with the focus in the input field.
- Transitions.** After the users presses "submit" or "discard changes" the page should go back to how it looked when they were viewing it (and not editing it).
- Note: If your "update" was to add a review to a list, you don't need to populate the textbox with any text. You may call it "add review" instead of "edit" if you like.

6. User control and freedom (Undo).

- The user should no longer be able to delete entire database items from the search page.



The next step is to become a user interface designer.

Part 1 – Usable Functionality:

1. Menu/Navigation.

- For consistency, all the templates should be rendered with a shared template that contains a navbar.
- The navbar should contain:
 - A home link (at the "/" route)
 - A text box to enter a search query and a "go" button (at the "/search" route). When the user presses enter on the search bar it should also "go".
 - A create link (at the "/create" route)

You identify the user

2. Home.

- The home link should render at the top of the page.
- It should show the latest 10 entries added to the database to entice the viewer to click on something and start exploring.
- Each of the 10 entries should be formatted as a Bootstrap Card that contains an image and the title of the item. If there is some other essential field, it can show that too, but it should not show all the data fields – it's meant to be a summary.
- When you click the image, it should take you to the page for viewing the item.

You identify a problem

3. Search.

- When the user presses "go" on the search link (or presses enter), it should search for the items and return a list of all matching results.
- Feedback. When you present the results to the user, the bit that matches the substring must be easy to scan for, according to gestalt principles.

You find the solution

4. State/Options/Transitions.

- On the template for creating a new database item, you will still have input boxes for all the fields the user must input. In addition:
 - Error Detection.** When creating a new database entry, there must be error handling on all the fields. If the field must be a number, then ensure it is a number. At the very least, you can check that the field is not blank. Remember to trim the input before checking for blank. If you have a text field, you can check for a minimum length. If you have a text field, you can check for a maximum length. If you have a text field, you can check for a minimum length. If you have a text field, you can check for a maximum length.
 - At the top of the page it should say, "New item successfully created." With a button or link that says "see it here" (or words to that effect). This links to a page for viewing the item.
 - Additionally, the input boxes should clear and the focus should be placed on the first text box so the user is ready to submit another item.

5. State/Options/Transitions.

- There will no longer be a separate /edit/<id> route. Editing will now be done in /view/<id>
- For each field that can be edited, create a small edit icon next to it. (at least two fields must be editable – including one that involves changes the text)
- State Change.** When the user presses the "edit" icon the field to be edited, it must immediately turn editable with a "submit" and "discard changes" option.
- Options.** The chosen text must disappear, and in its place, there should be a textbox or text input with the text they way to edit, with the focus in the input field.
- Transitions.** After the users presses "submit" or "discard changes" the page should go back to how it looked when they were viewing it (and not editing it).
- Note: If your "update" was to add a review to a list, you don't need to populate the textbox with any text. You may call it "add review" instead of "edit" if you like.

What is design?



*“Design is a plan for arranging elements
to accomplish a particular purpose.”*

– Charles Eames

Design is **not** a magical leap where a brilliant idea comes from no where.



Design is a iterative progress where you work with users to identify and solve their problems.



Sitting all day hurts!

Leaning forwards

No support for curve of lumbar spine

Excessive strain on lumbar discs

Don't perch on front of seat



Why does it hurt?
How do people sit?

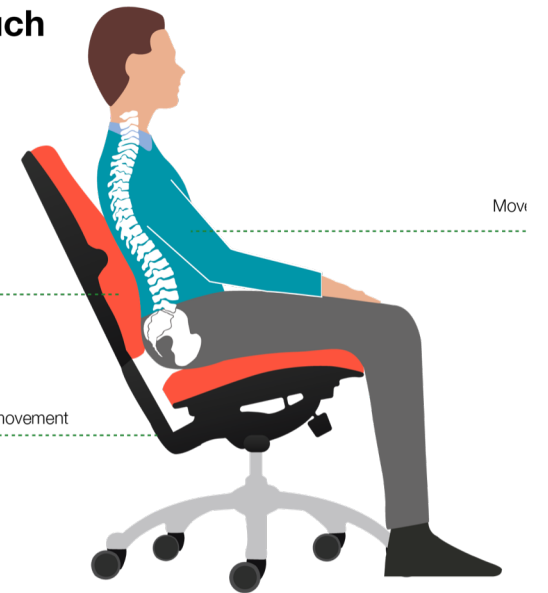


Good slouch

for ergonomic chairs with floating tilt

Back remains supported

Floating seat tilt gives freedom of movement



What does good sitting look like?

Identify

Users needs:

For people who sit all day in an office, alleviate back pain by designing a chair that supports the lower back.

Test solutions


on users:



Start by helping a **specific person** with a **specific need**



Nadia, age 11

 Name: _____
Date: _____

Fraction Test: Review of Fraction Concepts

Compare the fractions (or < or = or >)

1. $6\frac{2}{3}$ $6\frac{1}{3}$ 2. $9\frac{3}{4}$ $4\frac{0}{5}$ 3. $\frac{8}{8}$ $\frac{11}{4}$

4. $\frac{5}{8}$ $4\frac{1}{5}$ 5. $\frac{12}{8}$ $\frac{3}{5}$ 6. $8\frac{0}{8}$ $8\frac{0}{8}$

Calculate (reduce to smallest terms)

7. $1\frac{2}{3} \times 2\frac{2}{3} =$ 8. $8\frac{1}{3} - 5\frac{2}{3} =$ 9. $4\frac{1}{4} - 2\frac{2}{4} =$

10. $7\frac{2}{3} - 4\frac{4}{5} =$ 11. $9\frac{2}{3} + 3\frac{2}{3} =$ 12. $7\frac{1}{3} + 3\frac{1}{3} =$

13. $2\frac{5}{8} \times 1\frac{2}{8} =$ 14. $2\frac{1}{8} \times 7\frac{1}{8} =$ 15. $4\frac{2}{8} \times 3\frac{1}{8} =$

16. $4\frac{3}{8} \times 2\frac{4}{8} =$ 17. $9\frac{1}{3} - 7\frac{2}{3} =$ 18. $6\frac{1}{3} + 9\frac{1}{3} =$

Simply the Fractions

19. $\frac{18}{24} =$ 20. $\frac{13}{18} =$ 21. $\frac{2}{45} =$ 22. $\frac{11}{4} =$

23. $\frac{1}{10} =$ 24. $\frac{22}{9} =$ 25. $\frac{18}{4} =$

http://math.about.com Score


Ace this fractions test

Remember Nadia's story...

This is Nadia. She's 11. She lives in Houston.



Nadia is struggling with fractions at school

 Name: _____
Date: _____

Fraction Test: Review of Fraction Concepts

Compare the fractions (or $= >$ or $>$):

1 $6\frac{2}{3}$ $\frac{3}{8}$ 2 $9\frac{3}{4}$ $\frac{4}{8}$ 3 $\frac{8}{8}$ $\frac{11}{4}$

4 $\frac{3}{8}$ $4\frac{1}{3}$ 5 $\frac{12}{8}$ $\frac{5}{8}$ 6 $8\frac{5}{8}$ $8\frac{5}{8}$

Calculate (write in smallest terms):

7 $1\frac{2}{3} \times 2\frac{2}{3} =$ 8 $8\frac{5}{3} - 5\frac{2}{3} =$ 9 $4\frac{1}{4} - 2\frac{3}{4} =$

10 $7\frac{2}{3} - 4\frac{4}{3} =$ 11 $9\frac{2}{3} + 3\frac{2}{3} =$ 12 $7\frac{1}{3} + 3\frac{1}{3} =$

13 $2\frac{5}{8} \times 1\frac{2}{8} =$ 14 $2\frac{1}{8} \times 7\frac{6}{8} =$ 15 $4\frac{2}{3} \times 3\frac{1}{3} =$

16 $4\frac{3}{3} \times 2\frac{4}{3} =$ 17 $9\frac{5}{3} - 7\frac{2}{3} =$ 18 $6\frac{1}{3} + 9\frac{1}{3} =$

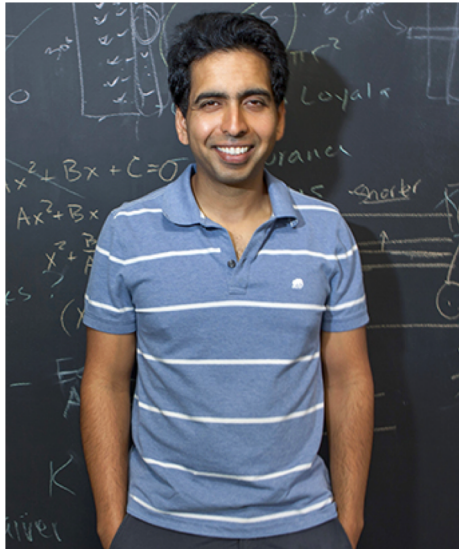
Divide the fractions:

19 $\frac{9}{12} \div \frac{3}{8} =$ 20 $\frac{13}{8} \div \frac{13}{8} =$ 21 $\frac{12}{48} \div \frac{1}{4} =$ 22 $\frac{11}{4} \div \frac{11}{4} =$

23 $\frac{1}{12} \div \frac{1}{12} =$ 24 $\frac{22}{8} \div \frac{1}{8} =$ 25 $\frac{18}{24} \div \frac{1}{24} =$

www.math.about.com Book 65

Her uncle wants to help, but he lives in NYC



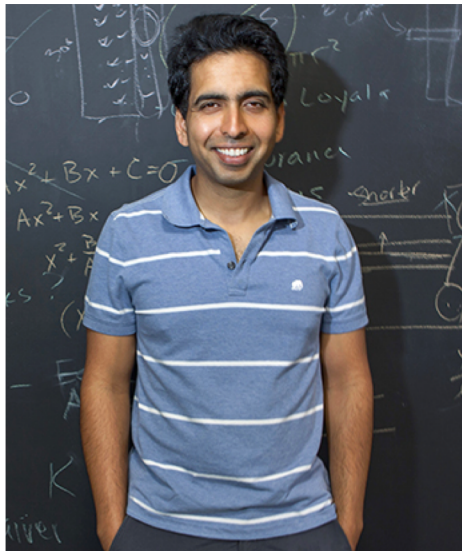
Multiply $1\frac{3}{4} \cdot 7\frac{1}{5}$. Simplify your answer and write it as a mixed fraction.

$$1\frac{3}{4} = \frac{4 \cdot 1 + 3}{4} = \frac{7}{4}$$
$$7\frac{1}{5} = \frac{5 \cdot 7 + 1}{5} = \frac{36}{5}$$
$$\frac{7}{4} \cdot \frac{36}{5} = \frac{7 \cdot 36}{4 \cdot 5} = \frac{252}{20} = 12\frac{6}{5} = 13\frac{1}{5}$$

khanacademy.org

He uploads them to YouTube

Her uncle tried many ways to help Nadia.



1.3.1.1

M

1.3.1.1

7

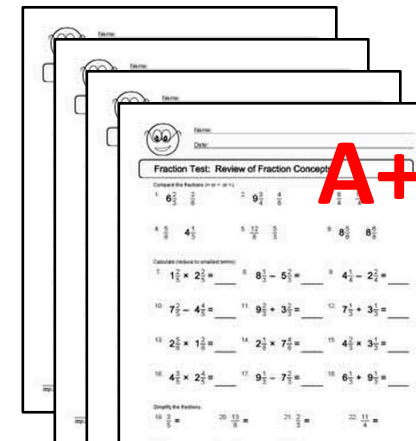
Rewrite each fraction with a denominator of 10.

0 1/5 2/10 1

0 1/5 2/10 1

$\frac{1}{5}$ $\frac{2}{10}$ $\frac{2}{10}$

khanacademy.org



This videos help Nadia. She aces the test!

Multiply $1\frac{3}{4} \cdot 7\frac{1}{5}$. Simplify your answer and write it as a mixed fraction.

$$1\frac{3}{4} = \frac{4 \cdot 1 + 3}{4} = \frac{7}{4}$$

$$7\frac{1}{4} \cdot \frac{36}{5}$$

$$7\frac{1}{5} = \frac{5 \cdot 7 + 1}{5} = \frac{36}{5}$$



Math test paper titled "Fraction Test: Review of Fraction Concepts". The test includes a name and date field, a large red "A+" grade stamp, and various fraction problems. The problems are:

Compare the fractions (or $= >$):

- $6\frac{2}{3}$ vs $6\frac{1}{3}$
- $9\frac{3}{4}$ vs $9\frac{1}{4}$
- $\frac{11}{8}$ vs $\frac{11}{4}$
- $\frac{10}{8}$ vs $4\frac{1}{2}$
- $\frac{12}{8}$ vs $\frac{10}{8}$
- $8\frac{1}{8}$ vs $8\frac{5}{8}$

Calculate (reduce to smallest terms):

- $1\frac{2}{3} \times 2\frac{2}{3} =$
- $8\frac{1}{2} - 5\frac{1}{2} =$
- $4\frac{1}{4} - 2\frac{2}{4} =$
- $7\frac{2}{3} - 4\frac{4}{3} =$
- $9\frac{2}{3} + 3\frac{1}{3} =$
- $7\frac{1}{3} + 3\frac{1}{3} =$
- $2\frac{5}{8} \times 1\frac{2}{8} =$
- $2\frac{1}{8} \times 7\frac{4}{8} =$
- $4\frac{2}{3} \times 3\frac{1}{3} =$
- $4\frac{1}{3} \times 2\frac{2}{3} =$
- $9\frac{5}{6} - 7\frac{2}{6} =$
- $6\frac{1}{6} + 9\frac{1}{6} =$

Order the fractions:

- $\frac{1}{3}$
- $\frac{20}{8}$
- $\frac{21}{4}$
- $\frac{11}{4}$
- $\frac{1}{3}$
- $\frac{22}{8}$
- $\frac{10}{4}$
- $\frac{1}{3}$

Page number: 28

This video helps other students pass their fractions tests, too.

Multiply $1\frac{3}{4}$ $7\frac{1}{5}$. Simplify your answer and write it as a mixed fraction.

$$1\frac{3}{4} = \frac{4 \cdot 1 + 3}{4} = \frac{7}{4}$$
$$7\frac{1}{5} = \frac{5 \cdot 7 + 1}{5} = \frac{36}{5}$$
$$\frac{7}{4} \cdot \frac{36}{5}$$

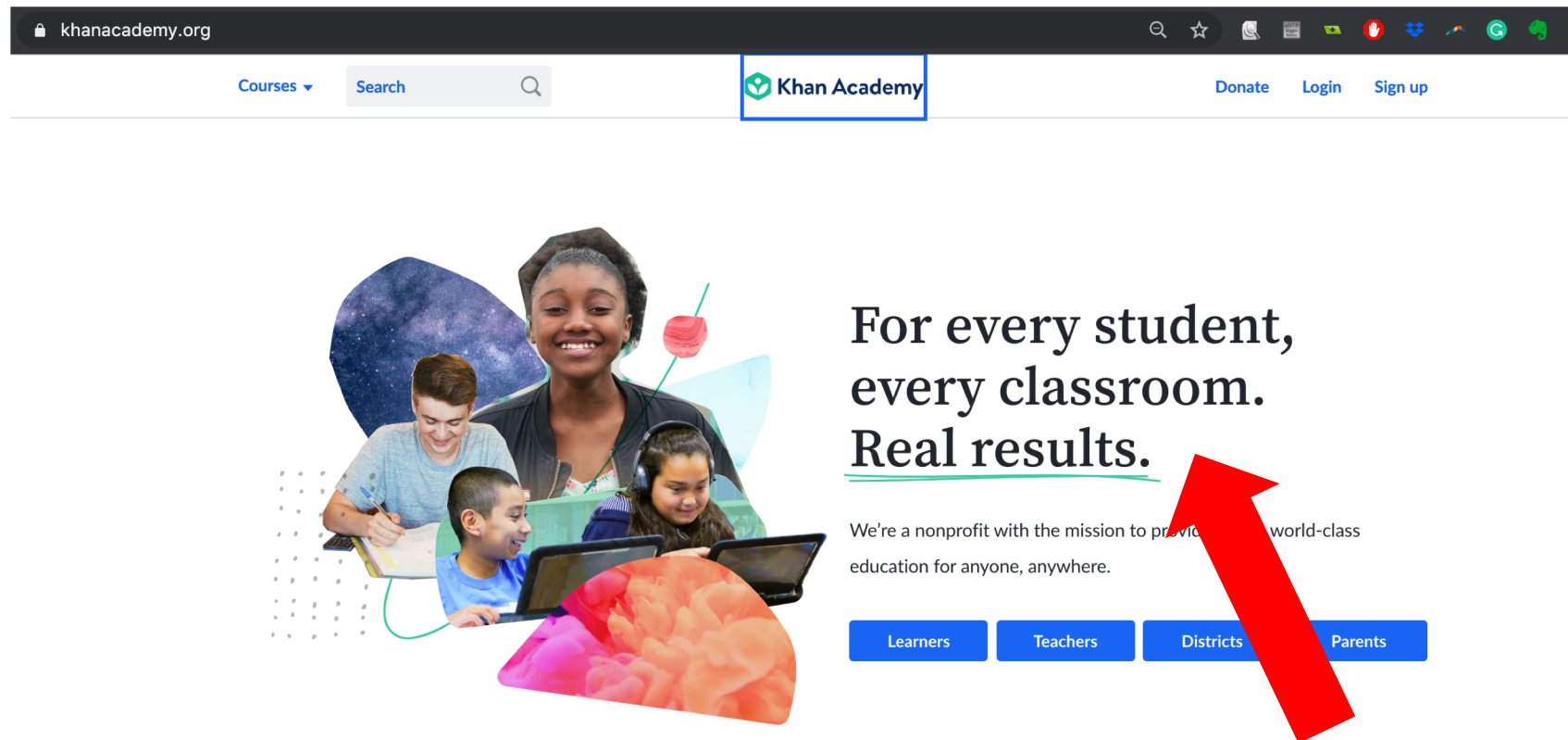

Videos in this format help students learn other topics.

Current

The image contains three hand-drawn diagrams on a black background. On the left, the word 'Current' is written in light blue. Below it are three pairs of symbols: a minus sign in a circle with an arrow pointing right, followed by a plus sign in a circle with an arrow pointing left; a plus sign in a circle with an arrow pointing left, followed by a plus sign in a circle with an arrow pointing right; and a minus sign in a circle with an arrow pointing left, followed by a minus sign in a circle with an arrow pointing right. In the center is a diagram of a copper atom labeled 'Cu 29' in pink. It shows a central nucleus with a scribbled orange interior and several concentric pink electron shells. Small circles representing electrons are scattered on the shells, with one pink electron on the outermost shell having an arrow pointing towards the right. On the right is a circuit diagram in blue. It shows a battery at the bottom with a '+' sign on the left and a '-' sign on the right. A wire goes from the positive terminal up and left, then right through a cylindrical resistor, then down and right to the negative terminal. Inside the resistor, several dashed arrows point from right to left, indicating the direction of current flow.

here, an electron is gonna come out of this battery,

These videos became Khan Academy.



Very general problem

But it started by helping a **specific person** with a **specific need**



Nadia, age 11

Compare the fractions (or < or = or >):

1. $6\frac{2}{3}$ vs $6\frac{1}{3}$ 2. $9\frac{3}{4}$ vs $4\frac{0}{5}$ 3. $\frac{8}{8}$ vs $\frac{11}{4}$

4. $\frac{5}{8}$ vs $4\frac{1}{5}$ 5. $\frac{12}{8}$ vs $\frac{3}{5}$ 6. $8\frac{0}{8}$ vs $8\frac{0}{8}$

Calculate (reduce to smallest terms):

7. $1\frac{2}{3} \times 2\frac{2}{3} =$ 8. $8\frac{1}{3} - 5\frac{2}{3} =$ 9. $4\frac{1}{4} - 2\frac{2}{4} =$

10. $7\frac{2}{3} - 4\frac{4}{5} =$ 11. $9\frac{2}{3} + 3\frac{2}{3} =$ 12. $7\frac{1}{3} + 3\frac{1}{3} =$

13. $2\frac{5}{8} \times 1\frac{2}{8} =$ 14. $2\frac{1}{4} \times 7\frac{1}{8} =$ 15. $4\frac{2}{8} \times 3\frac{1}{3} =$

16. $4\frac{3}{8} \times 2\frac{4}{8} =$ 17. $9\frac{1}{2} - 7\frac{2}{3} =$ 18. $6\frac{1}{3} + 9\frac{1}{3} =$

Simplify the fractions:

19. $\frac{18}{24} =$ 20. $\frac{13}{8} =$ 21. $\frac{2}{45} =$ 22. $\frac{11}{4} =$

23. $\frac{1}{10} =$ 24. $\frac{22}{9} =$ 25. $\frac{18}{4} =$

http://math.about.com Score: 25

Ace this fractions test

If you start specific, you can usually generalize later.



Domain
Online shopping

Specific Need
Uncommon books

Generalized to
Clothes, Food,
Amazon Fresh
Other sellers



Domain
Social Networking

Specific Need
Harvard students looking
up dorm, classes,
relationship status

Generalized to
Ivy League
US Colleges
Everybody



Domain
Read/send Email

Specific Need
No page reload
Never Delete

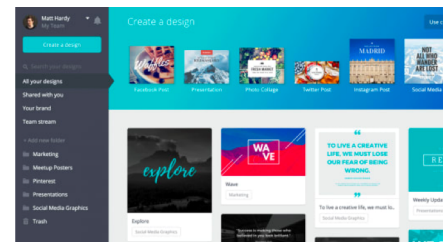
Generalized to
Chat
GDrive



Domain
Graphic Design
For novices

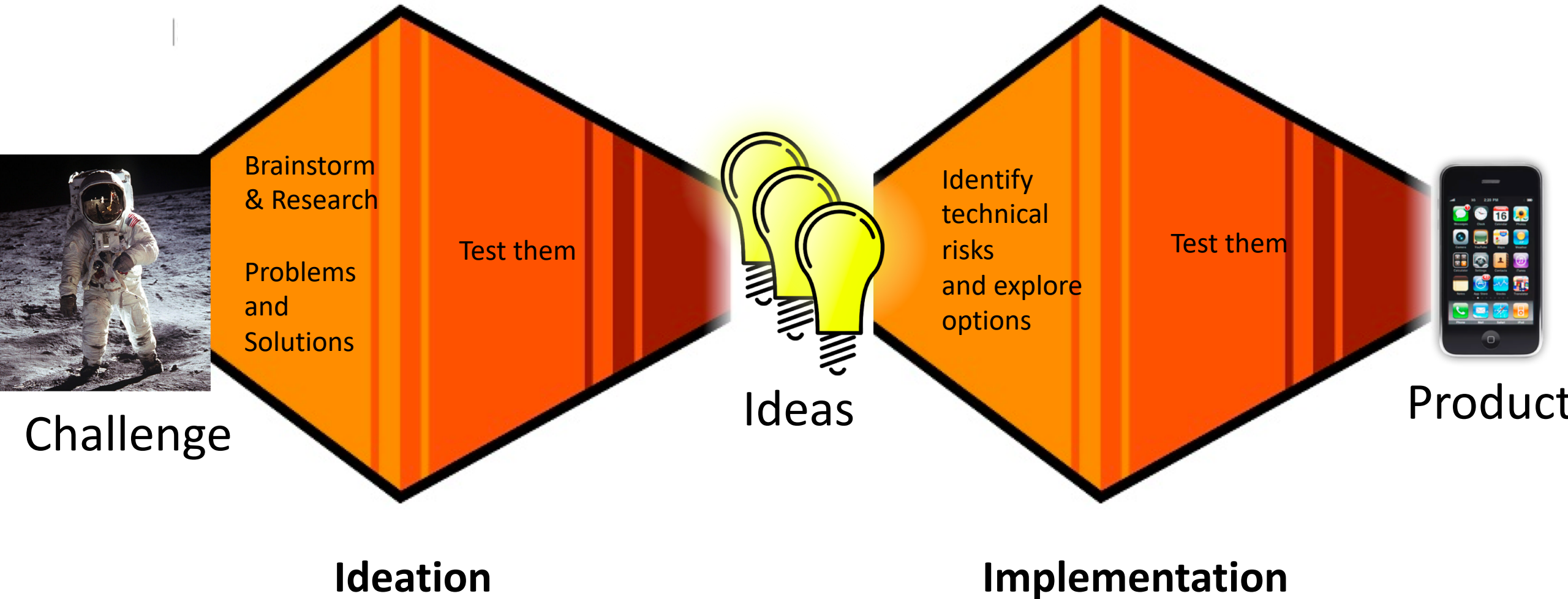
Specific Need
High School
Yearbooks

Generalized to
Posters,
flyers, ads



The Design Process

Flare and Focus





The best way to have a good idea
is to have lots of ideas.

- Linus Pauling

In addition to a specific problem,
we need an **insights** into the solution

Problem

Insight

Electric light source

Heat metal until it glows

A machine that does computation

Programmable tape can calculate anything (theoretically)

Teaching fractions

Workbooks suck. I'm going to show people how I think through them problem.

Making yearbooks

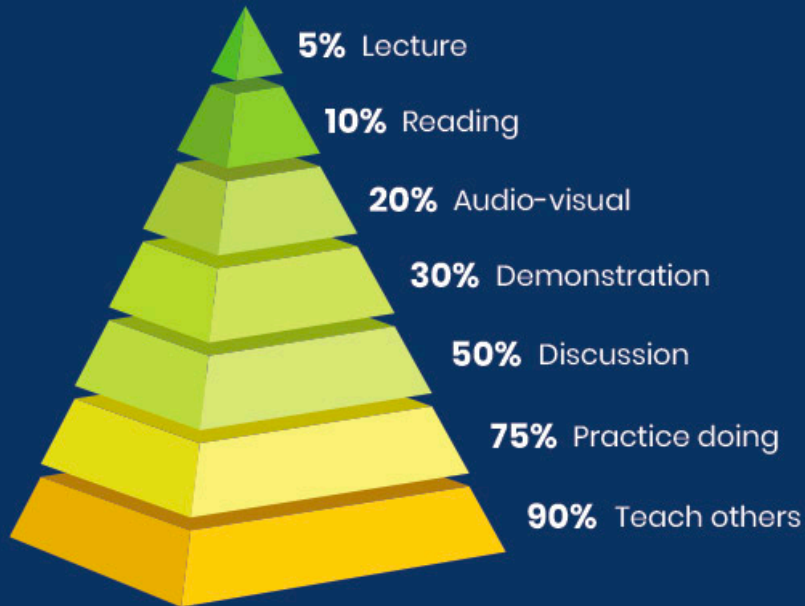
Photoshop is HARD, and sharing resources is annoying. Maybe some online templates can make this easier.

Social network for photos.

People take crappy photos and are not too eager to share them. What if filters made every photo beautiful?

Ideation: Research related work

Academic studies



Related systems

A screenshot of the Duolingo Spanish skills interface. The interface is titled "Spanish skills LEVEL 12" and features a "Lingot store" button. The main content area displays several circular icons representing different skill categories: "Basics 1", "Phrases", "Basics 2", "Food 4/5", "Animals", and "Plurals". Each icon is accompanied by a small graphic and a progress indicator.

Competitors

A screenshot of an article titled "Impressionism" from a website. The article is dated "c. 1874 - 1886" and discusses the movement's characteristics and key artists. The article is structured with a "Beginner's guide" section, a "videos + essays" section, and several image-based sections with captions.

Impressionism

These artists broke new ground with sketchy, light-filled canvases shown in independent exhibitions.

c. 1874 - 1886

Beginner's guide

These artists each sought their own solutions for the depiction of modern life. Can we even call Impressionism a unified style?

- Impressionism, an introduction
- How the Impressionists got their name
- Impressionist pictorial space
- Impressionist color
- Looking east: how Japan inspired Monet, Van Gogh and other Western artists

videos + essays

The Impressionists painted city parks and city streets, train stations and ballet rehearsals, cafes and lily ponds.

Impressionist color
Blue snow and violet-tinted flesh—the Impressionists radically changed our expectation of color.

Impressionist pictorial space
The surprising pictorial effects of modern art may seem at first like errors, but they are quite intentional!

What does "Impressionism" mean?
Impressionist paintings—once considered sloppy and unfinished—draw huge crowds to museums today.

A summer day in Paris: Berthe Morisot's *Hunting Butterflies*
The subject takes control over the outdoor setting, expressing her independence in spite of limitations.

How to recognize Monet: *The Basin at Argenteuil*
In the suburbs, Parisians escaped the pressures of modern life. Monet painted their sun-drenched pleasures.

How to recognize Renoir: *The Swing*
Renoir wanted to forget everything he knew about how to paint so that he could render light as it really is.

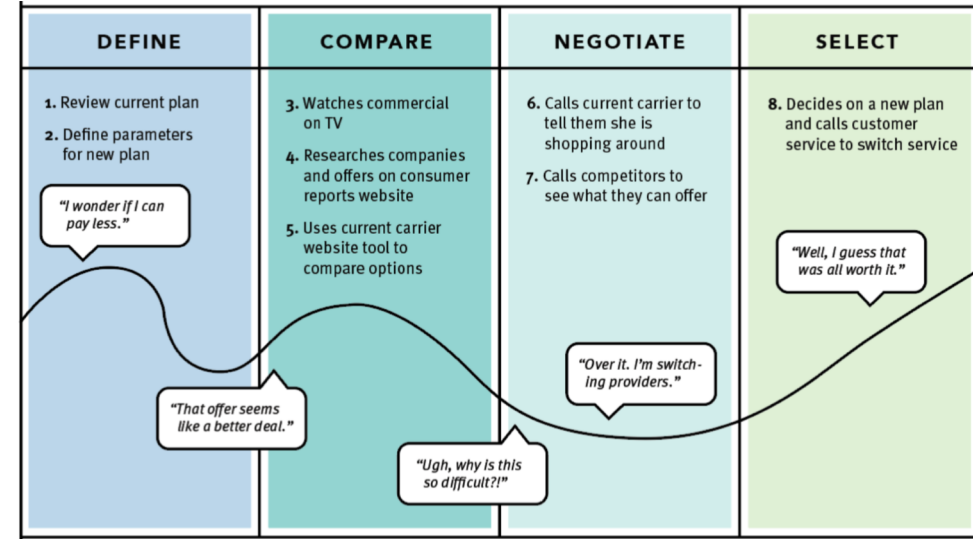
Ideation: Talk to people about their experience

Find someone who has done it recently



Ask: "Tell me about that experience" (include thoughts, feelings, actions at every step)

Synthesize into phases
Mark highs and lows of the experience



You will discover things you wouldn't even think to ask.

"I always forget to fill out the participation form."

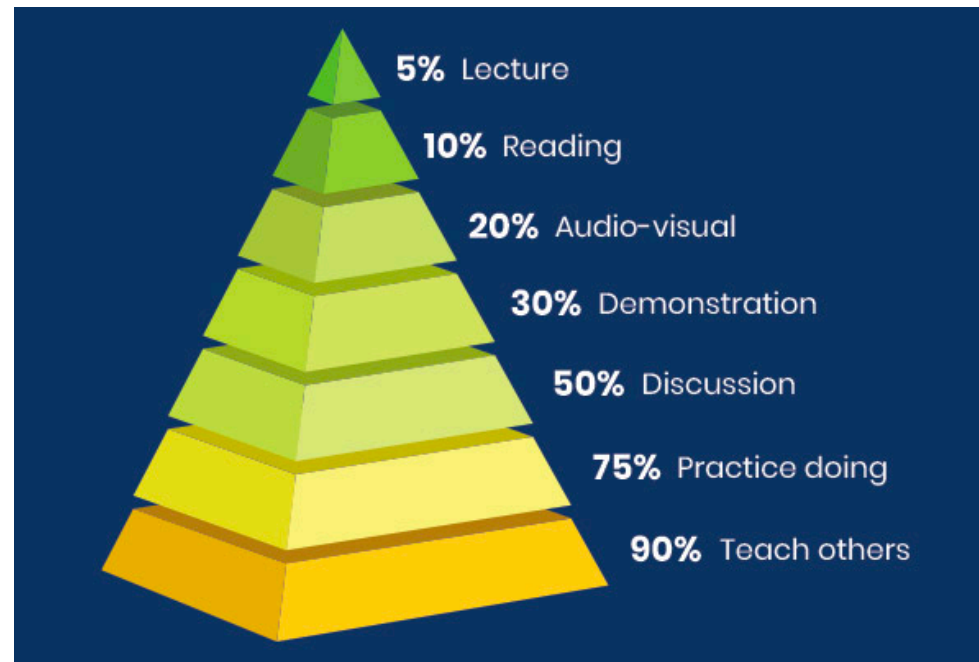
Educational insight #1:

Students are terrible at assessing their learning. They need tools to assess themselves.



Educational insight #2:

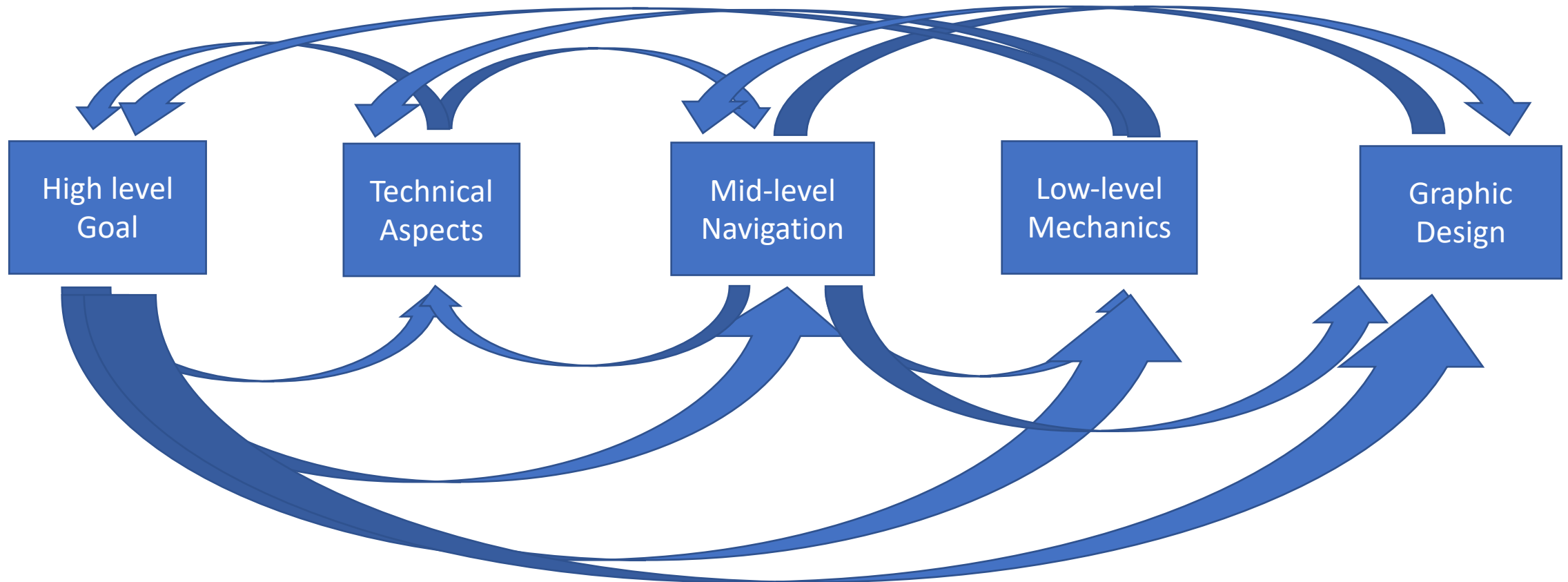
Reading textbooks is boring. Nobody learns from that. People learn by practicing - from doing something and getting feedback.



Is design really this hard?

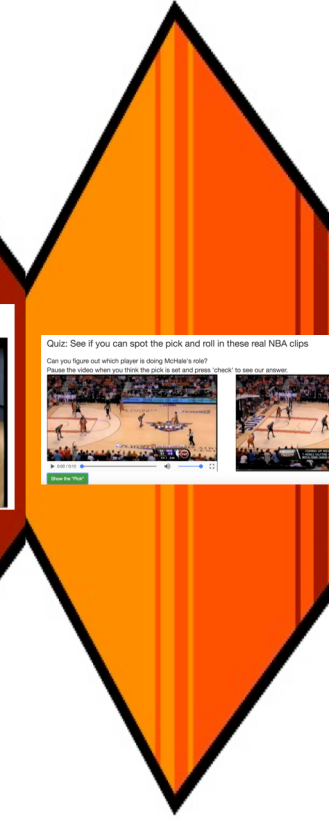
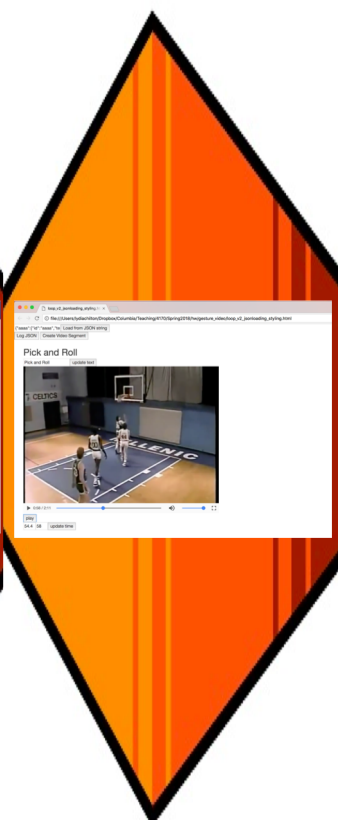
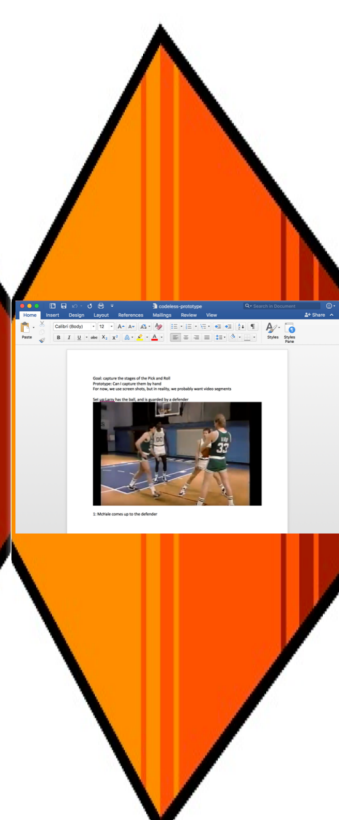
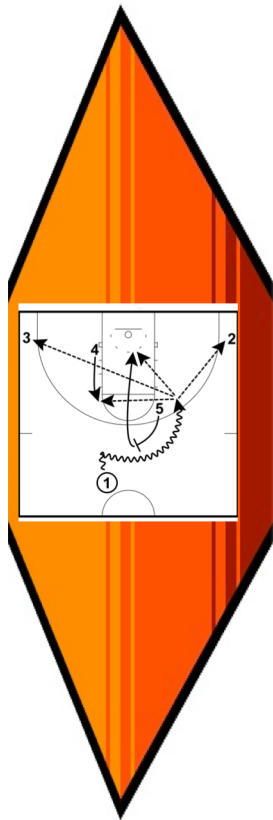
Or are we just stupid?

Design is hard because requires combining many elements that are dependent on each other.



Design requires synthesizing many elements that are completely dependent on each other.

Idea:
Help NBA fans
Recognize the
strategy
during games



Idea

Resources

Design

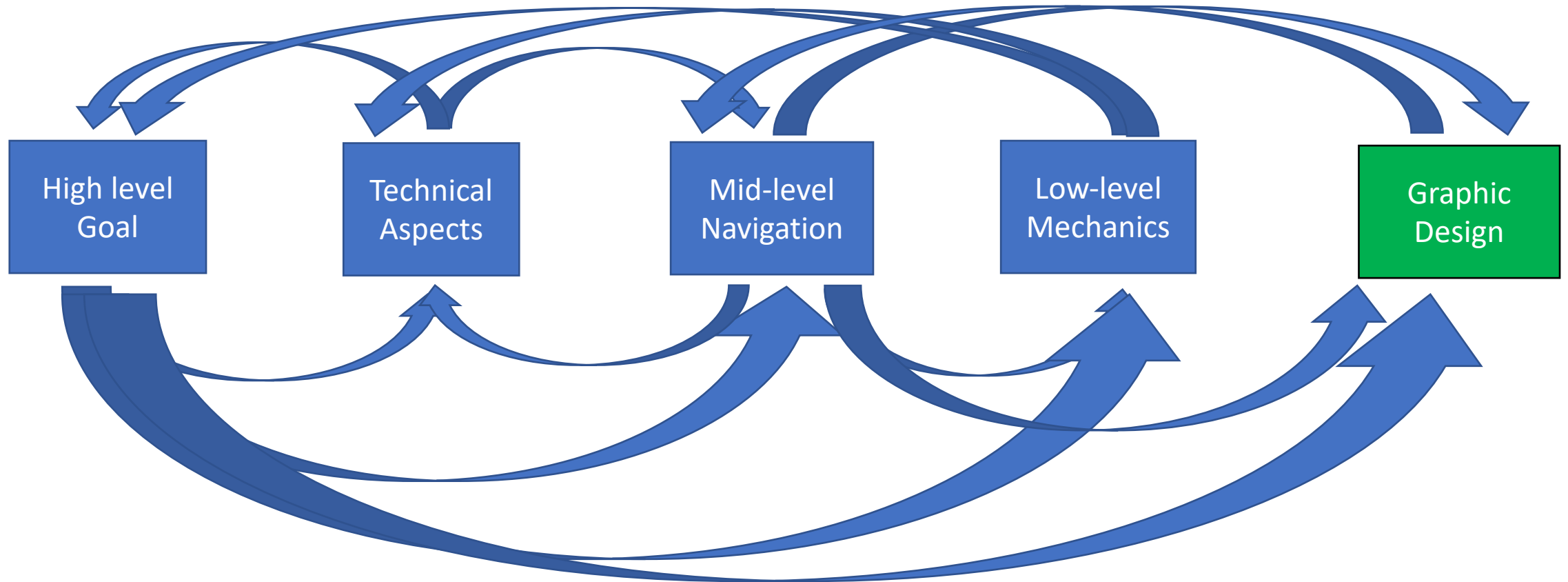
Technical

Design

Idea

Design

Graphic design is the final step for designers. Why?



But what do users perceive first? **Graphic Design**

Is that everything I need to know
to be the next tech unicorn?

No...

Market Research

Is there a big enough need for this?

Is that need big enough that they would pay for it?

Market Research:

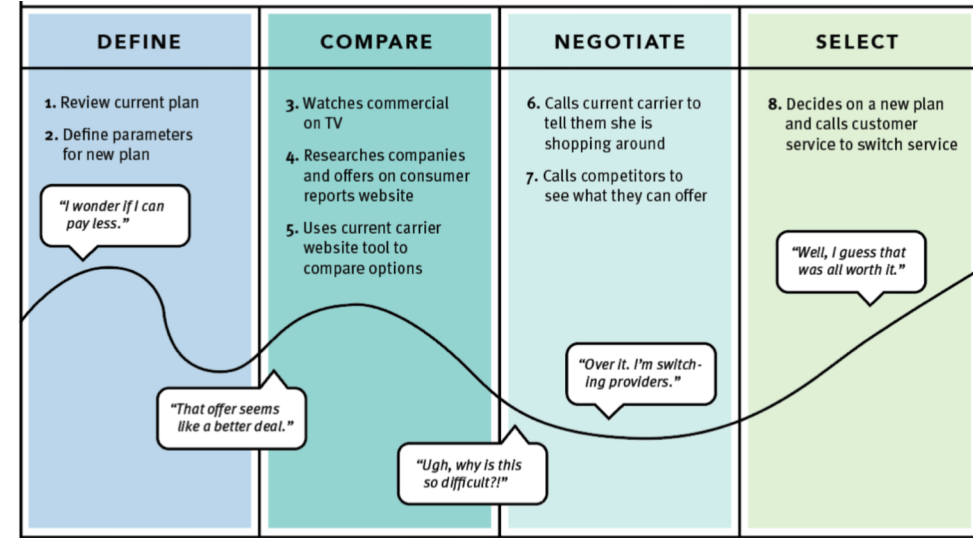
Talk to people about their experience

Find someone who has done it recently



Ask: "Tell me about that experience" (include thoughts, feelings, actions at every step)

Synthesize into phases
Mark highs and lows of the experience



Users

Industry Partners

Technologists

Example 1: Courshedog

Justin made an app for students to pick classes that don't conflict

Course Planner

Search: pe 080

Units: 373

	Fall	Winter	Spring
PE 080A	Ec 011	Hum/PI 008	APh/EE 009B
Health Advocates	APh/EE 009A	Ph 008B	Ge 001
1-1-1	PE 099	PE 087B	
Stapf	Units:42	Units:42	Units:39
Fall	PE 099	Hum/H 003B	Bi 001
	Ma 002	Ma 003	PI/HPS 183
	Ph 002A	Ph 002B	Ph 002C
	EE 044	EE 045	EE 040
	EE/CS 051	EE/CS 052A	EE/CS 052B
	Units:45	Units:48	Units:42
	PE 099	ACM 095A	ACM 095B
	EE 111	P/S 141A	EE 151
	EE/MedE 124	EE 001	EE 090
	PE 080A	EE 112	En 128

Nobody adopted it.

Students wouldn't pay for it.

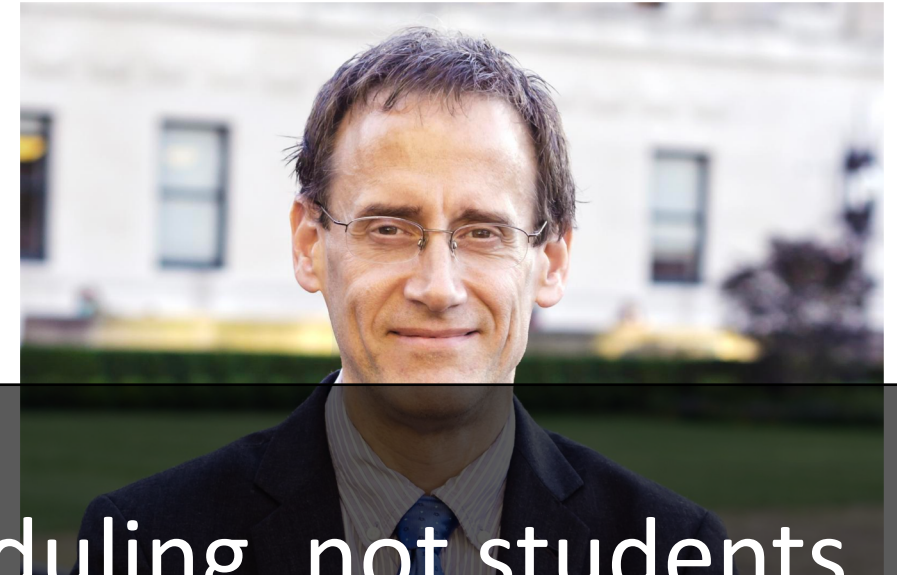
It's not a big enough need.

Coursedog Interviews: What is peoples experience with scheduling?



ELECTRONIC DIPLOMAS
The Office of the University Registrar now provides an Electronic Diploma to graduates beginning February, 2018.

Bolton
The Trustees of Columbia University
in the City of New York
Say and Zhana Vagelos
College of Physicians and Surgeons
Awarded to the Honorable
Jonathan Peoples Name
Doctor of Medicine



The registrar needs help with scheduling, not students.
And they are willing to pay for it.

Contact Us

Student Service Center

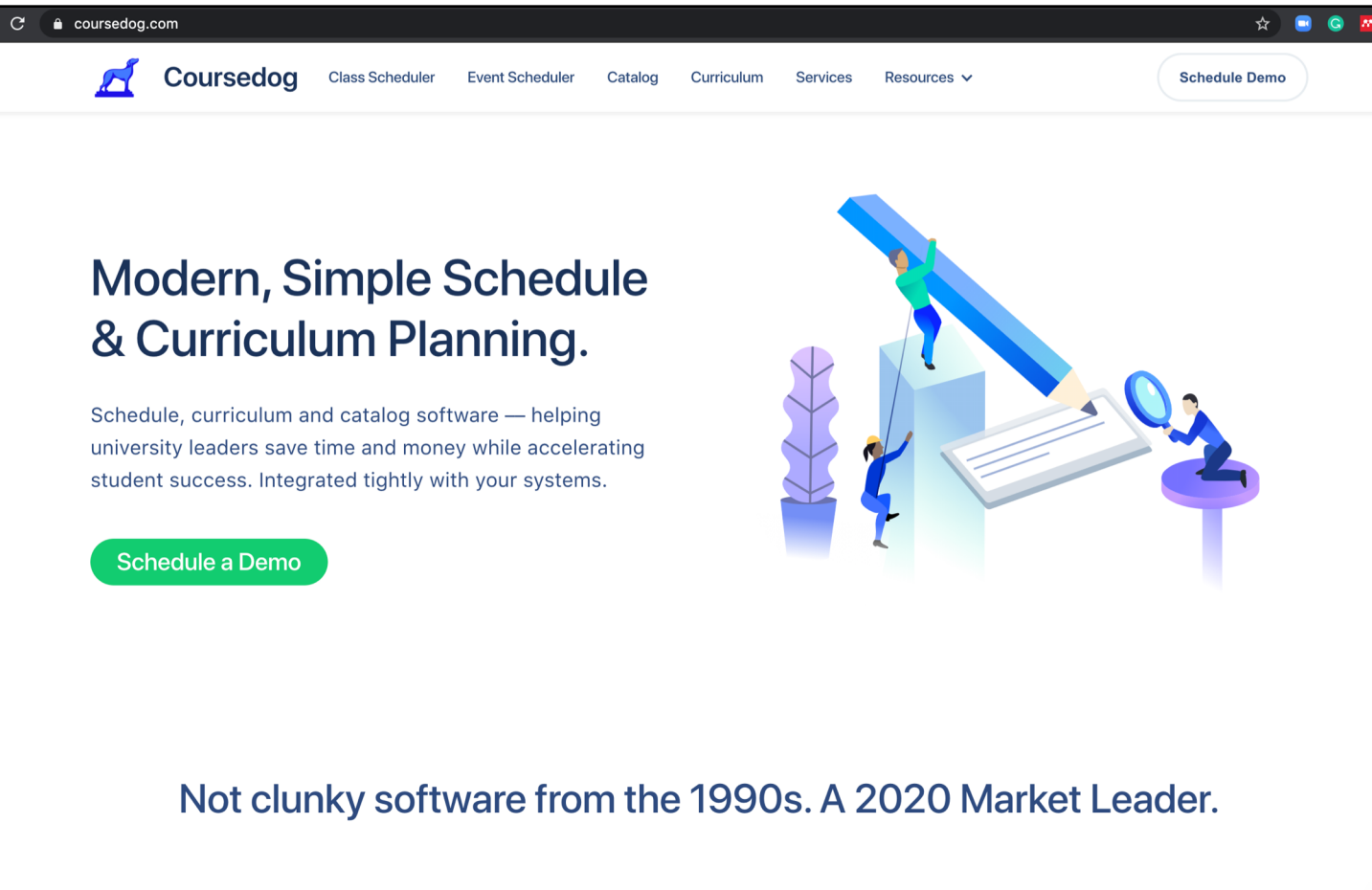
Location: 205 Kent Hall

Email:

registrar@columbia.edu

Website: ssc.columbia.edu

Coursedog



August 2017
We Welcome our first Partners.



December 2018
Seed-funded and California-bound!

After closing seed funding led by Y Combinator and Ebay CEO Devin Wenig, the team heads out to California for 3 months.

2018 - 2019

Coursedog launches catalog, curriculum and event management solutions.

Coursedog signs on 62 new schools of all shapes & sizes in one year.

Coursedog team grows to 30.

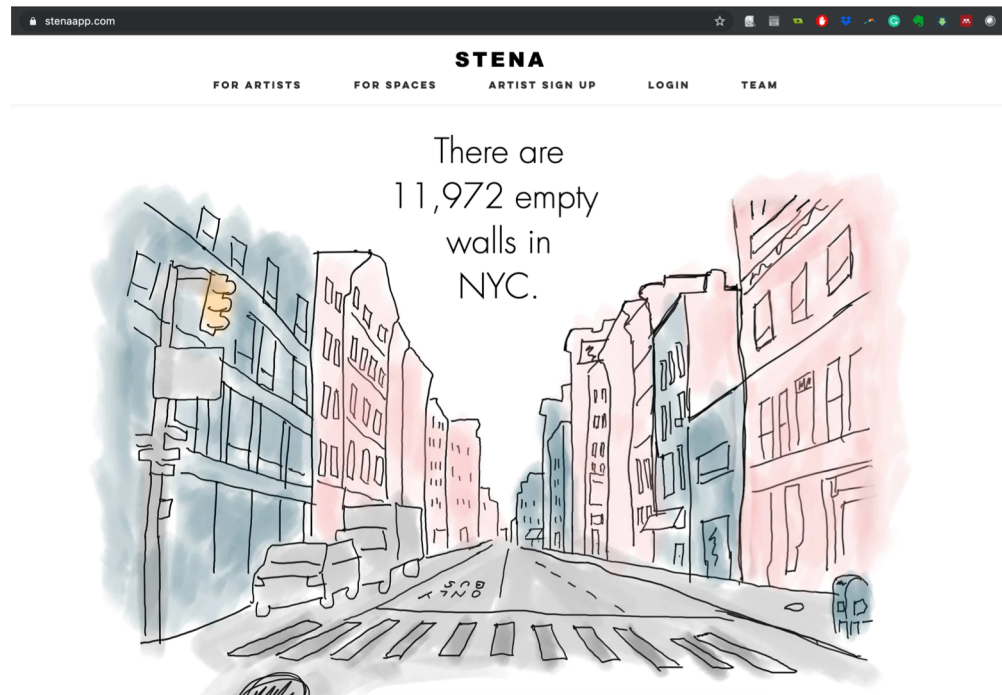


Early 2019

Coursedog raises \$5.7M

See us featured in TechCrunch

Example #2: Stena App

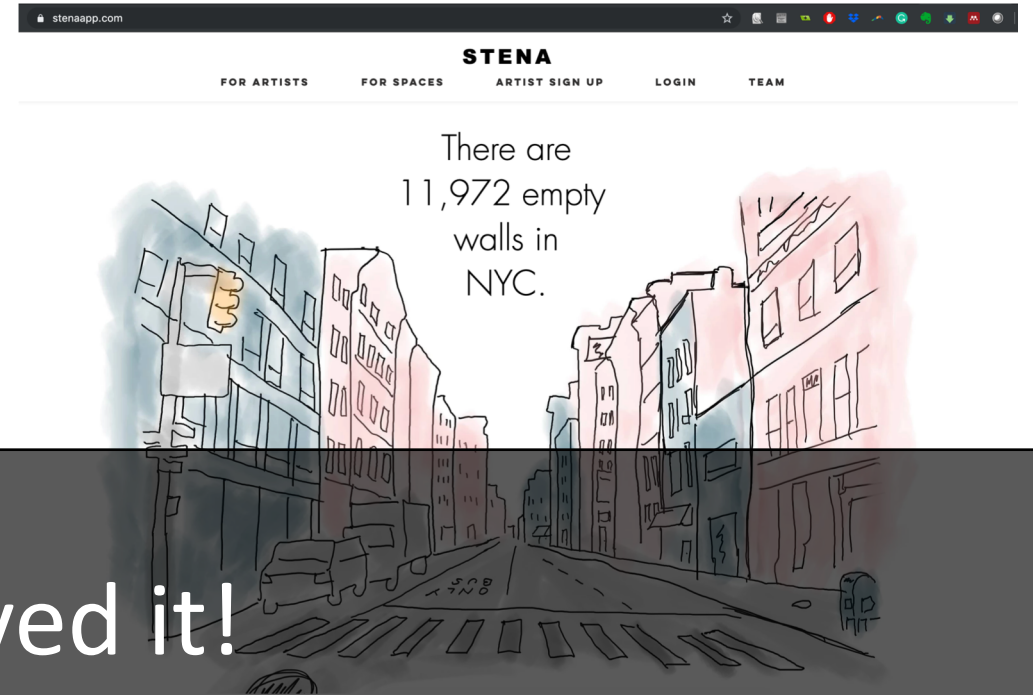


Why don't more coffee shops
sell art on their walls?

Would artists and owners
be willing?

Stena Interviews

- Talk to:
 - Artists
 - Business
 - Potential buyers (coffee shop patrons)



Artists loved it!
They have TONS of their art lying around.

STENA

[FOR ARTISTS](#)

[FOR SPACES](#)

[ARTIST SIGN UP](#)

[LOGIN](#)

[TEAM](#)

Learn more.



If you're like Zak and have art you want to display and sell. Click here to learn more about becoming a Stena Artist.

[For Artists](#)



If you're like Susie and have some spare wall space. Click here for more information about becoming a Stena Space.

[For Spaces](#)

STENA

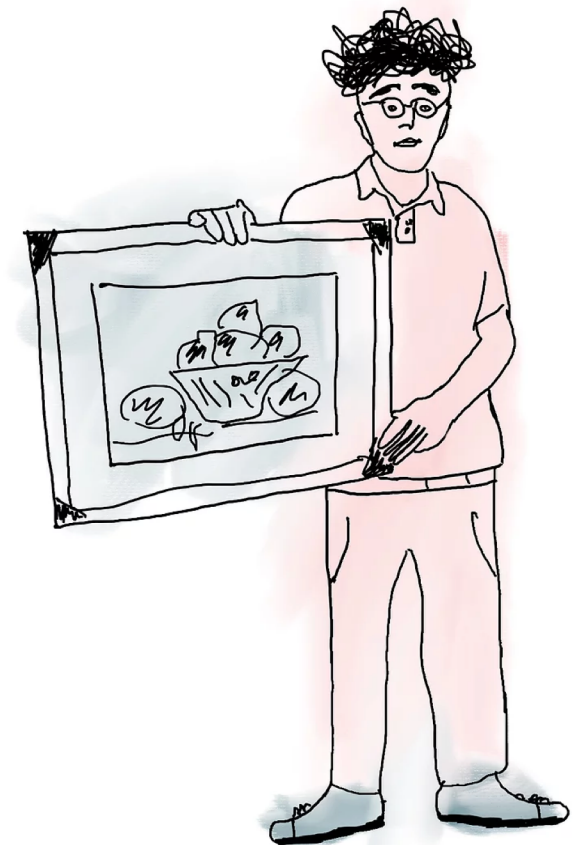
[FOR ARTISTS](#)[FOR SPACES](#)[ARTIST SIGN UP](#)[LOGIN](#)[TEAM](#)

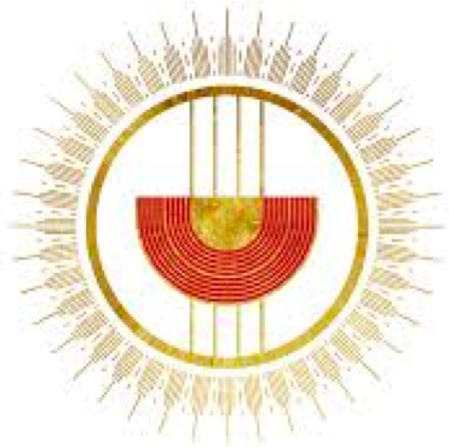
Zak created a Stena profile and uploaded his available art.

Susie saw his work on the Stena site and loved it.

In just a few days, Stena drafted a contract, printed hang tags and installed Zak's pieces in Susie's cafe.

The best part: Zak and Susie paid nothing upfront!





DEAR MAMA
specialty coffee bar



How do I learn design?

Not like this



Not like this



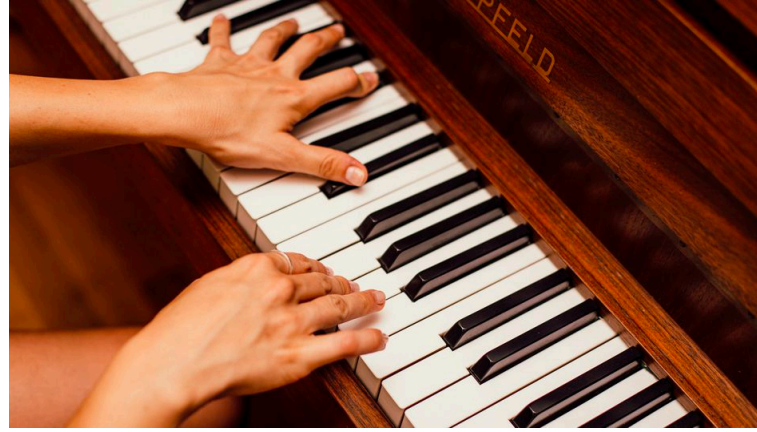
More like this



Design is a skill, not knowledge. We learn it through practice and feedback



Sports



Playing an instrument



Languages



Cooking



Acting



Painting

Learn Design by Doing it



Paul Blaer,
CS



Lydia Chilton,
CS



Steve Feiner,
CS



Brian Smith,
CS



Gita Johar,
Business



Mark Hansen,
Journalism



Laura Kurgan,
Architecture



Elizabeth Hillman,
Biomedical Eng



Harry West
MechE / IEOR



Chris Wiggins,
Applied Math



Katie Reuther
Biomedical Eng



Adam Royalty
Design Center

Advanced Web Design Studio

COMS 6998 · Fall 2018

[Home](#) [Syllabus](#)

[Piazza](#)

Goals

1. Master front-end and back-end technologies for making interactive websites.
2. Discover specific user needs by developing a low-level, mechanical model of human behavior.
3. Practice iterative design to meet specific user needs.

INSTRUCTOR

[Prof. Lydia Chilton](#)

OH: Tuesdays 4-5, CEPSR 612

Please contact staff through [Piazza](#) only

TAS

[Katy Gero](#)

OH: Wed 2:30-3:30, CEPSR 603

[Savvas Petridis](#)

OH: TBA, CS OH room

WEEKLY SCHEDULE

Lecture

Friday 2:10–4pm in Mudd 337

(also known as the Engineering Terrace)

TEACHING METHOD

This is a studio style class in the tradition of art and architecture. Students are expected to already know the fundamental techniques. We will practice these techniques as well as give and receive critique on a weekly basis. Attendance is mandatory.

Any absence, excused or otherwise, must be made up



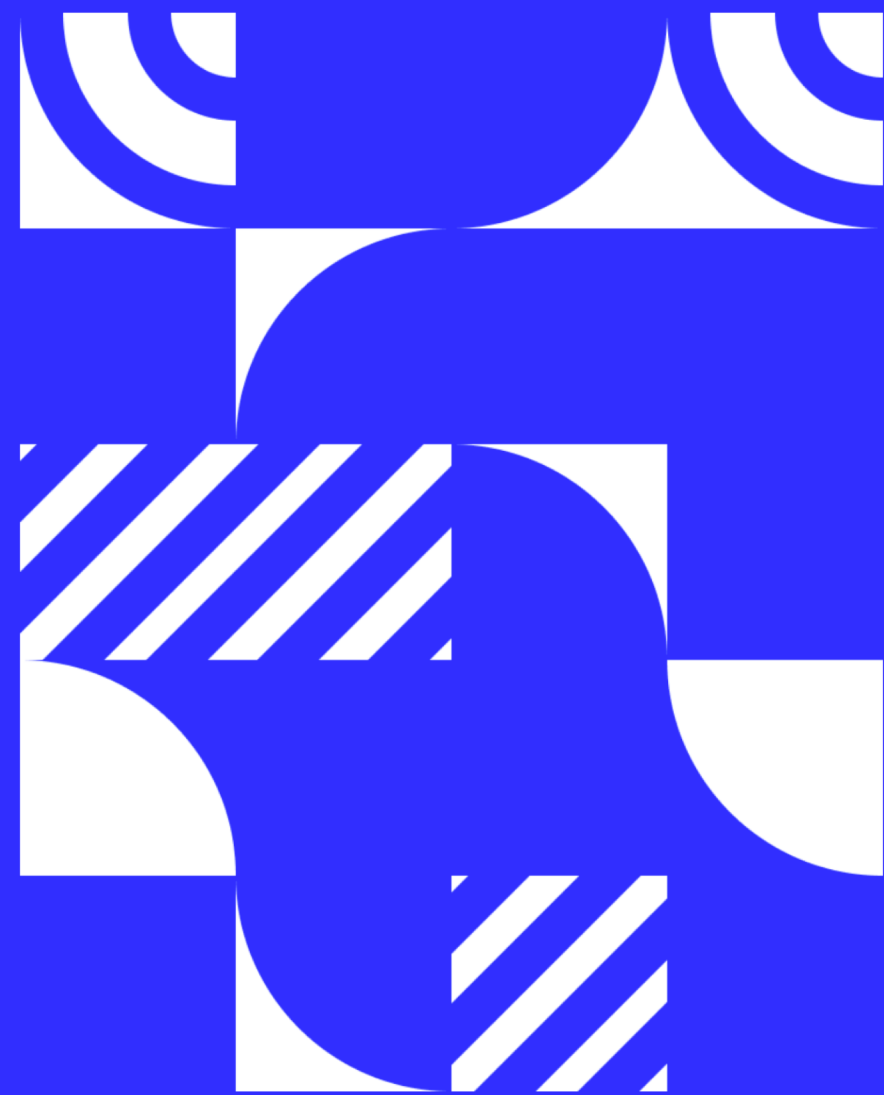
sentiment

SO YOU CAN EMOTE EVEN WHEN WE'RE REMOTE

Welcome to Columbia's Design Community!

From the team that brought you design day, we are launching a **summer session** of workshops, projects, design challenges, and more!

[Join Us!](#)



You have always got me.

My best selling product is pants,
But I'm trying to make shirts.

I'm trying to find a UX designer

I might be interested in grad school

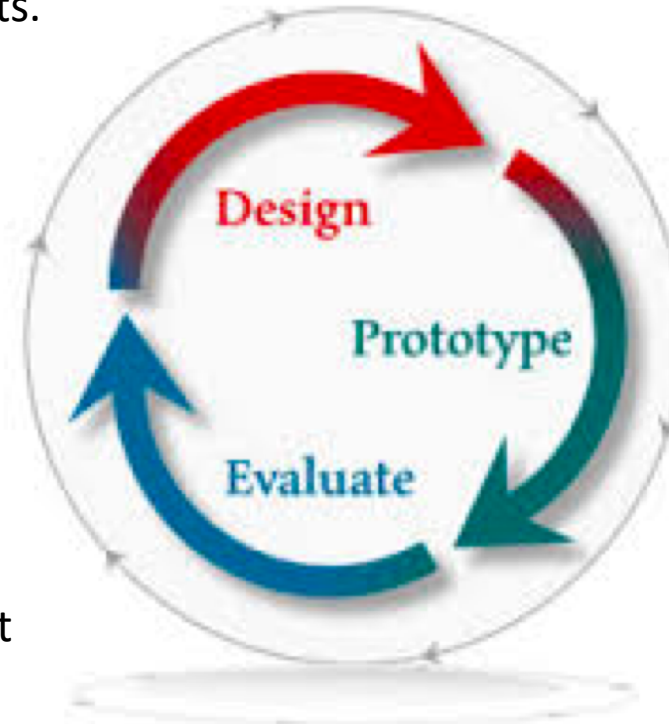
I missed my flight,
what should I do?

I have a start up idea!

I can't get my site to run on digital ocean

I need feedback on my
summer internship project

I can't [random thing I downloaded] to run!



chilton@cs.columbia.edu

If you want to stay in touch, add me on Facebook

Lydia Chilton

Lydia Chilton

Timeline About Friends Photos More ▾

+ Add Friend Message ...