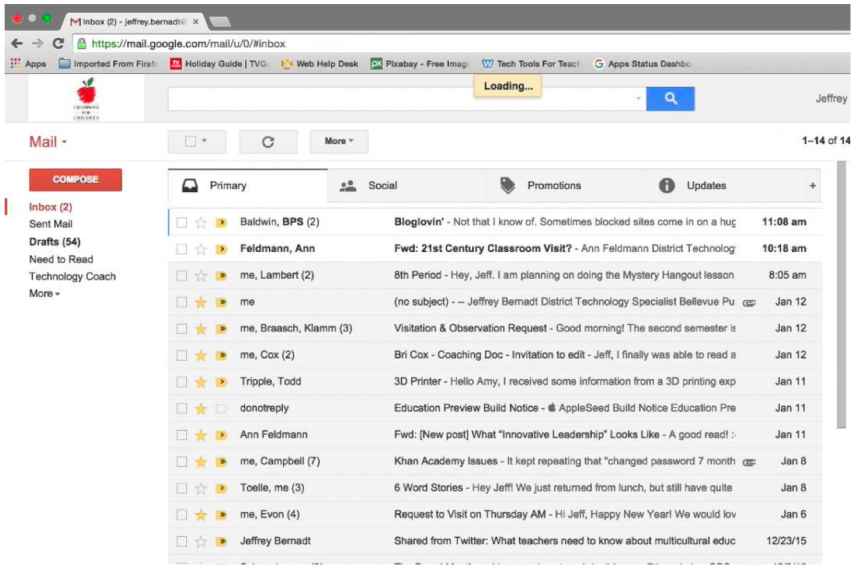
Design Project Kickoff

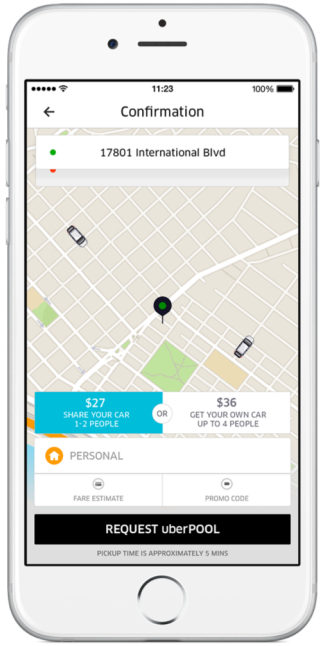
Prof. Lydia Chilton
COMS 4170
18 March 2024

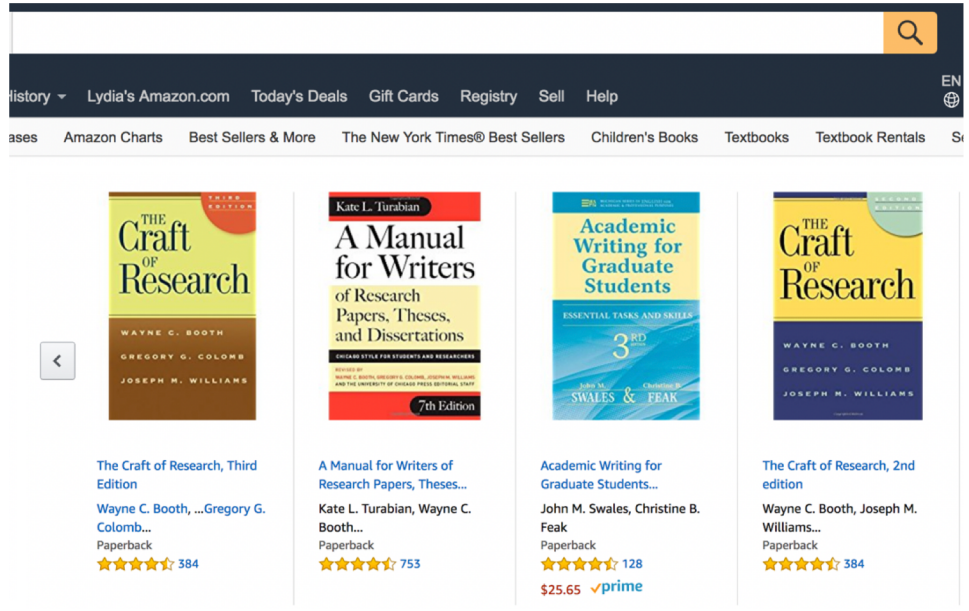
The Midterm is a big achievement!

You are now a user interface programmer!

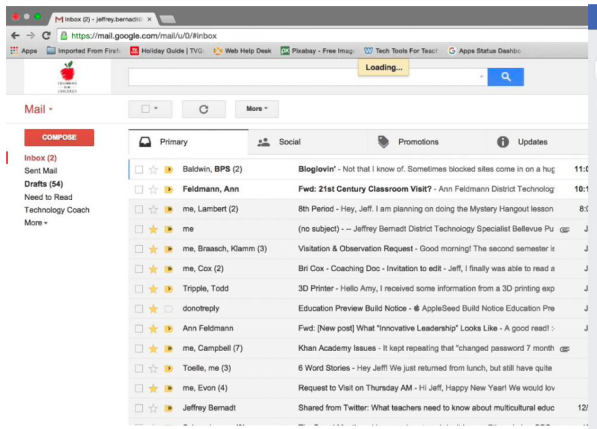
The main goal of many websites is to **interact with data.**

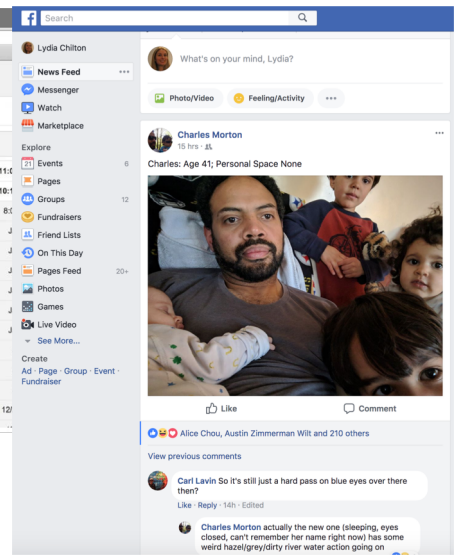


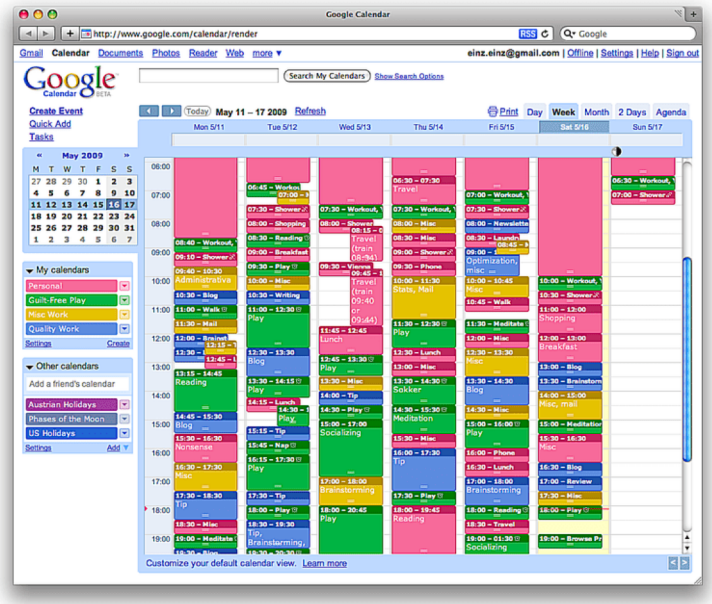


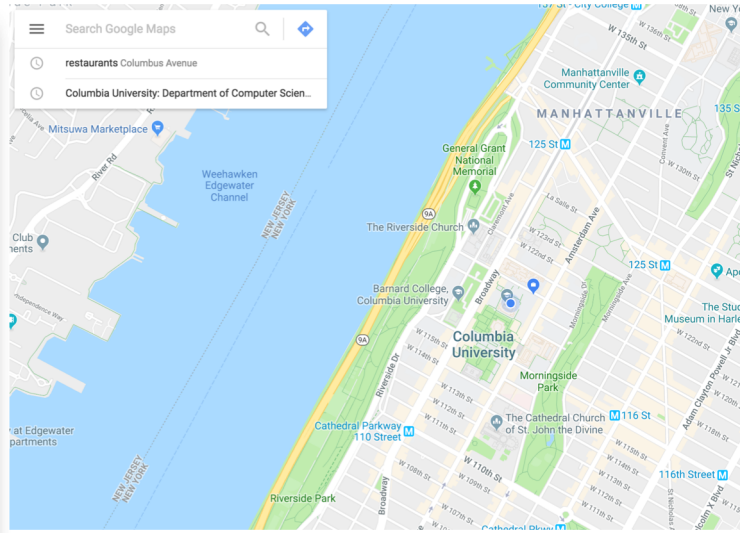


You can now make a working prototype of a most websites







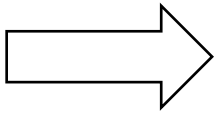


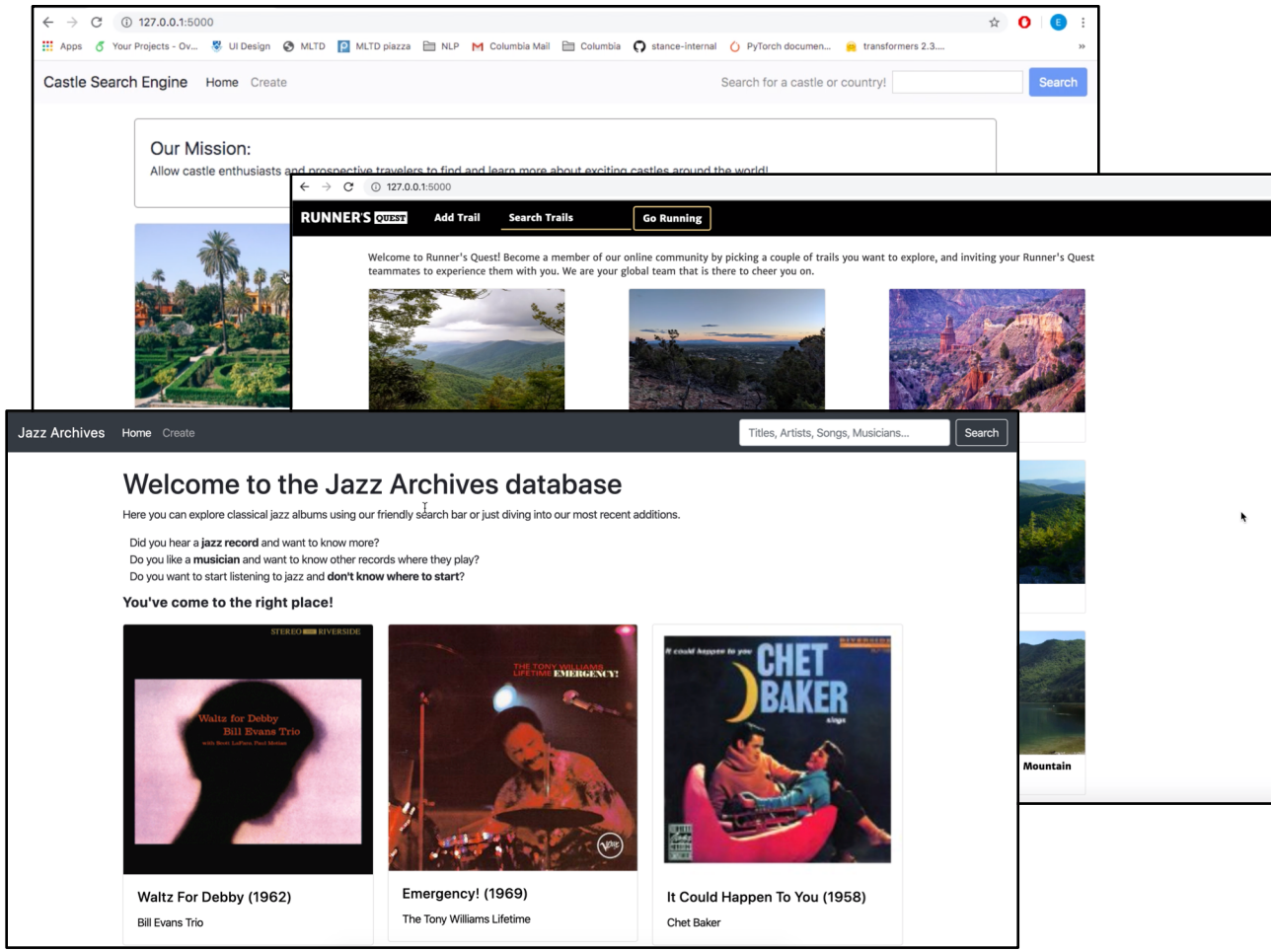
Given specifications, you can create interactions

Part 1 – Usable Functionality:

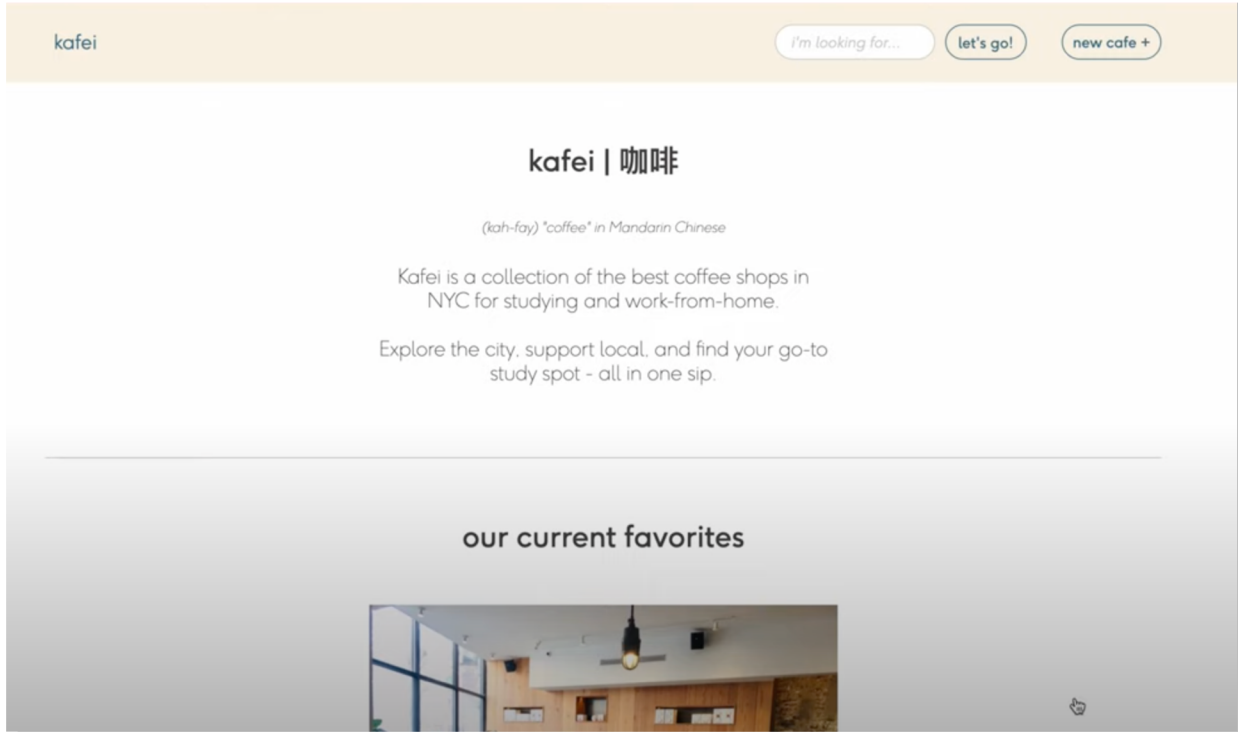
1. **Menu/Navigation**.
   a. For consistency, all the templates should be rendered with a shared template that contains a navbar.
   b. The navbar should contain:
      i. A home link (at the "/" route)
      ii. A text box to enter a search query and a "go" button (at the "/search" route). When the user presses enter on the search bar it should also "go".
      iii. A create link (at the "/create" route)
2. **Home**. The home link should render at the "/".
   a. 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.
   b. It should show the latest 10 entries added to the database to entice the viewer to click on something and start exploring.
   c. 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.
   d. 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.
   a. **Flexibility**. The query must do substring matching that is not case sensitive on the title and one other text field.
   b. **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.
   c. **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:
   a. **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 in 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.
   b. **Transitions**. After the user presses "submit" and the data successfully submits, allow the user to either view the item or enter a new item.
      i. 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.
      ii. 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>

   a. 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)
   b. **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.
   c. **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.
   d. **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).
   e. 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)**.
   a. The user should no longer be able to delete entire database items from the search page.





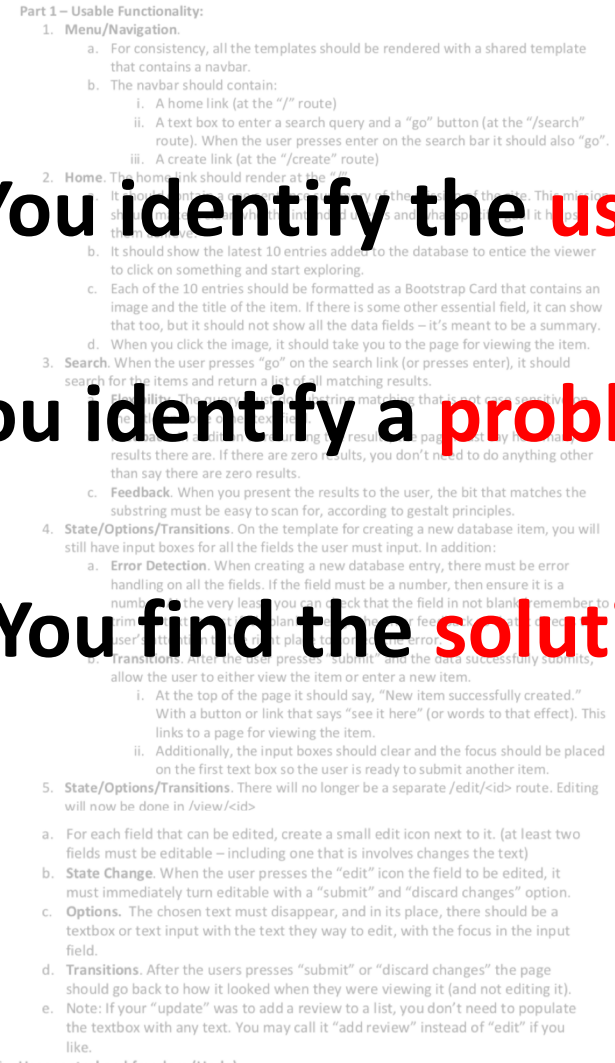
A project I loved: Kafei



A nicely specific user-centric need to fill

Help people find coffeeshops with wifi - so they find study places around the city

The next step is to become a user interface **designer**.



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You identify the user

You identify a problem

You find the solution

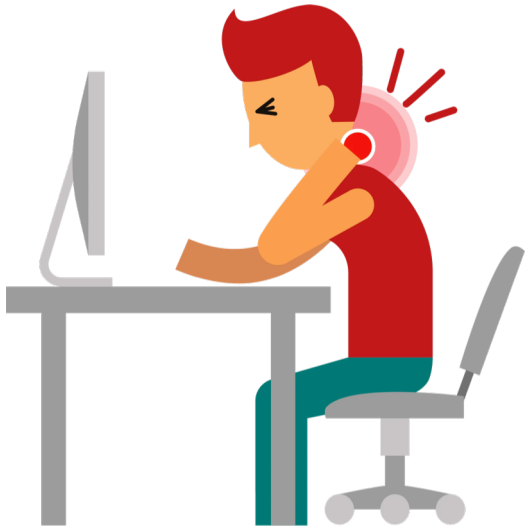
What is design?

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

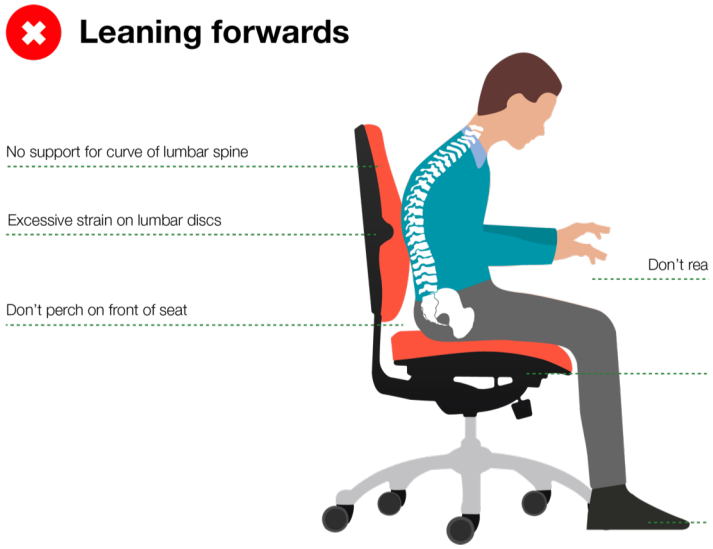
– Charles Eames

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

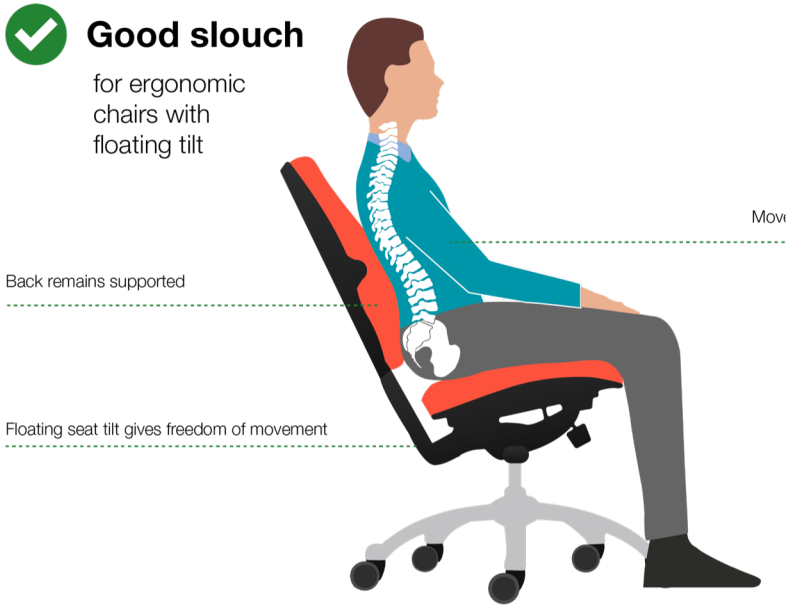
Design is a iterative progress where you work with users to identify and solve their problems.



Sitting all day hurts!



Why does it hurt?
How do people sit?



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.

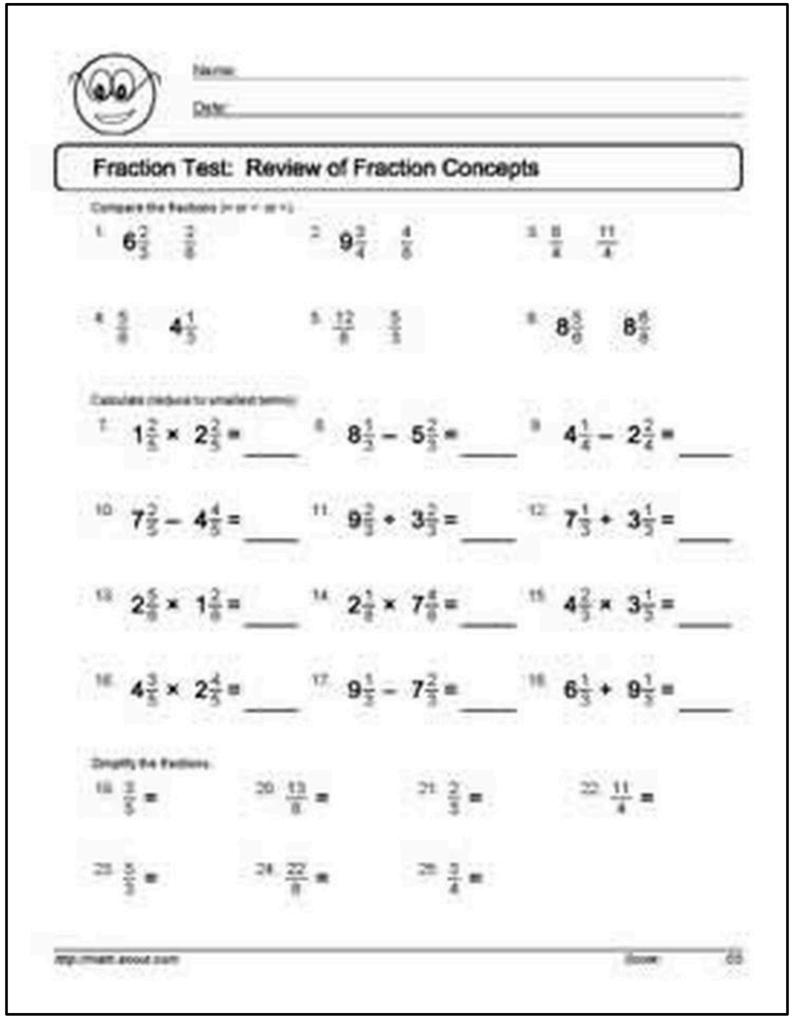
Test solutions on users:

The key to design is to iterate based on user feedback.

Let me tell you a 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

1. $6\frac{2}{3}$ $\frac{2}{8}$
2. $9\frac{3}{4}$ $\frac{4}{6}$
3. $\frac{8}{4}$ $\frac{11}{4}$
4. $\frac{5}{8}$ $4\frac{1}{5}$
5. $\frac{12}{8}$ $\frac{5}{3}$
6. $8\frac{5}{6}$ $8\frac{6}{8}$

Calculate (reduce to smallest terms)

7. $1\frac{2}{5} \times 2\frac{2}{5} =$ ____
8. $8\frac{1}{2} - 5\frac{2}{3} =$ ____
9. $4\frac{1}{4} - 2\frac{2}{4} =$ ____
10. $7\frac{2}{5} - 4\frac{4}{5} =$ ____
11. $9\frac{2}{3} + 3\frac{2}{3} =$ ____
12. $7\frac{1}{3} + 3\frac{1}{2} =$ ____
13. $2\frac{5}{8} \times 1\frac{2}{8} =$ ____
14. $2\frac{1}{8} \times 7\frac{4}{8} =$ ____
15. $4\frac{2}{3} \times 3\frac{1}{2} =$ ____
16. $4\frac{3}{5} \times 2\frac{4}{5} =$ ____
17. $9\frac{1}{2} - 7\frac{2}{3} =$ ____
18. $6\frac{1}{3} + 9\frac{1}{3} =$ ____

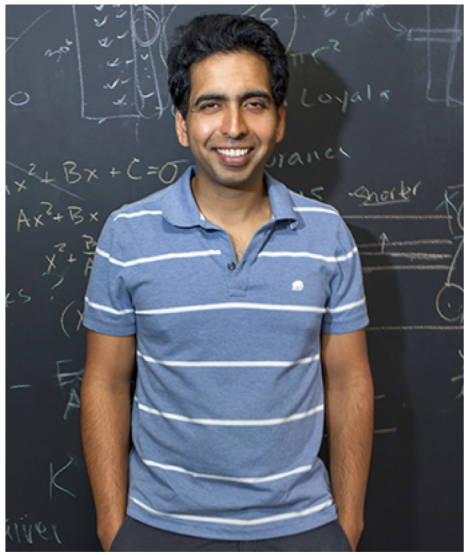
Simplify the fractions

19. $\frac{3}{5} =$
20. $\frac{13}{8} =$
21. $\frac{2}{3} =$
22. $\frac{11}{4} =$
23. $\frac{5}{3} =$
24. $\frac{22}{8} =$
25. $\frac{3}{4} =$

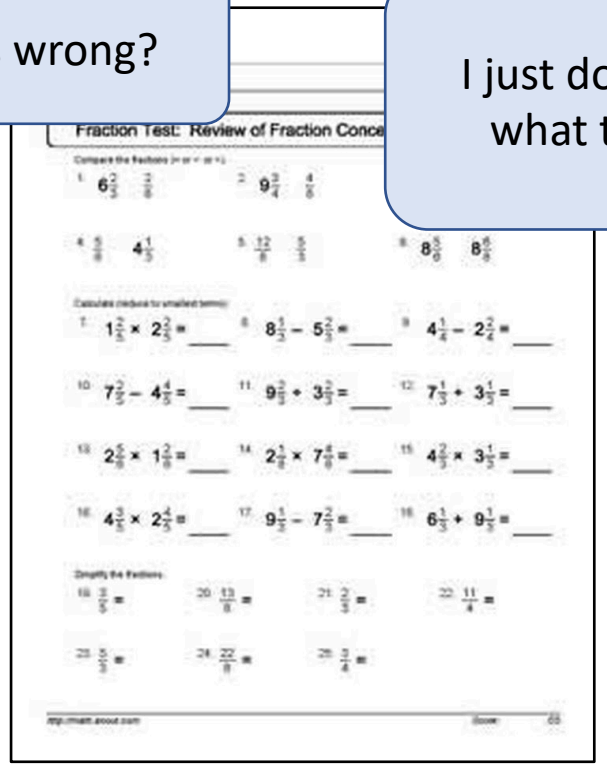
http://math.about.com Score:

Her uncle wants to help, but he lives in NYC

He asks about her fractions homework.



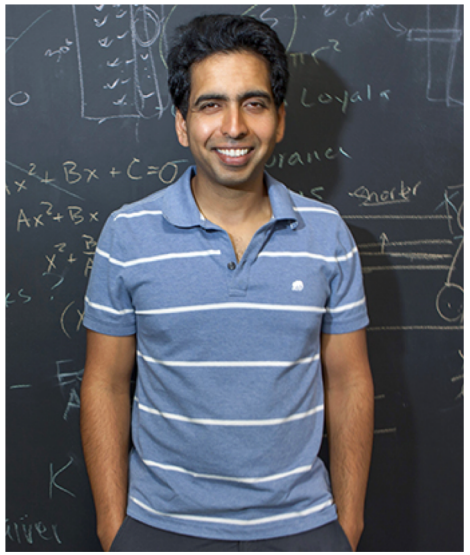
What's wrong?

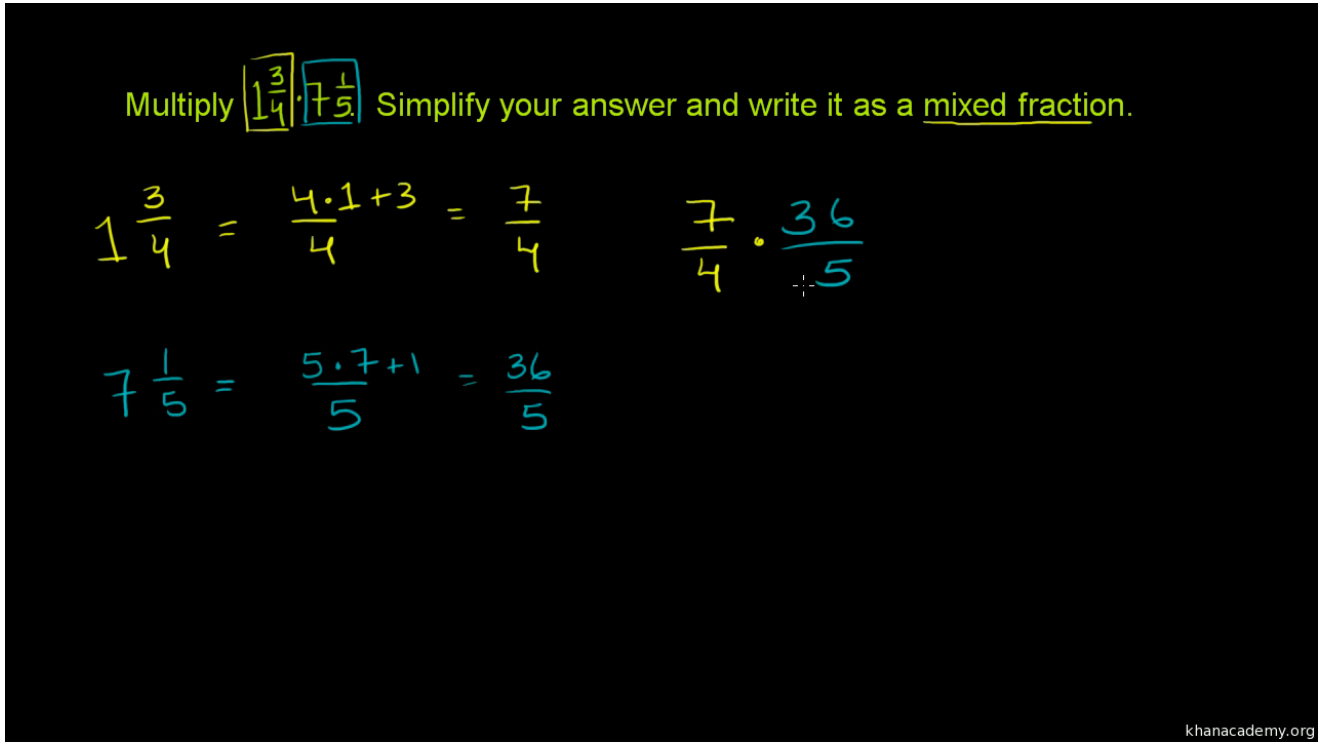


I just don't get what to do.

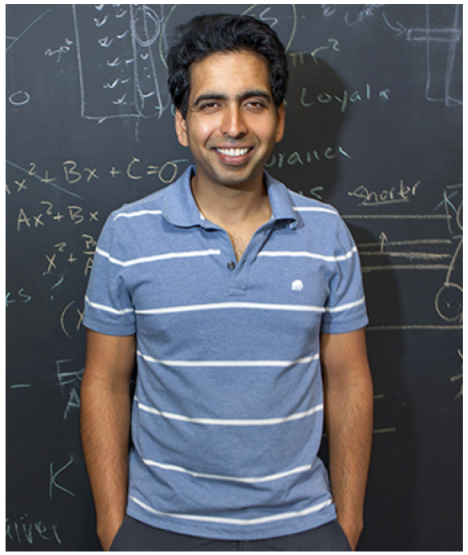
He has the insight that if she **saw more examples**, she could figure out how to solve fractions.

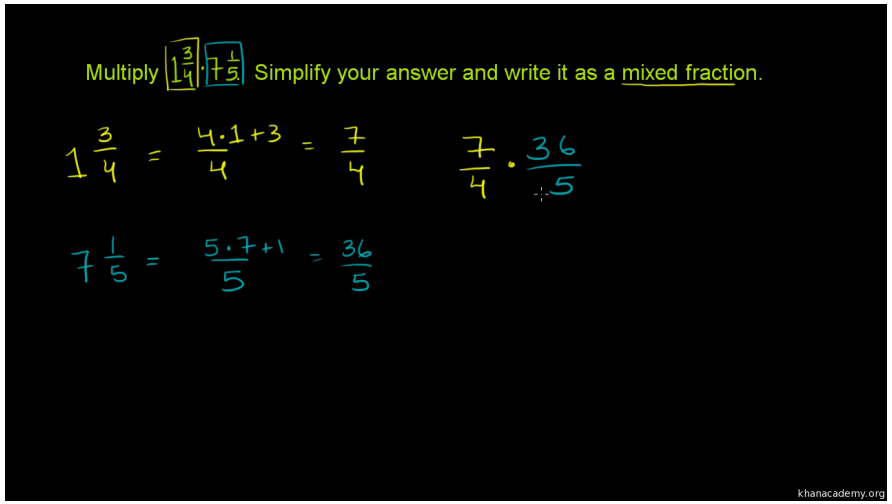
He makes videos and uploads them to YouTube.

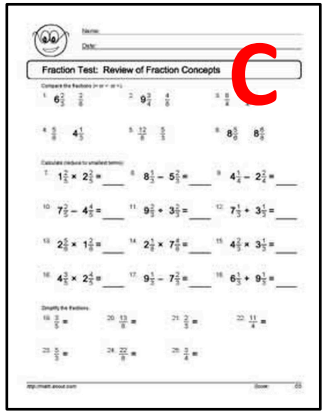




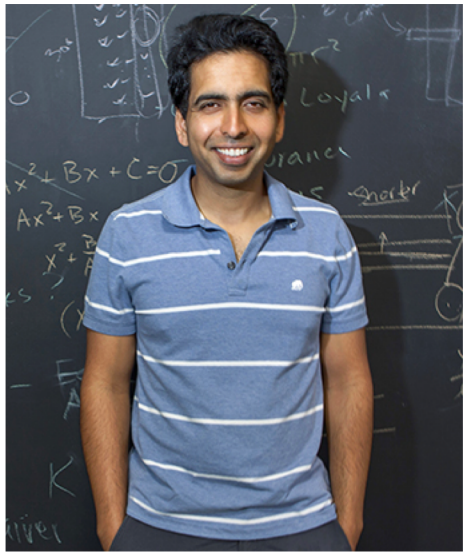
And he shows it to Nadia to see it helps…

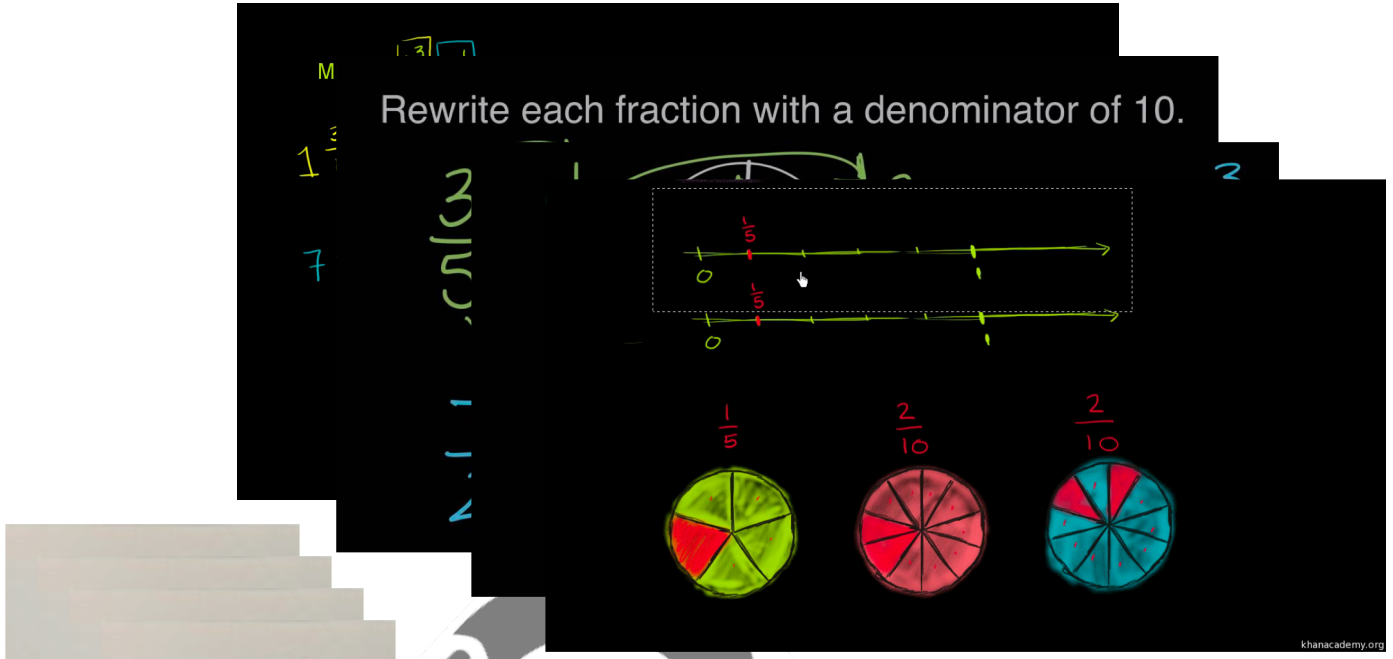


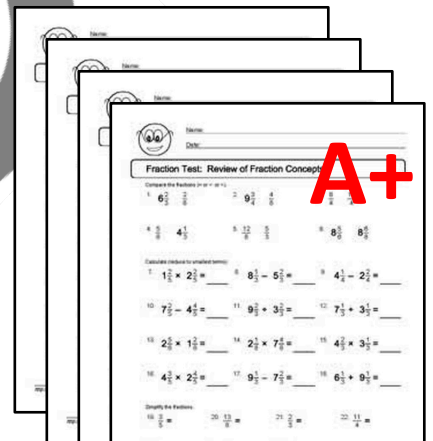




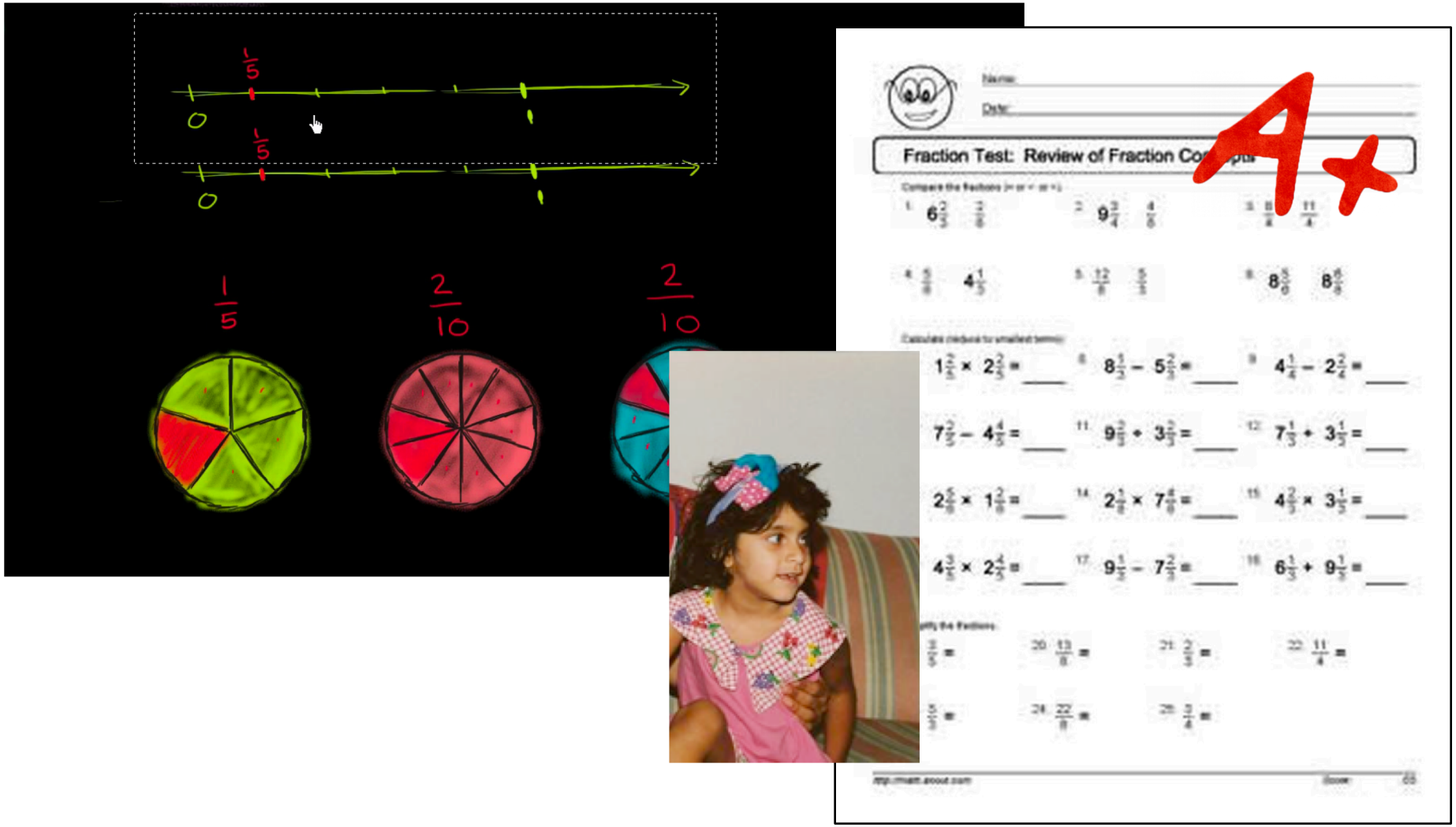
And he improves it again and again



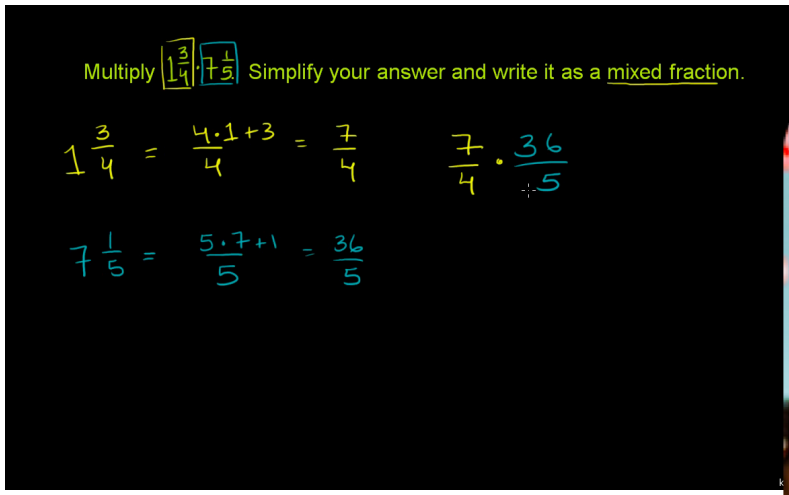




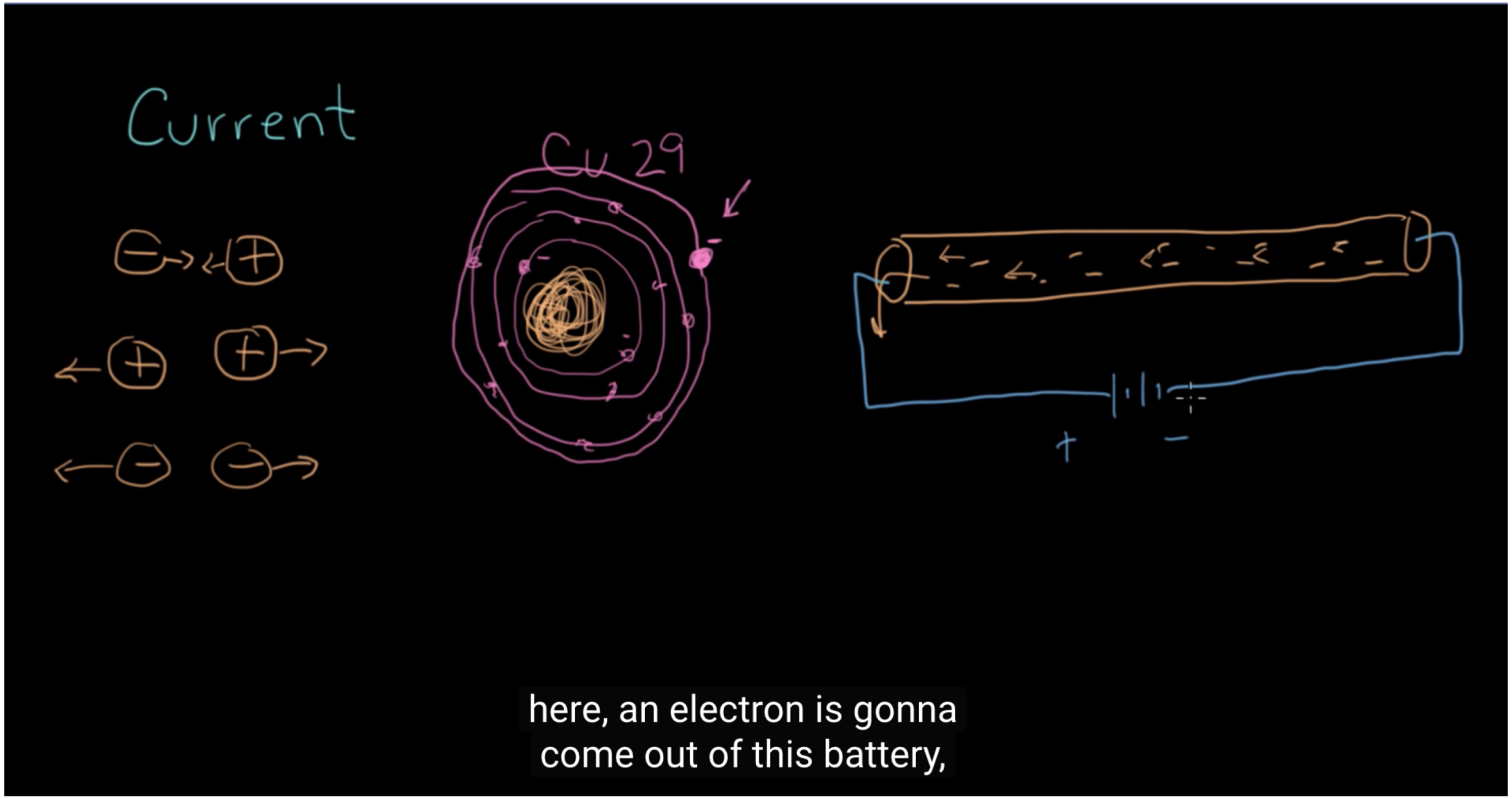
This videos help Nadia. She aces the test!



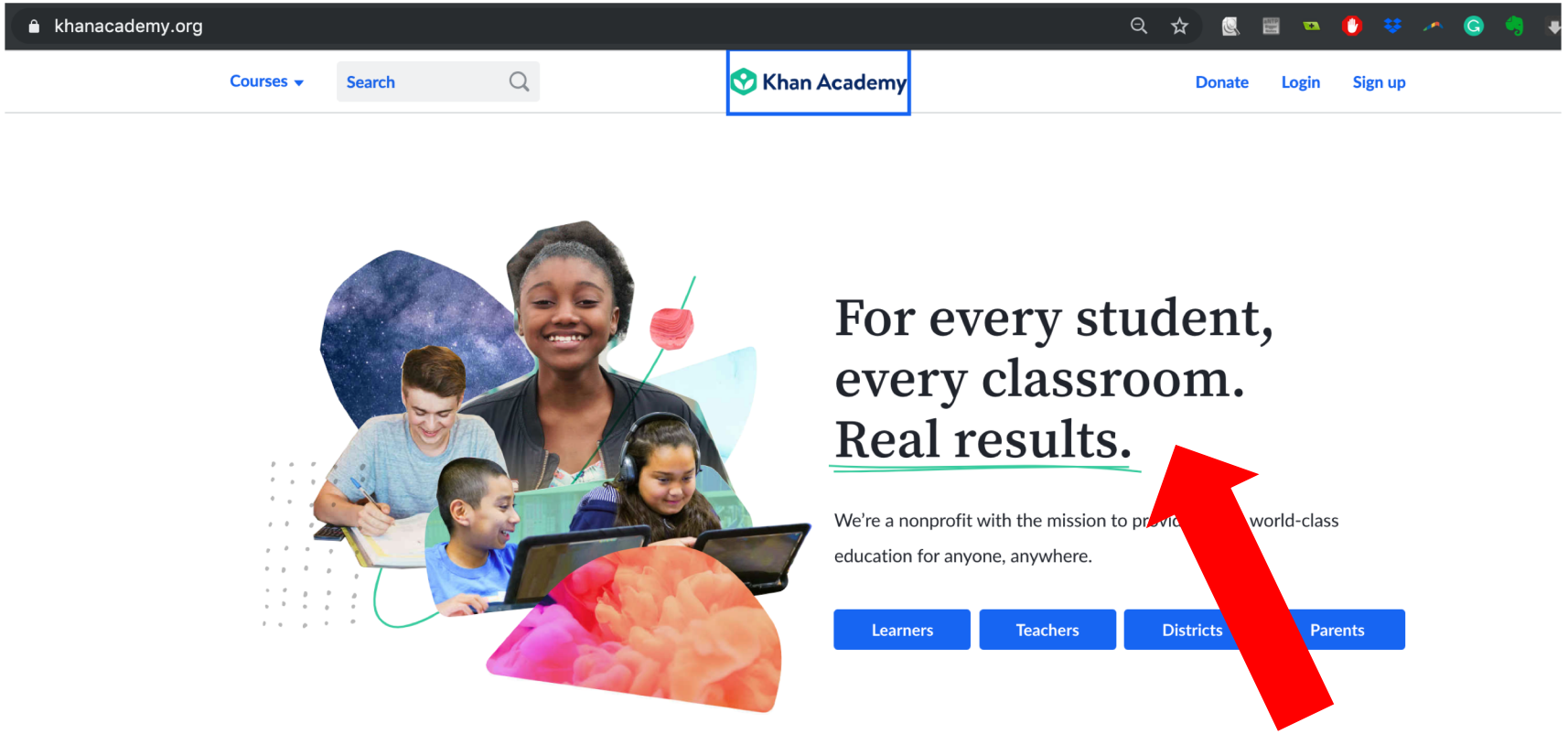
This video helps other students pass their fractions tests, too.



Videos in this format help students learn other topics.

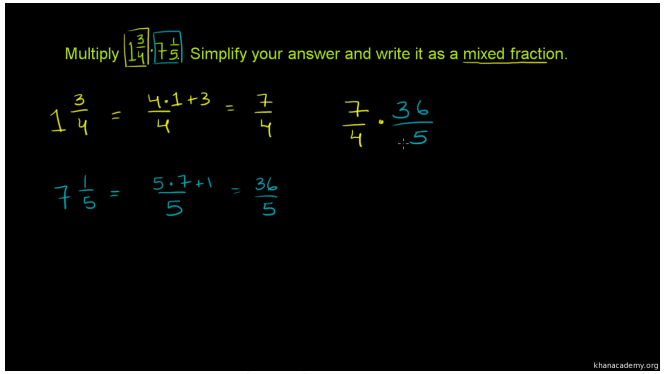


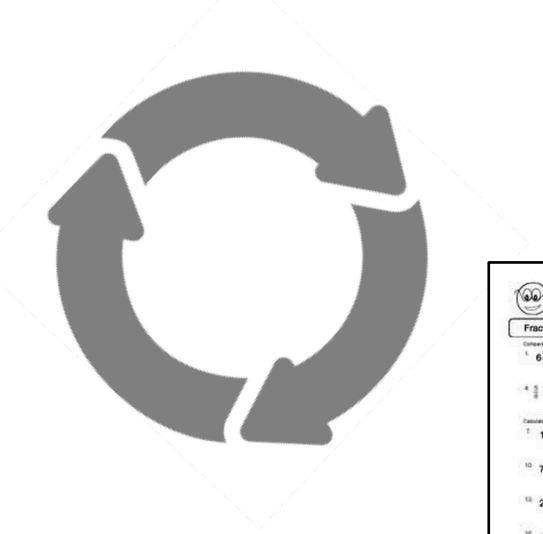
These videos became Khan Academy.

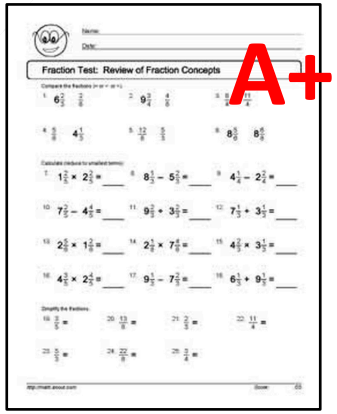


Very general problem

But it started by helping a **person** with a **problem,** and lot of **iteration**

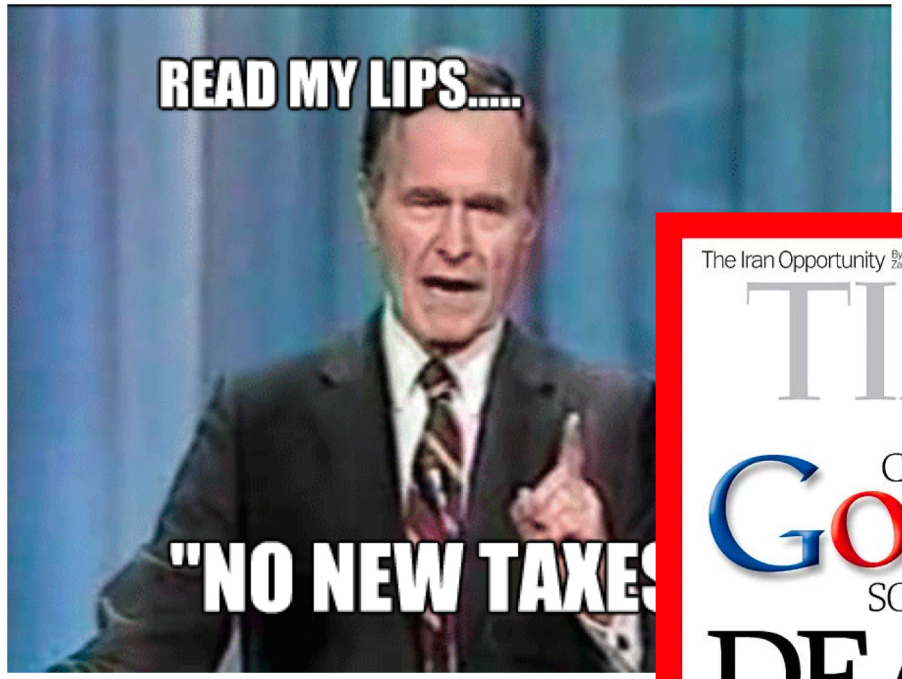




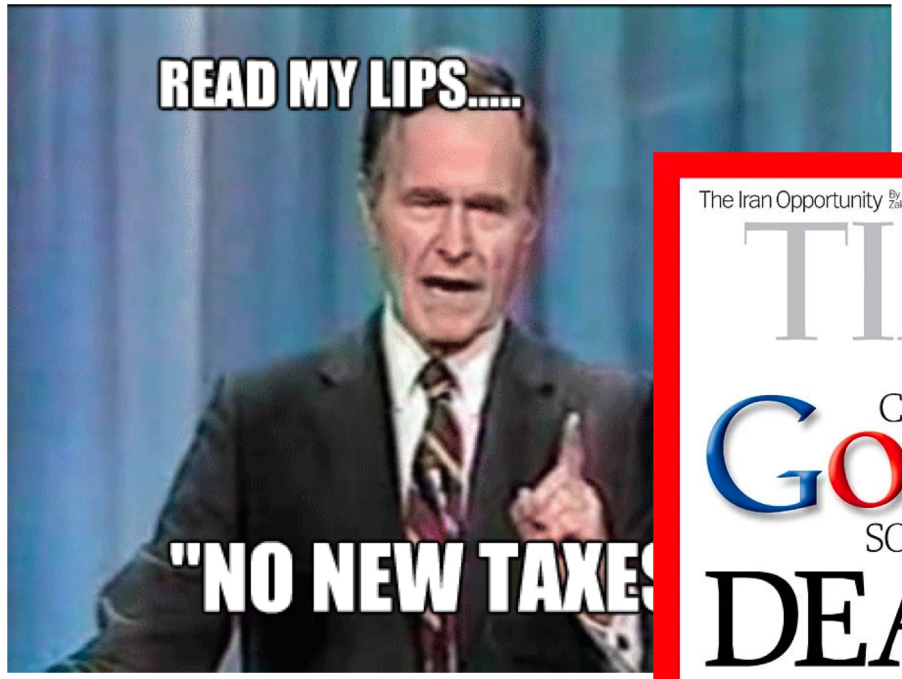


Don’t start big. Start small.

In the media, people often *claim* they are solving big problems.



There’s something appealing about how grand big problem sound, but ….

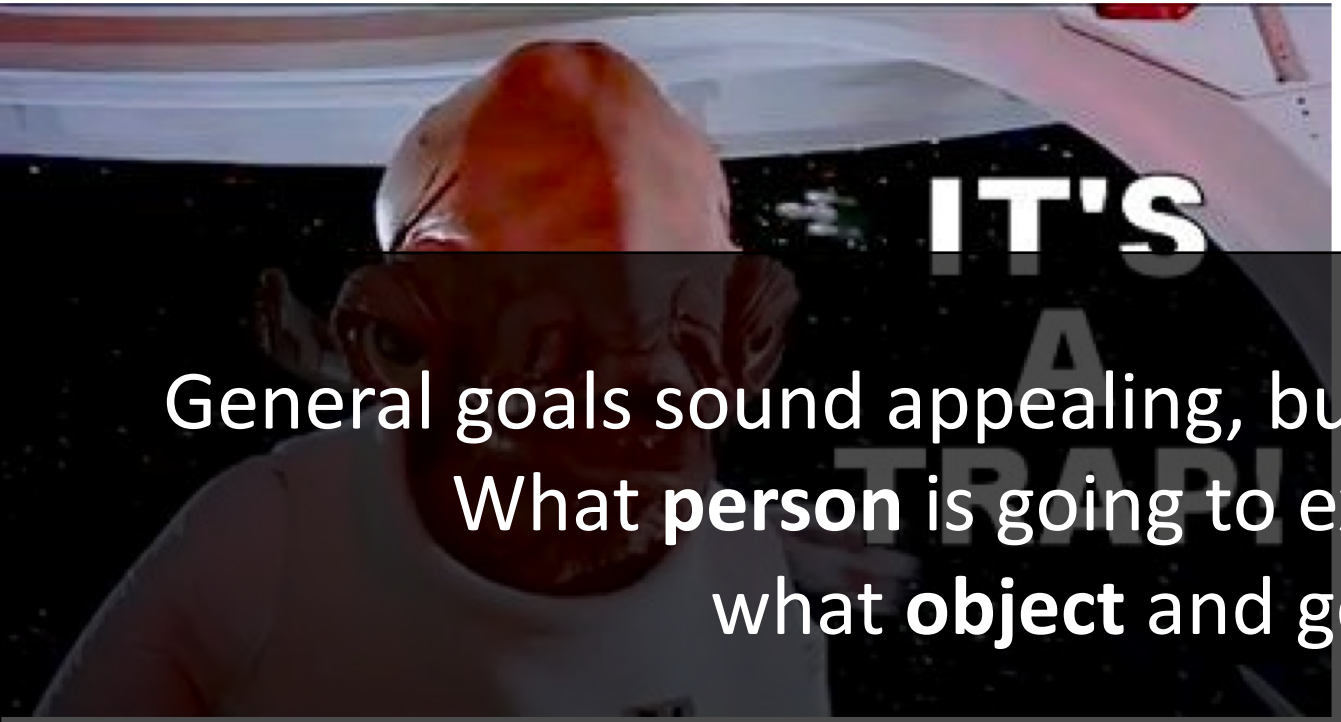


What’s the problem with general goals?

They aren’t actionable.

General Vs. Specific Goals

Goal 1:
“Clean the house.”



Goal 2:
“Fold that basket of laundry.”

General goals sound appealing, but specific goals are actionable:
What **person** is going to execute what **action** on
what **object** and get what **value**?

General goals are actually Domains

Domain:
"Clean the house"

Specific goal:
"Fold that basket of laundry."

What’s the risk with a specific goal?

“Fold that basket of laundry.”

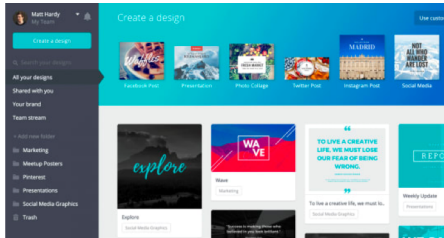
Specific goals can be trivial.

But, if you start specific,
you can usually generalize

If you start specific, you can usually generalize later.

	Domain	Specific Need	Generalized to
amazon	Online shopping	Uncommon books	Clothes,Food, Amazon Fresh Other sellers
facebook	Social Networking	Harvard students looking up dorm, classes, relationship status	Ivy League US Colleges Everybody
Gmail	Read/send Email	No page reload Never Delete	Chat GDrive
Canva	Graphic Design For novices	High School Yearbooks	Posters, flyers, ads

If you start specific, you can usually generalize.



Design Project

Final Project:

- Design and build a **web** application
- To help a user learn an introductory topic **interactively**
- Within a **domain of your choosing**
- The interactive experience centers around **media (image, video, audio..)**
- And help them assess their learning with a **quiz**.
- And keep learning through **feedback** from the quiz.
- In under **10 minutes** total

The **user** is someone in this class

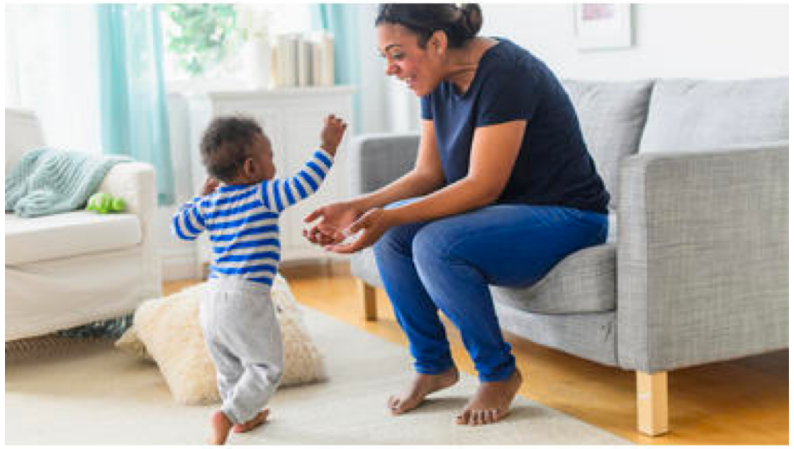
- This way, you can test your designing on people in this class.
- Your TA must also feel like this is something valuable for them to learn.
- Consequently, you **cannot** design for:
  - Kids or teenagers (they aren't in this class)
  - People who only speak Serbian (everyone in this class speaks English)
  - Architecture Majors.

The **topic** may be in a domain of your choice, but it must be focused enough to teach in 10 min.

- Examples of broad domains:
  - chess,
  - basketball,
  - art history,
  - music
- Example focused topics
  - **Chess**: how and when to perform 3 different opening moves in chess for chess beginnings
  - **Basketball**: how to run a pick and roll in basketball for casual NBA fans
  - **Art history**: how to tell impressionist paintings from post-impressionist paintings for ArtHum students
  - **Music**: how to mix a drop swap for aspiring DJs

Design insight for teaching:

People learn through interaction and feedback, not from reading long dumps of information



Learning to walk

Playing an instrument

```
void loop() {

float humidity = 452;
for( int counter = 0; counter < 1000; ++counter ) {
  digitalWrite(13, HIGH);   // set the LED on
  delay( 200 );             // wait for a second
  digitalWrite(13, LOW);    // set the LED offer
  Serial.pirnt( "Hello " );
  Serial.println( counter );
  delay(200);               // wait for a second
  humidity += 0.5;
}
```

100 %

Error List

2 Errors | 1 Warning | 0 Messages

	Description
1	IntelliSense: class "Serial_" has no member "pirnt"
2	In function 'void loop()'
3	23:10: error: 'class Serial_' has no member named 'pirnt'

Code

Examples

Lipreading Learn B Learn H Learn L Test

Welcome to **Lipreading**, your site for learning to read lips! Use the navbar above or click the button below to learn the how to lipread different sounds. When you're ready, try a test!

Start With B

How does it fulfill the requirements?

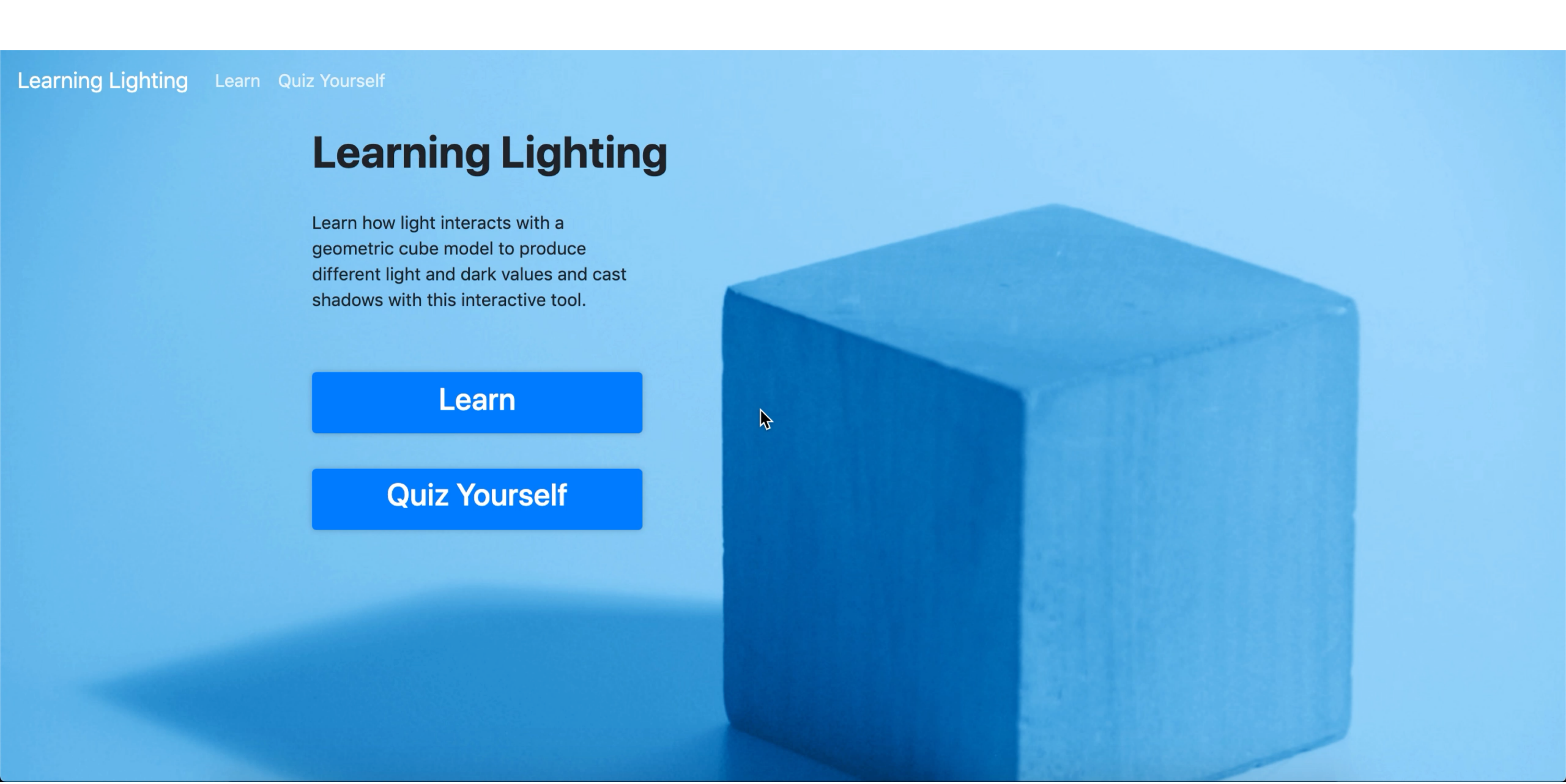
Domain:	Lipreading
Topic:	B, H and L sounds
Media:	Videos
Interaction	Watch videos with and without sound
User:	Would you learning something from this?

Learning Lighting

Learn how light interacts with a geometric cube model to produce different light and dark values and cast shadows with this interactive tool.

Learn

Quiz Yourself

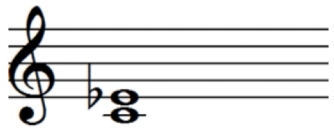


How does it fulfill the requirements?

Domain:	Lighting
Topic:	Lighting from 5 directions
Media:	3d model
Interaction	Click the model
User:	Would you learning something from this?

Minor Third

Step 1: Listen



A Minor Third has 3 half steps between the lower note and the higher note. Try counting the number of lines and spaces between the two notes on the image above.

The "minor" quality indicates that this interval comes from the minor scale of its lower note, and that the interval sounds slightly dissonant or unhappy.

0:00 / 0:06

Step: 1 2 3

How does it fulfill the requirements?

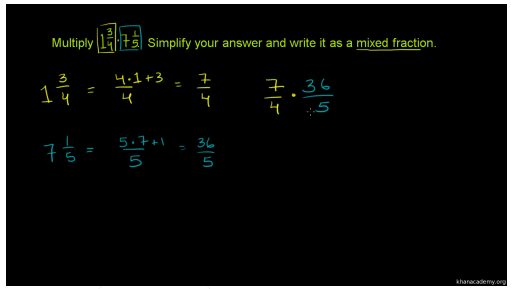
Domain:	Music
Topic:	Identifying intervals
Media:	Piano
Interaction	Play music, press keys on piano
User:	Would you learning something from this?

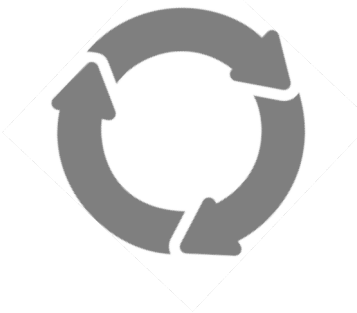
Project Logistics

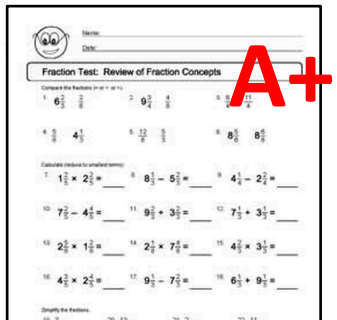
- **Weekly homework** will build up to the final project (5% of grade)
- Final submission is worth **20% of your grade**.
- This project is to be completed **in a group**.
  - You will meet with your TA to receive feedback.

You must iterate based on your TAs feedback.

- There are no right or wrong answers to design problems.
  - But there are better and worse answers.
- A core skill we want you to learn is to iterate based on feedback. Thus, your grade is depending on your making your TA happy.



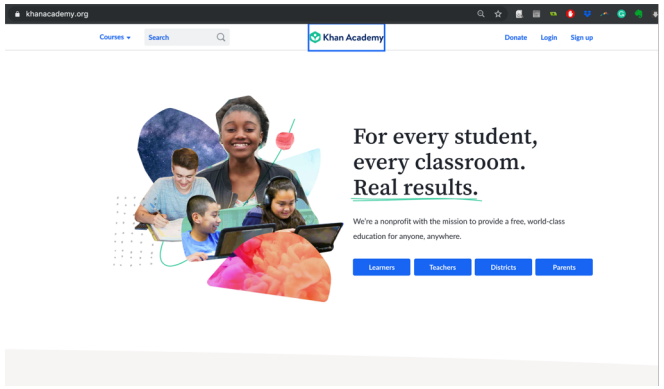




Design Process

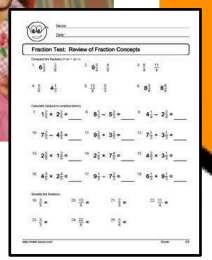
The biggest misconception about creativity

Idea



Product

Creativity is a Process



Person with a challenge

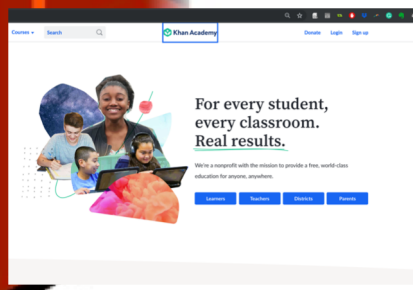
- Brainstorm
- Interview
- Research

Synthesize into insights and ideas

Ideas

- Prototype solutions
- Explore technical options

Test them

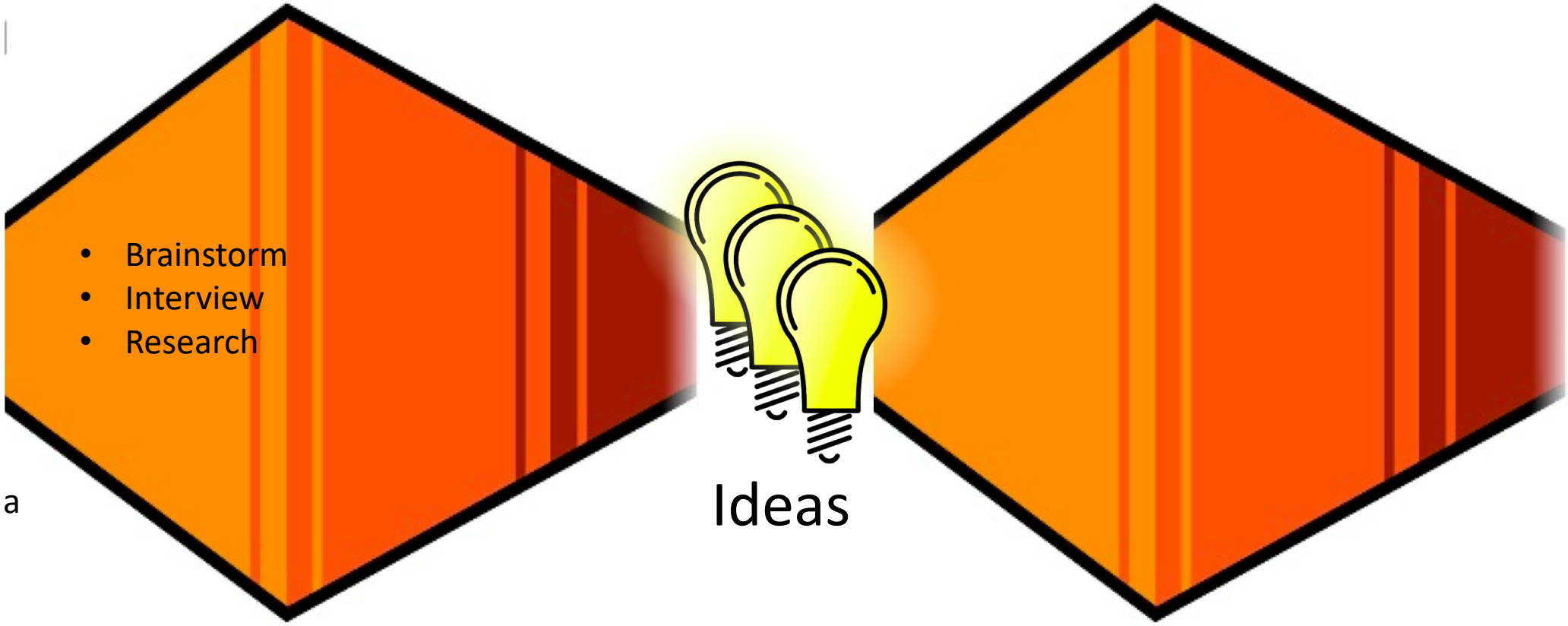


Product

Understand the problem

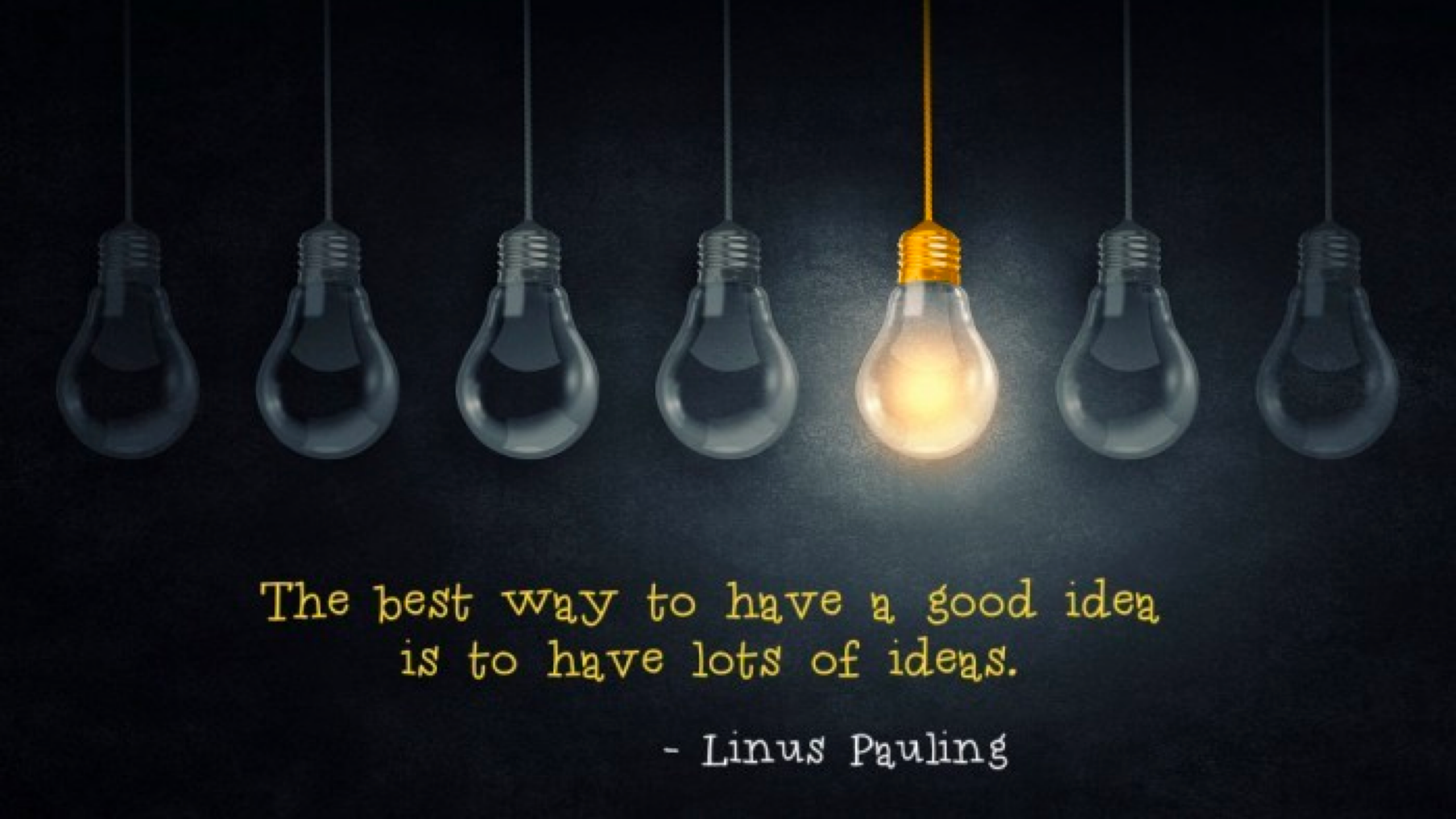
Solve the problem

Your user is your TA (and students in this class). You have to identify a problem you can solve.

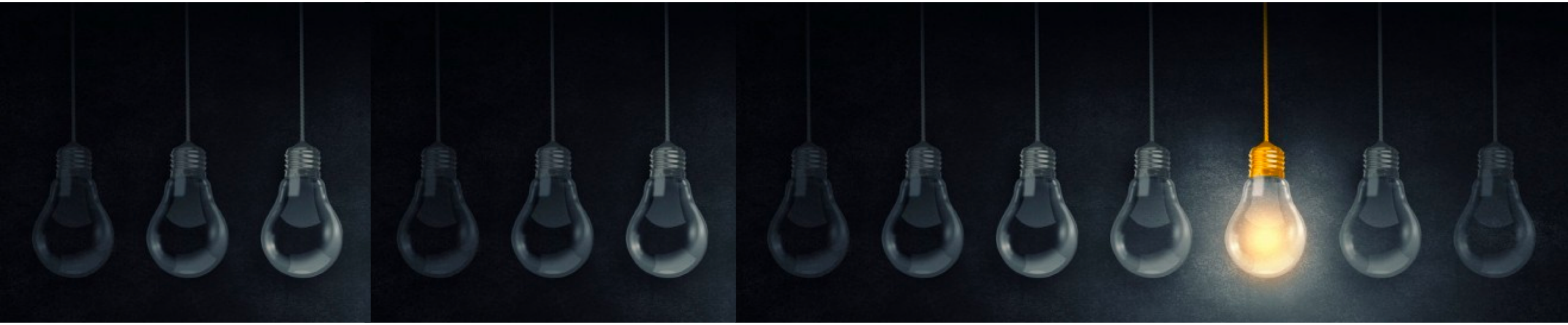


Individual warm-up:
Brainstorm **domains and topics** you can teach

2. **Brainstorm 5 domains**. What are 5 domains that you could teach things to your classmates?
    1. Note: These must be things were you already know a lot of stuff, because you obviously can't teach a topic that you don't know well.
    2. Note: domains are broad like chess, basketball, art history. Next, we'll think about specific topics, which are must less broad
3. **Brainstorm specific topics.** For each of those 5 domains, list 5 specific topics that you could teach interactively in under 10 minutes.
    1. For each specific topic,
        a) What media would you use?
        b) What would you quiz users on to test their knowledge? (a short sentence or phrase is fine)
    2. Note: It has to be hard enough that people don't already know it, but specific enough that you can teach it in 10 minutes.
    3. Note: To get from a broad domain to a specific topic, you may need to narrow the topic down more and more. For example: Art History -> The Modern Era -> Identifying types of paintings -> identifying post-impressionist paintings.
4. **Select favorite topics.** Of these 25 potential topics, which are your favorites? List between 3 and 6 topics that you would be willing to pursue. PRESENT THESE IN YOUR SLIDES FIRST.


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

Many of those ideas will be absolute crap!



That’s okay!
You gotta get through the bad ones to get to the good ones.

Goal: Make the best piece of pottery.

Group 1 was told to make as many as they could

Vs.

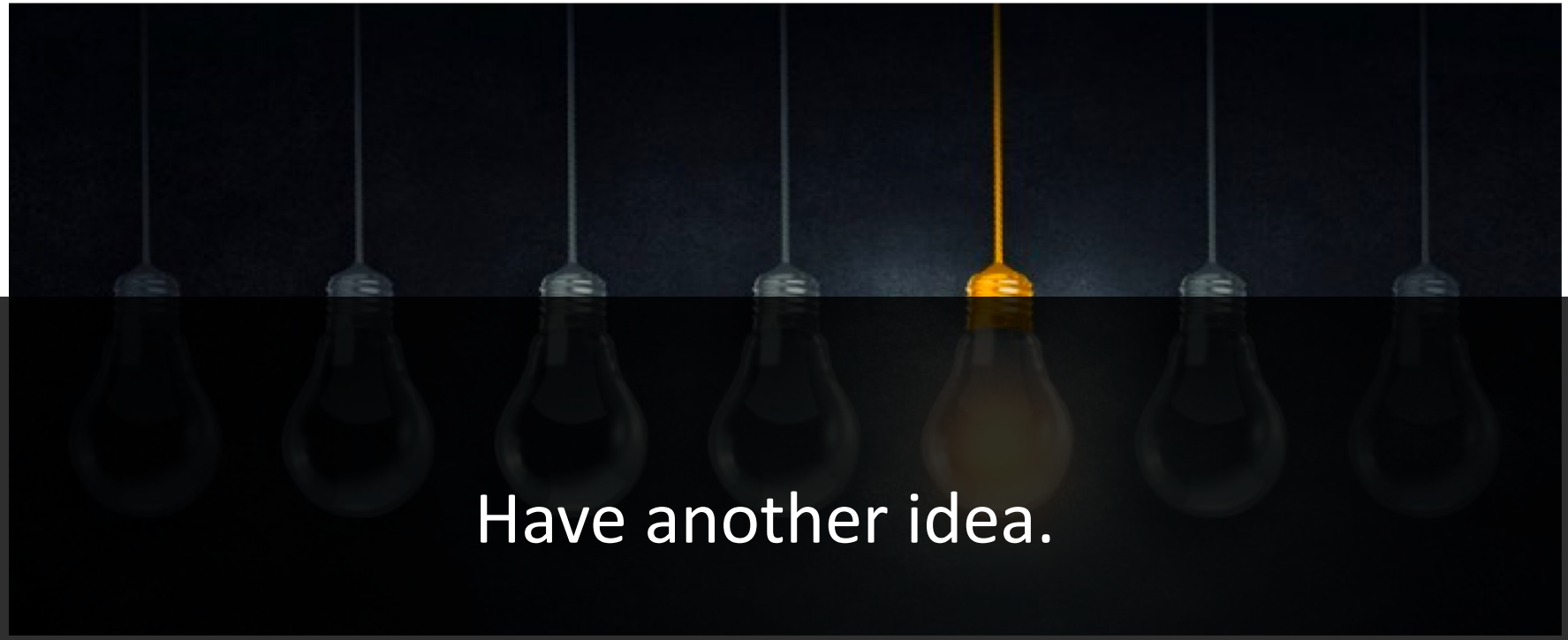
Group 2 was told to only make one

Bayles and Orland, 2001

Keep the ideas flowing!
Don’t be critical of the ideas.

You can prune bad ideas later.

In a group brainstorm, if you HATE someone's idea, what should you do?



Brainstorm:
Domains you could teach

- Cooking
- Programming
- Languages
- Dance
- Yoga
- Fitness
- Music
- Identify poisonous plants.
- Games
- Health
- Music theory
- Fashion
- Basketball rules
- Flowers

Brainstorm:
Topics to teach in **Cooking domain**

- How to tell when meat is cooked?
- Learn different pasta shapes
- How prepare sashimi
- How to fold dumplings!
- Vegan meat substitutes
- Mooncakes
- How to tell if fruit is fresh

Brainstorm:
Topics to teach in **Dance domain**

- Tik tok dances
- Moonwalk
- Different grooves in hiphop
- Fortnite dance
- Stanky leg
- Ballet positions
  - 5 basic ones: explain what they are or how to add on to them.
- Stretching for dance
- Steps for ballroom dancing

For this class, topics must be **small enough** that it can be learned in 10 minutes, but also **hard enough** that they don't already know it

- **Bad topics (too big/hard)**
  - How to play chess (too hard: way too big for 10 minutes),
  - How to DJ (too hard: way too big for 10 minutes)
  - Learn the Arabic alphabet. Too hard to memorize 30+ things. You could possibly reduce this to a small and interesting subset to find a better scoped topic.
  - How to identify art movements (too hard: too many art movements to do in 10 minutes, and some of them are very easy to identify)

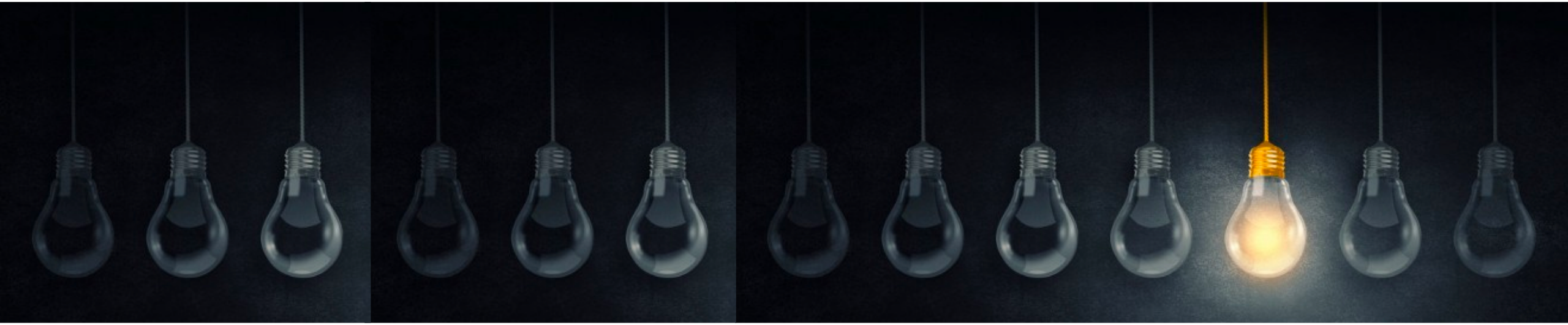
Bad topics (too easy)

- identifying the chess pieces (too easy – most people in this class probably know at least 50% of the pieces)
- Distinguish a major chord from a minor chord. (Almost everyone can do this without 10 minutes of training)
- Which bin to put things in the recycle. Most people know 90% of the recycle rules (there are just a few tricky one).
- Count to 10 in German. Although people may or may not know this – what need to be learned is to memorize 5 things. Also, there are already great solutions for this.

Good topics

- **how and when to perform 3 different opening moves in chess for chess beginners** (who already know the moves the pieces can make, because that's mostly common knowledge). For someone who knows chess pieces casually, and might want to start to play, learning the opening moves is useful, interesting, and can be done in 10 minutes.
- **how to musical intervals (like a minor third).** This is harder and less intuitive than major/minor chords, but still learnable in 10 minutes. If you can't teach them all, find some important ones to teach.
- **how to tell impressionist paintings from post-impressionist paintings for ArtHum students**. These two movements are hard to tell apart for casual viewers, but have several features that distinguish them, making it valuable to learn and possible to teach in 10 minutes.
- **how to mix a drop swap for aspiring DJs.** This focuses on one particular skills. If someone is interested in learning what DJing really entails, it teaches a concrete skill to get them started.

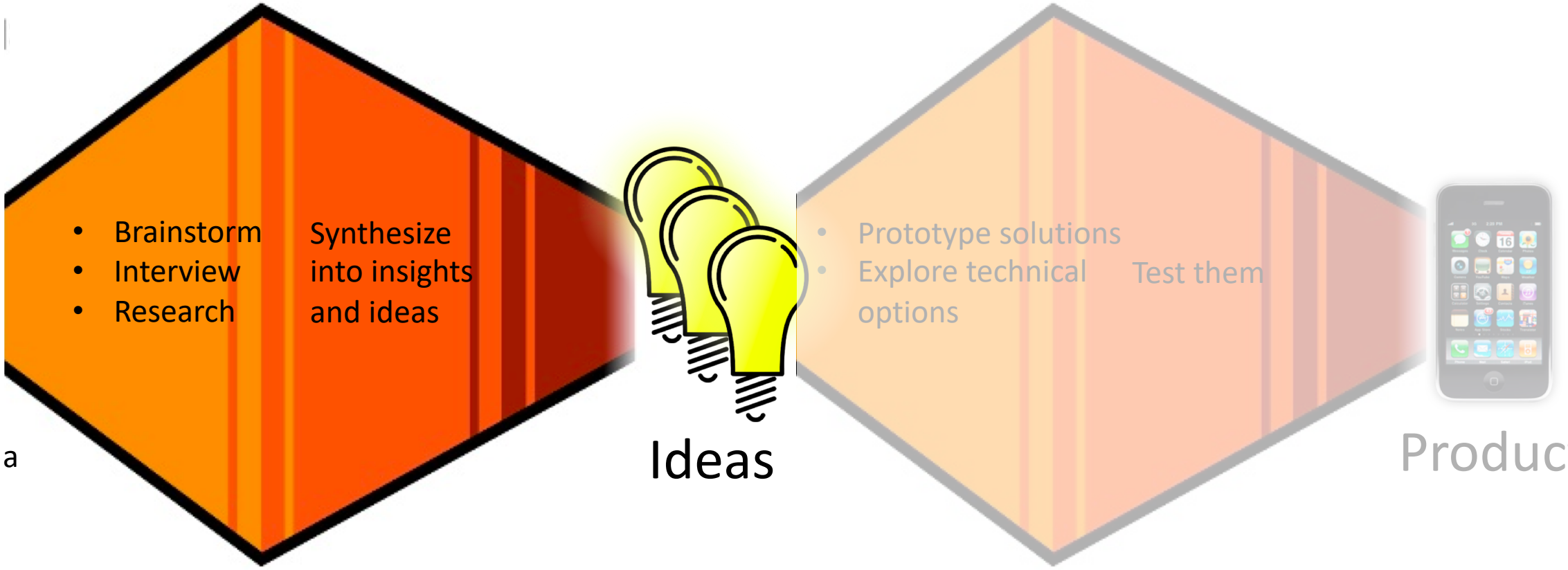
Brainstorm domains and topics…



But we'll have to narrow them down…

To pick an idea, talk to users to learn about their experience.

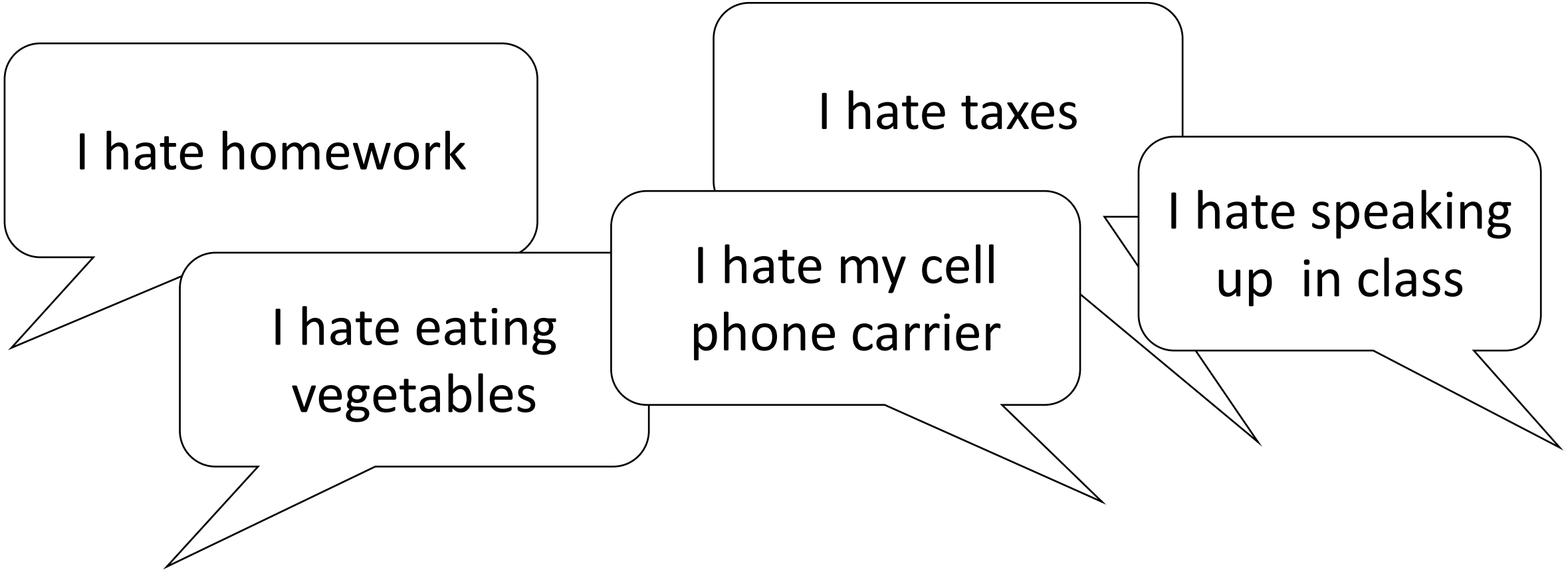
To understand the problem, you have to understand users' experiences.



Phase 1: Understand the problem

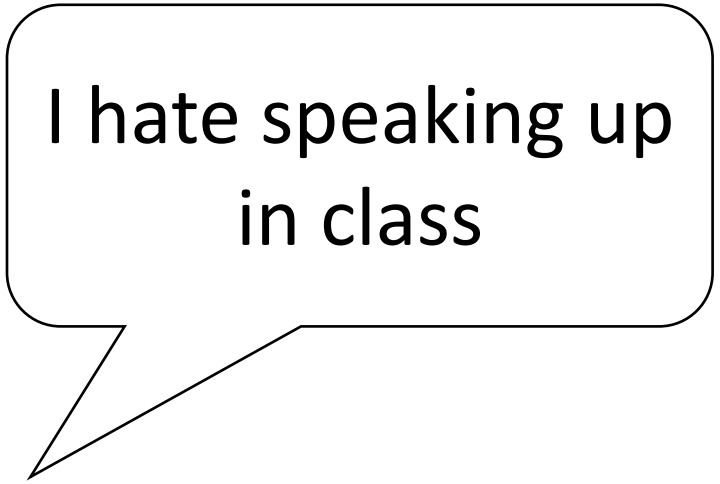
Talk to Users

If you ask “What are your problems?” you get things like this.



These answers doesn’t provide us with the details we need to understand the problem.

Instead,
we want to **understand their experiences**.



What's the experience of speaking up in class?

Step 1.
Find a real person who has done this recently.

Caroline – a student in User Interface design who is shy, but is forced to participate in class and fill out a form after class to record her participation

Step 2.
Ask them about a **specific time** they did it.

When was the last time you spoke up in class?

- What did you say?
- Why did you decide to speak up then?
- What did it feel like. Easy? Hard? Scary?
- What happened after you spoke up?
- What did you think/feel/say/do?
- Then what?

Don’t ask broad questions like “why don’t you like speaking up in class?”
People are better at accurately recalling a specific incident and reasoning about it.

Student answers to: “Tell me about the last time you participated in class?”

I’m worried my accent won’t be understood

I only saw something if I’m 100% sure of the answer. I don’t like to guess

I’m so nervous about participating that I don’t pay attention

It takes me a few seconds to think of something, and by then you’ve called on someone in the front row.

I always forget to fill out the participation form.

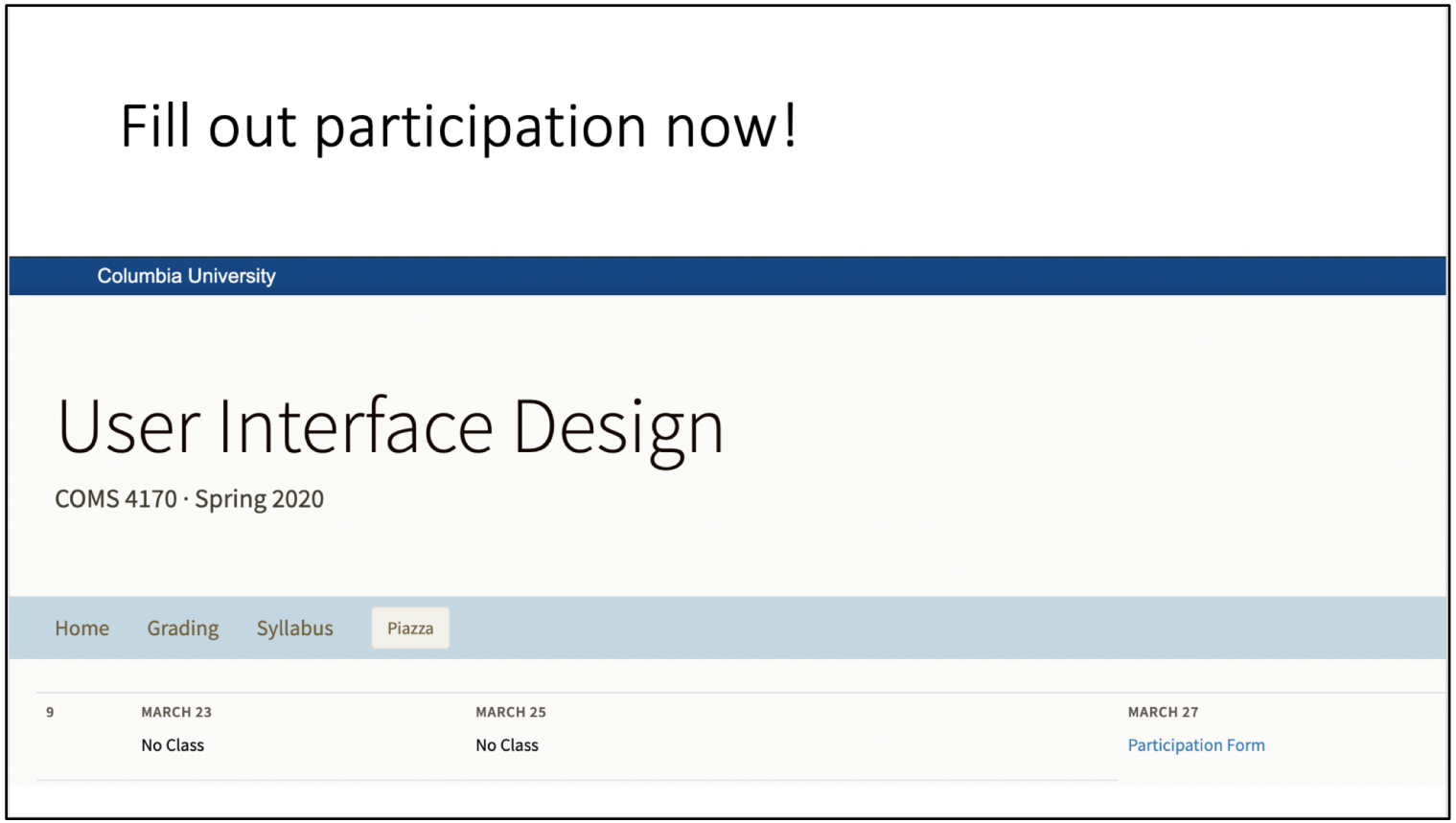
I always forget to fill out the participation form.

I always forget to fill out the participation form.

I always forget to fill out the participation form.

I always forget to fill out the participation form.

But why is filling the form so hard????



I remind you right after class.
Don't you pull out your phone after class anyway???

There is other stuff to check on my phone that I get sucked into.

I'm running to my next class, and my mind switches tasks

I need a computer to fill it out because I have to be logged in.

I didn't know there was a deadline to fill them out by!!!!!

I fill it out after I go home

Can't I just put it on the homework.

Step 5.
Identify insights

- After class, people want to move on. They're switched mental states.
- **Idea:** Have people just write their participation on the homework.
- Not everybody loves speaking up in front of 400 people.
- **Idea:** Focus participation on the smaller sections where we can give more feedback.

For the HW7, interview someone in this class about your domain/topic.

- **Interview them about their experience** with a domain/topic you are an expert in.
  - What do they already know about it?
  - For the domain of “recycling” what do they already know.
  - Where is their knowledge stuck?

- **Write down 3 insights you learned.** things you didn’t know about the person or problem before hand)

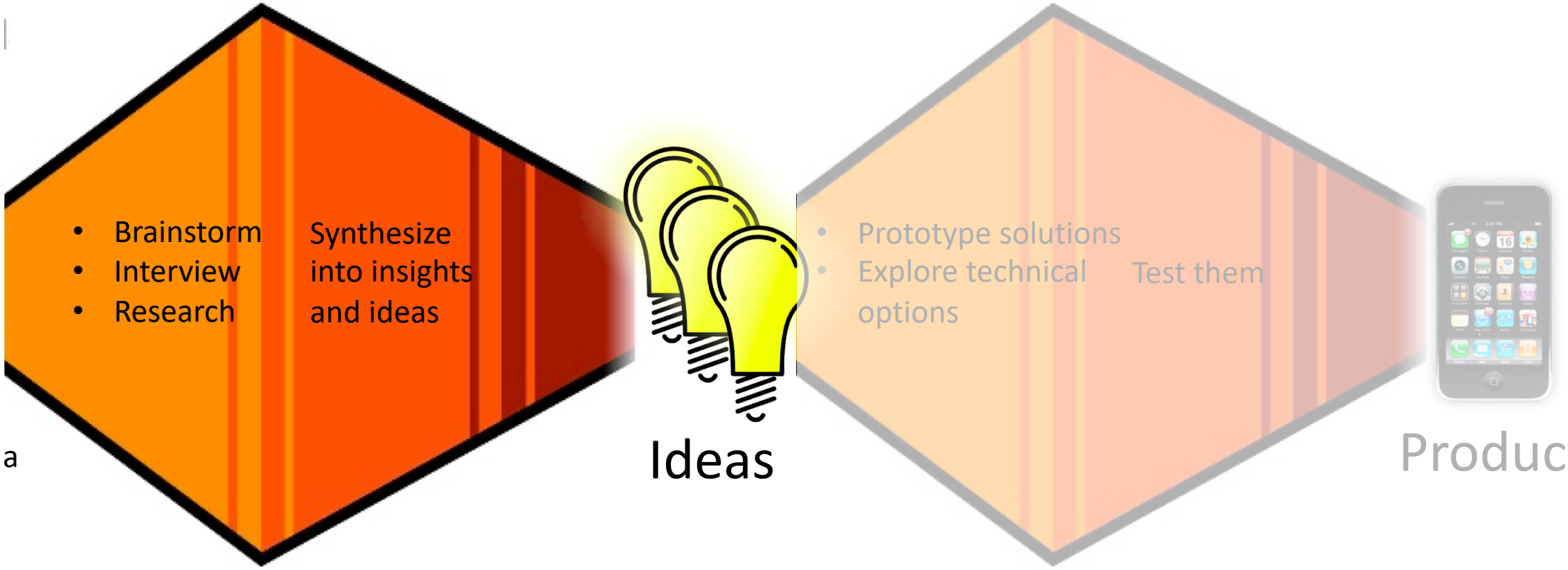
- If they are uninterested in the domain/topic, pick another topic, or another person in the class.

1. **Individual. User Interview.** For one of the domains you are considering teaching, find a target user (someone in this class) and interview them for 10-20 minutes. Get a sense of what they already know about the topic, and what they might be interesting in learning about it. If you can’t find a user interested in the domain, you’ll have to pick a new domain.
    1. **Interview them.** Turn in a document with 3 insights you got from the interview (things you didn’t know about people’s experiences with this topic and domain before)
        1. Some sample questions to get you started:
        2. Domain questions: (ex. “Chess” is a domain)
            - What are your experiences around (domain)? If this goes well, you can follow up about more specific topics.
            - What do you already know about (domain)? If this goes well, you can follow up about more specific topics?
            - What’s interesting to you about (domain)?
        3. Topic questions: (ex. “Opening moves” is a topic in the domain of chess)
            - Have your ever heard of (topic)?
            - What do you know about (topic)?
            - If they don’t know much, you might have to tell them a little bit about it or show an example.
            - If the topic is interesting to them, why is the topic hard for you?
            - If the topic is interesting to them, why? How might they use this knowledge? Ideally, what problem do they have that your website might help them solve.

Phase 1: Understand the problem

Competitor Analysis

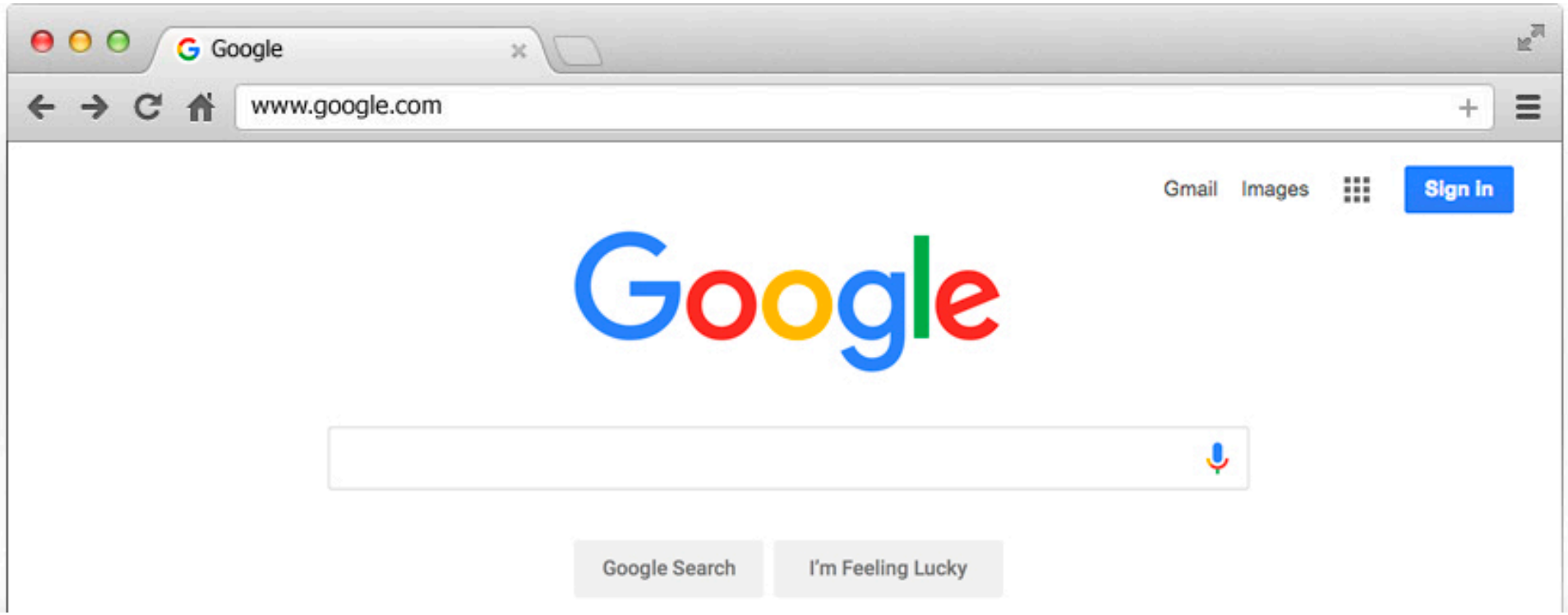
To understand the problem, you have to understand what solutions already exist



There are (almost) no new ideas

- Assume if you are thinking about a problem other people are too.
- That’s totally fine.
- But it also means you need to do your research.

Before you even THINK about solving it…


Google
www.google.com
Gmail
Images
Sign In
Google
Google Search
I'm Feeling Lucky

Default (GPT-3.5)

CH

what are some ways students find clubs to join?

Students can find clubs to join in various ways, both on and off campus. Here are some common methods:

1. **Campus Activities Fair**: Many universities and colleges host a campus activities fair at the beginning of each academic year. This is an excellent opportunity for students to explore a wide range of clubs and organizations in one place.
2. **University Website**: Most educational institutions maintain a list of clubs and organizations on their websites. Students can browse these lists to find clubs that match their interests.
3. **Social Media**: Many clubs and organizations have a presence on social media platforms like Facebook, Instagram, and Twitter. Students can search for and follow these pages to stay updated on club events and meetings.
4. **Bulletin Boards**: Check out bulletin boards around campus. Clubs often post flyers and announcements about their meetings and events on these boards.
5. **Word of Mouth**: Asking fellow students, roommates, or classmates can be an effective way to learn about clubs. Friends and acquaintances may have recommendations based on their interests.
6. **Involvement Fairs**: Some schools host involvement fairs or similar events where clubs set up booths to showcase what they have to offer. These events are great for meeting club members and learning more about their activities.
7. **Departmental Involvement**: If you have a specific academic interest, consider joining clubs

Regenerate

Send a message

I am guilty of not googling.

- I joined a start up to do online therapy. When I joined, no one had researched what's already out there.
- There were definitely competitors.
- I went and tried them all out and learned what they did well and poorly.

This is so obvious, it hurts. But people constantly skip this step. WHY?????

(I don’t know the answer to this. Do you?)

Perhaps, I don’t do it because I think of myself as being “original” and “creativity” and “individualistic.”

I’m excited about building something new. I don’t want there to be a solution out there. So I don’t look for it.

Don’t worry about originality.
Worry about solving the problem.

- You’re going to steal ideas from other people.
- It’s called *background research*.
- Your unique ideas are probably just a recombination of stuff you’ve seen before, anyway.

Design Research:

- Identify the **existing or obvious** solutions
- **Google** it.
- Find **direct solutions (competitors)** and research what they do
- Find **indirect solutions** and research how they work.

Allow these ideas to simmer before you jump to a solution

Problem:

How to better help new students find clubs and events on campus.

What’s the obvious solutions?

Direct Competitor Definition

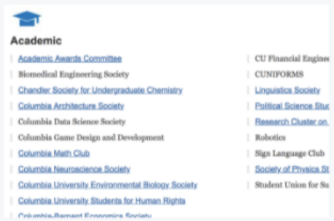
Direct Competitors are the ones who offer the same, or a very similar, set of features to your current or future customers, which means they are solving a similar problem to the one you are trying to solve.

Direct Competitors
for findings clubs and events on campus

Direct Competitors (Current Solutions)

SEARCHING & BROWSING

Admissions Club Directory
The admissions website has an outdated directory of student clubs and organizations that is ued for prospective students. There is no way to see the clubs by Alphabetical order and some clubs that I know of on campus today are missing.

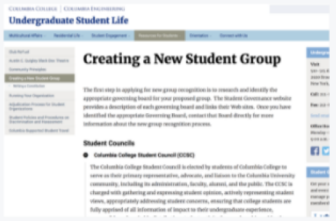


Admissions Club Pages
The actual clubs pages lead to a clubs website of they run their own. All of these links are external links that have varied and non-standardized amount of information about the clubs. If a club doesn't have their own website, there's no contact email or further information beyond the club's name.

LionLink
This was Columbia's attempt at centralizing all the organizations and events on campus. It's poor mobile view, lack of an app, lack of integration into current Columbia systems, and an extremely messy and broken portal for clubs made adoption fail. It shows that there is interest in a solution similar though.

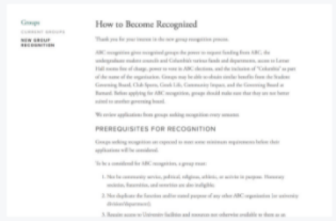
LionLink Events
There have only been 6 events on LionLink posted in the last two years, and there are no upcoming events. Clubs, administrators, and students have abandoned LionLink as a centralized solution.

PROPOSING



Undergraduate Student Life
Student Life's website has a section about creating clubs, but it is extremely vague beyond creating a constitution. It also provides information about the student councils before the governing boards when the councils are not involved in the proposal process. Tiny links at the bottom of the page lead users to the home page of the governing boards.

Student Governing Board
The new group applications section of the website is tucked away and is not the easiest to find. The steps to creating a new group for SGB include doing at least two semesters of programming. Where does SGB expect you to organize this programming if there's no place to advertise new clubs and if you can't reserve space on campus until you're recognized as a club by a board?



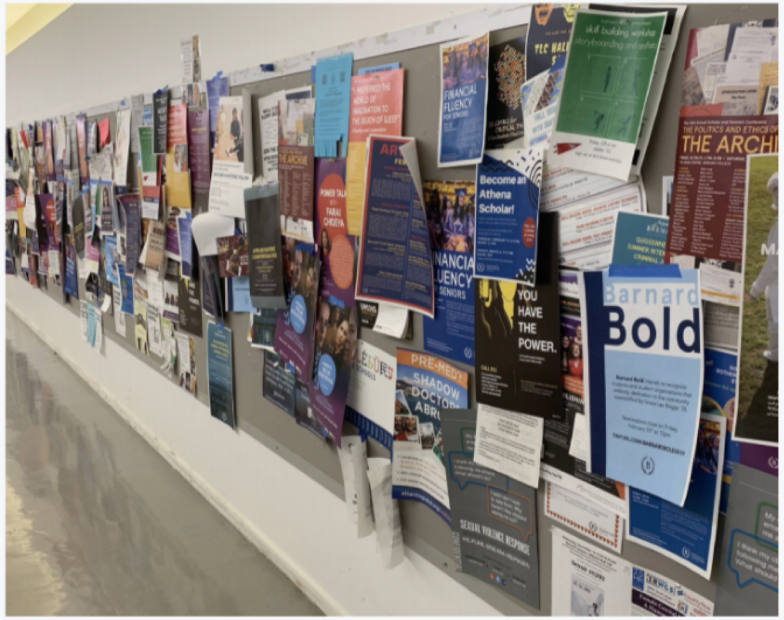
Activities Board at Columbia
The new group recognition page is extremely clear on their website, but shows that there are a long list of prerequisites for recognition as a new clubs. Specifically, the club has to have at least 20 members for two consecutive semesters when the clubs aren't recognized and can't reserve space for 20 members to meet. They mention there's 5 different boards that clubs can get funding from, and none of them have the same process.

Barnard Clubs & Events
I couldn't find where to propose for a new club through Barnard, Columbia's sister school, but I did find that their events and clubs have their own calendar that isn't integrated in Columbia University overall. This shows the decentralized information across our various undergrad schools as well.

More Direct Competitors
for findings clubs and events on campus

My dorm floor poster board

Most of the flyers for clubs were for events that happened over a week ago or even last semester. Also, there wasn't equal representation of the 500+ organizations on campus on this one board.



Academic hall poster board

I watched people walk by this wall of posters for 15 minutes, not a single person stopped to look at any of them. It can be an overwhelming experience with too many posters as well.

In-Direct Competitor Definition

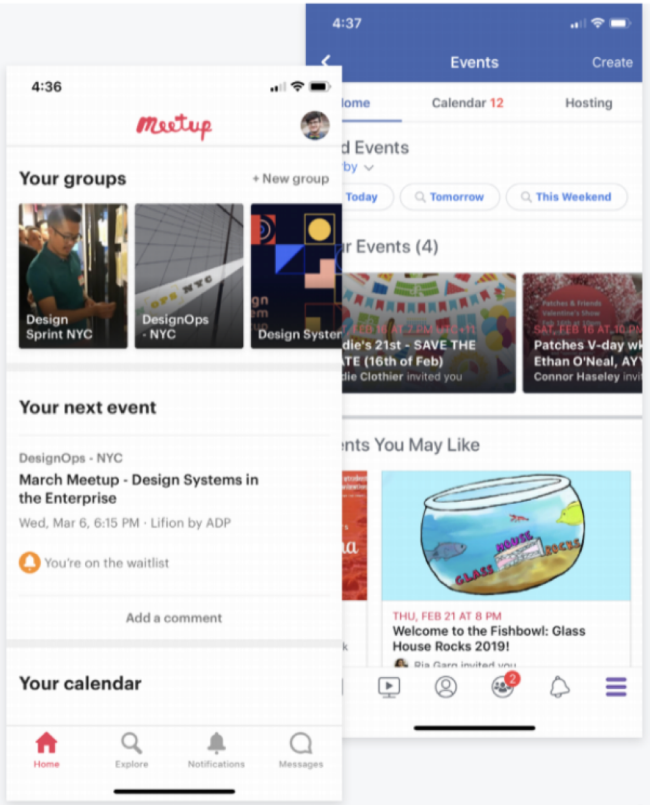
In-Direct Competitors are the ones who offers a similar set of features but to a different customer segment; which means indirect competitors are solving the similar problem but for a different customer base.

In-Direct Competitors
for findings clubs and events on campus

In-Direct Competitors (Other Available Solutions)

Facebook has a focus around community and personal events, and they make it easy to invite your friends and share information about an event. It is often used as an alternative currently for marketing clubs and event on campus through our Columbia Class pages, but it leaves people not constantly on social media (or without a Facebook) in the dark. Allowing students to still share clubs and events through social media should be a product feature if user adoption is to be successful.

Meetup is a successful event and gathering platform that focuses on specific interests. I've personally had success getting connected to groups around design systems and operations in both Sydney and New York. With Meetup creating interest-based communities around the world, I believe this model could be tweaked applied to campus community as well. Their app encompasses all the functionality needed to meet up efficiently and focuses on the accessibility and visibility of their groups; this focus should be kept for the solution designed for college campuses.



“It’s like X but for Y”

- AirBnB: It’s like Uber, but for hotels.
- Farmers Only: It’s like OK Cupid, but for Farmers (only)
- LinkedIn: It’s like Facebook, but for work associates.

A great way to find a solution is to reuse the structure of another solution, but for a different problem or market segment.

You are **never** the first person to have thought of something.

- Newton and Leibnitz invented calculus at the same time
- The steam engine was invented 4 or 5 recorded times before it started the Industrial Revolution.
- Alan Turing was the second person to solve the Halting Problem (his advisor Alonzo Church beat him to it)
- Long before Facebook there was MySpace, and Friendster and a bazillion other social networks.

All you want is a solution to a problem. If someone else has already done it, that's great!

If they've come close but haven't exactly solved our problem, we want to understand what they've done and how to make it better or different for out problem

the bulletin

Your one-stop destination for all opportunities at Columbia.

Featured Events

💼 Recruiting

Finance & Consulting Career Fair

in 14 min EST

Columbia University Center for Career Educatio...

37

COLUMBIA | GS
School of General Studies

👋 Social

GS Club Fair

in 14 min EST

GS Student Life

10

GLOBEMED AT COLUMBIA PRESENTS

CURRENT TOPICS IN ENVIRONMENTAL PUBLIC HEALTH

13th Annual Hilltop Conference

🔮 Conference

13th Annual Hilltop Conference: Current Topics in Environmental...

Oct 6 @ 6:30pm EST

GlobeMed at Columbia University

7

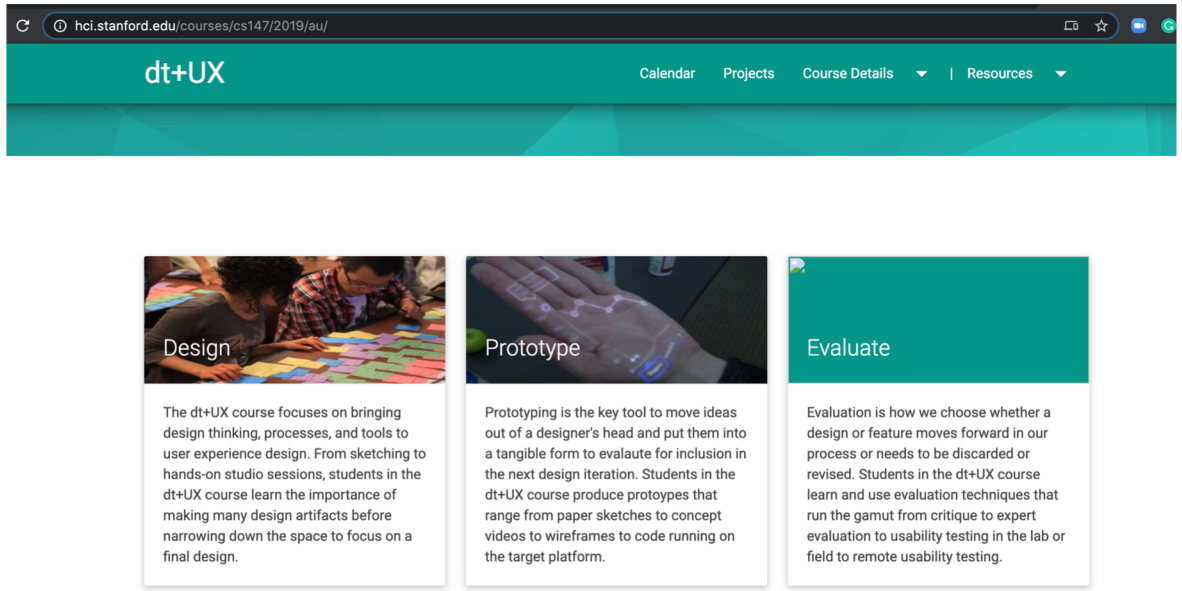
Feed

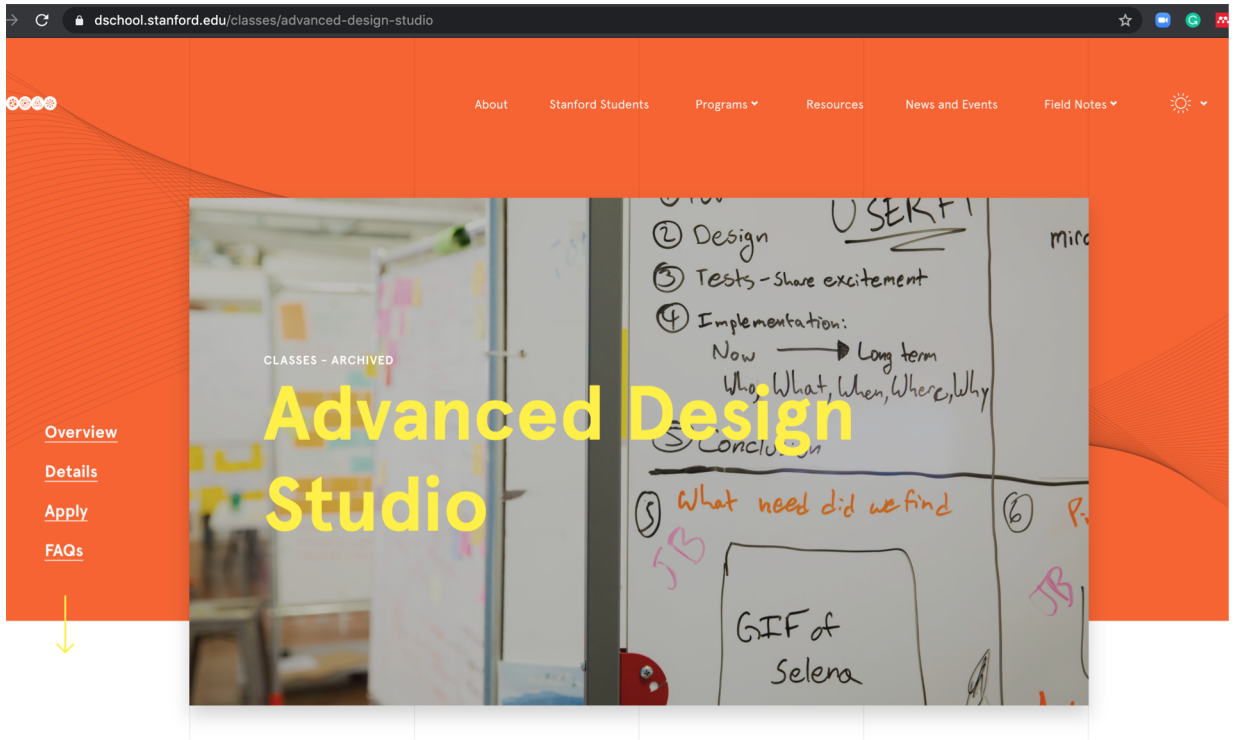
Design Research:

- Identify the **existing or obvious** solutions
- **Google** it.
- Find **direct solutions (competitors)** and research what they do
- Find **indirect solutions** and research how they work.

Allow these ideas to simmer before you jump to a solution

Near Competitors
(other ways of teaching 4170)





Far competitors (other teaching tools)

Khan Academy

```
1  noStroke();
2  background(79, 45, 214);
3
4  // face
5  fill(255, 242, 0);
6  ellipse(202, 208, 300, 300
7
8  // eyes
9  fill(0, 0, 0);
10 ellipse(157, 151, 40, 40);
11 ellipse(304, 142, 40, 40);
12
13 // mouth
14 fill(255, 0, 0);
15 ellipse(257, 240, 120, 136);
16
17 // headband
18 stroke(191, 0, 255);
19 strokeWeight(37);
20 line(80, 115, 270, 75);
21
```

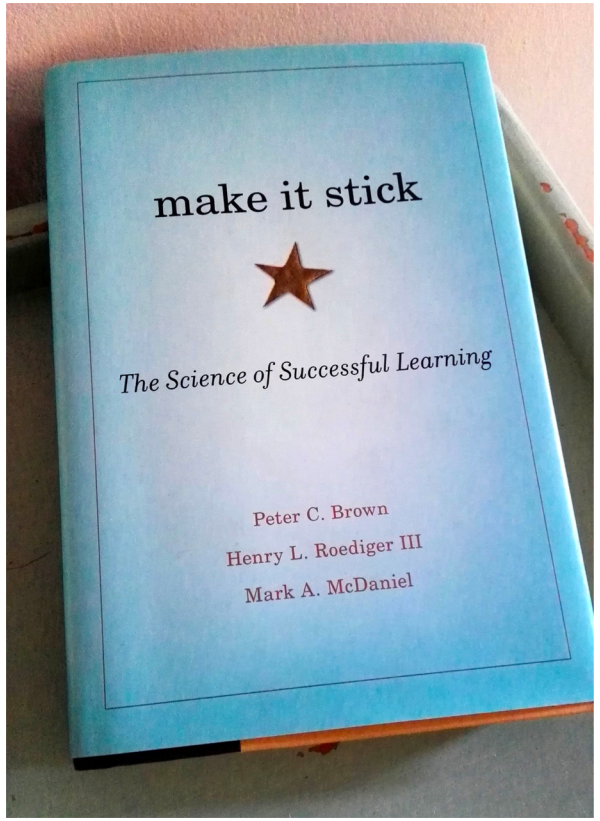
Homework

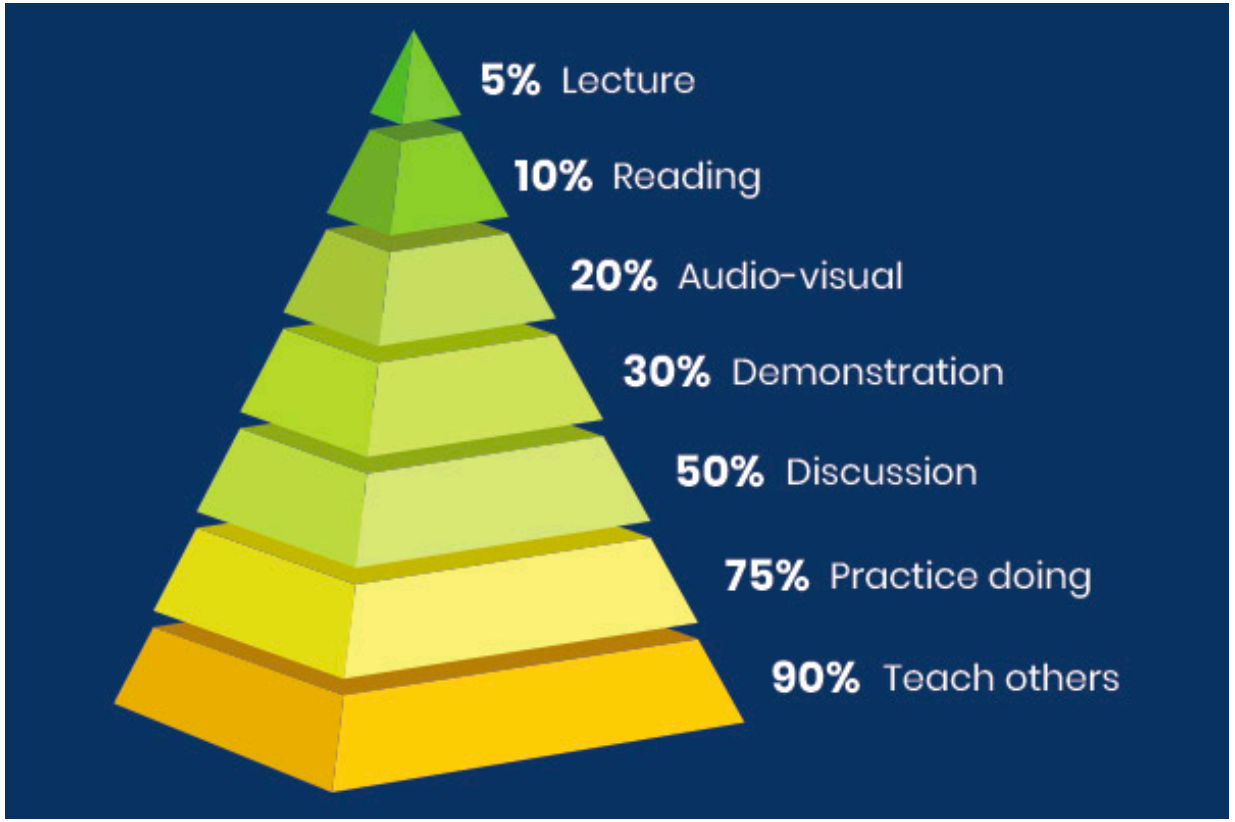
2. **Individual. Competitor Analysis**. In your group, each person should analyze a different competitor product. For your chosen product, do the following:
    1. What topic does it teach? (if it teaches multiple topics – like multiple coding languages), pick one to focus (like JavaScript) on for the sake of concreteness.
    2. Who is the target audience (or who do you think benefits the most from it)?
    3. What media does it use to help people learn? (show a screenshot and describe it in a sentence)
    4. What is a major way it uses interaction to help people learn? (show a screenshot and describe it in a sentence)
    5. What are 3 things you like about the interaction and media usage that help people learn? (what might inspire your design?)
        1. Show a screen shot for each one.
    6. What are 3 things that could be better or different about the interaction and media usage that help people learn?
        1. Show a screen shot when applicable.

Phase 1: Understand the problem

Academic Research

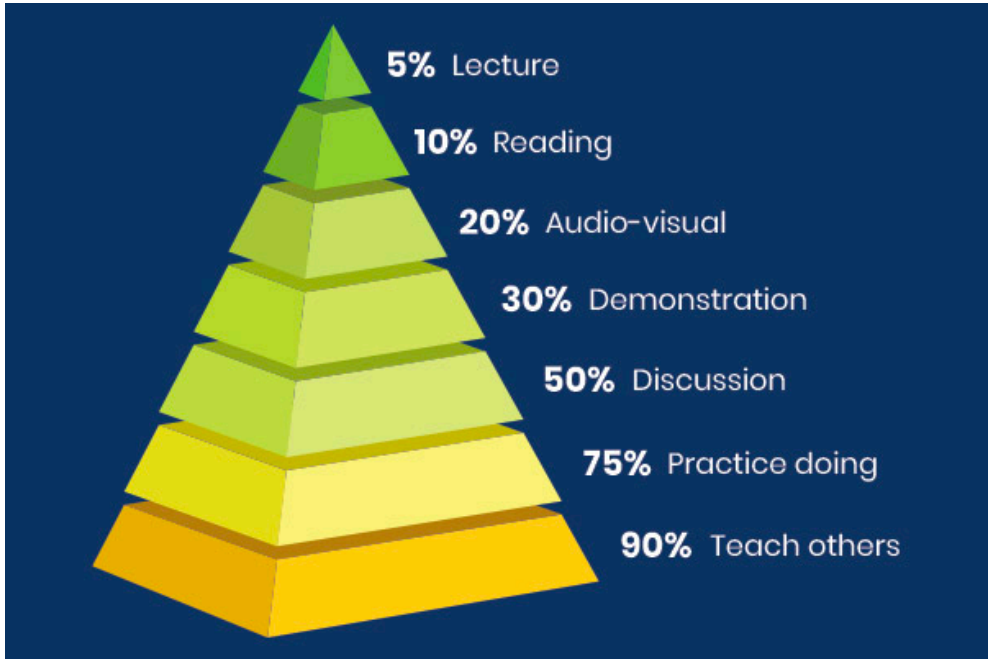
Read books, papers, theories, scientific evidence to get insights into the problem.





Educational insight #1:

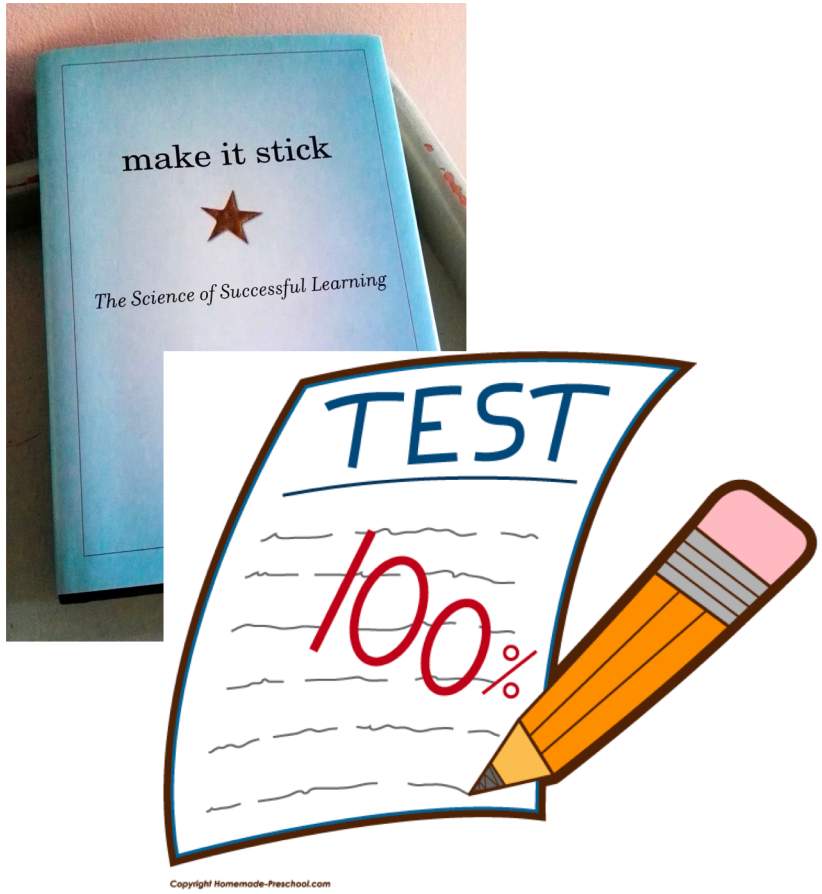
Reading textbooks is boring. Nobody learns from that. People learn by practicing - from doing something and getting feedback.



- Design and build a **web** application
- That allows a user to **interact** with media
- Within a **domain of your choosing**
- To help a user learn an introductory topic **interactively**
- And help them assess themselves with a **quiz**.
- And keep learning through **feedback** from the quiz.
- In under **10 minutes** total

Educational insight #2:

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



- Design and build a **web** application
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- And keep learning through **feedback** from the quiz.
- In under **10 minutes** total

Everyday activity: changing the thermostat?

Why do I have to set this stupid thing constantly?

Real insights behind applications you use.

Problem	Idea
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?

Homework 7

Homework 7 has 3 parts.

- **Individual Warm up** due Wednesday before your TA session
  - Brainstorm domains and topics you could teach in
- TA sessions on Wednesday
  - Present topics and get TA feedback.
  - Group formation starts
- **Group Warm-up** due Friday
  - Groups must be formed by Friday 11:59pm
- Lecture Monday
- **Homework 7 main** due Wednesday
  - before TA sections.
  - User Interview
  - Competitor Analysis
  - Group presentation: what 5 topics is your group considering

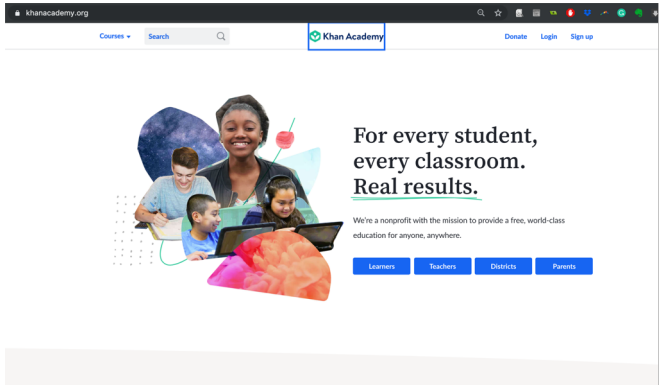
10% of your grade is participation in your TA section

- Show up on time.
- Be prepared to present.
- Present your materials clearly and concisely.
- Listen to other presentations.
- Take feedback from your TA.
- If you can’t attend a feedback session, email your TA in advance and schedule a make up session before Friday 11:59pm.

Summary

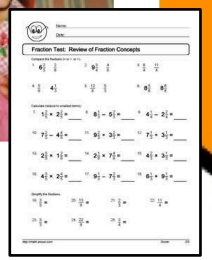
The biggest misconception about creativity

Idea



Product

Creativity is a Process



Person with a challenge

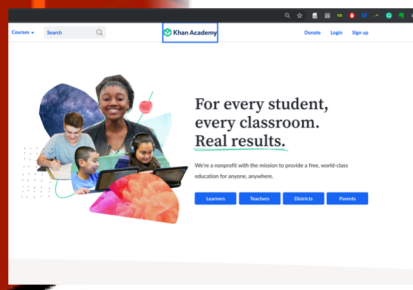
- Brainstorm
- Interview
- Research

Synthesize into insights and ideas

Ideas

- Prototype solutions
- Explore technical options

Test them

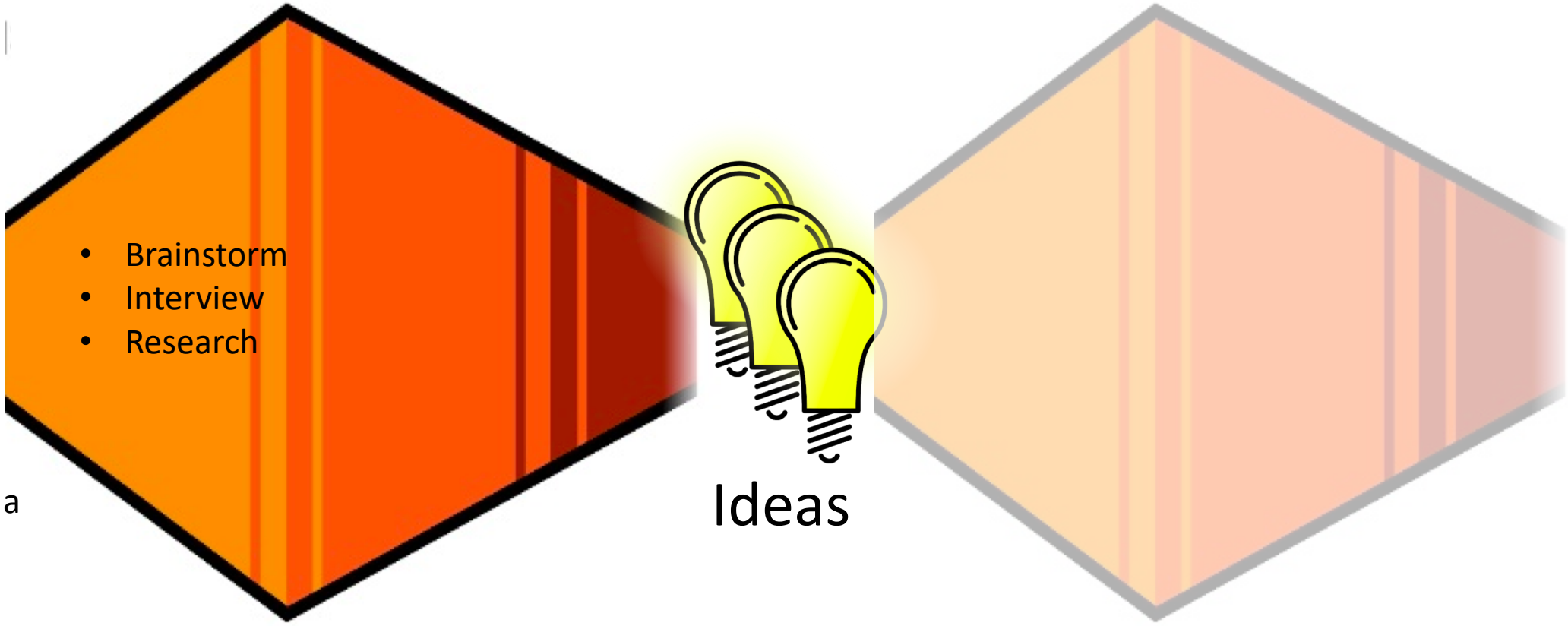


Product

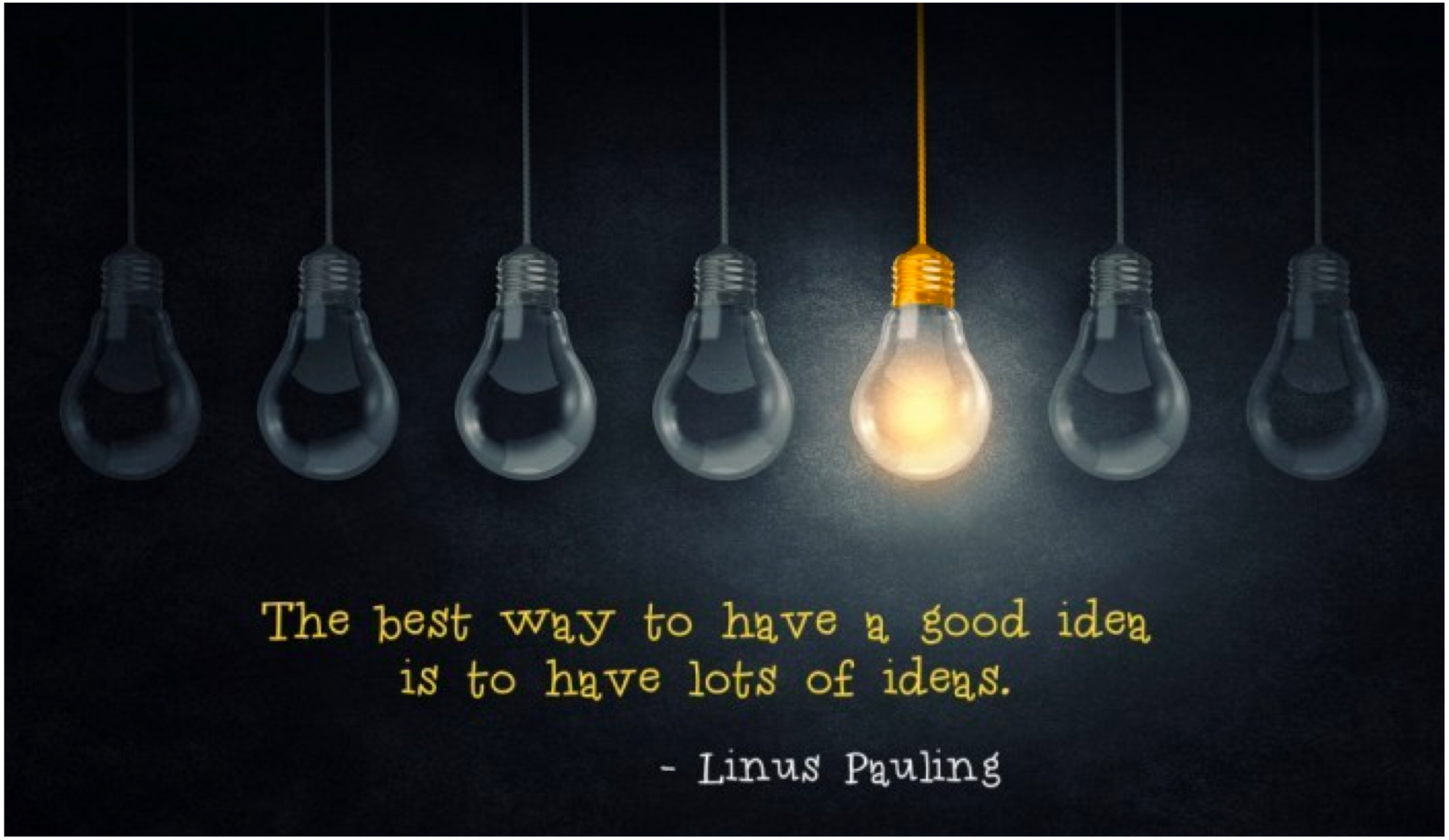
Understand the problem

Solve the problem

Your user is your TA (and students in this class). You have to identify a problem you can solve.



Brainstorm possibilities



Talk to people about their experiences

When was the last time you spoke up in class?

- What did you say?
- Why did you decide to speak up then?
- What did it feel like. Easy? Hard? Scary?
- What happened after you spoke up?
- What did you think/feel/say/do?
- Then what?

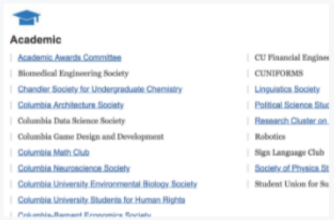
Research other ways of solving similar problems.

Direct Competitors (Current Solutions)

SEARCHING & BROWSING

Admissions Club Directory

The admissions website has an outdated directory of student clubs and organizations that is ued for prospective students. There is no way to see the clubs by Alphabetical order and some clubs that I know of on campus today are missing.



Admissions Club Pages

The actual clubs pages lead to a clubs website of they run their own. All of these links are external links that have varied and non-standardized amount of information about the clubs. If a club doesn't have their own website, there's no contact email or further information beyond the club's name.

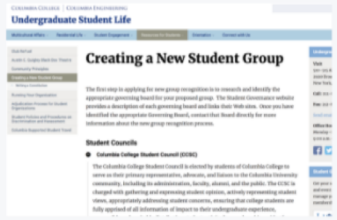
LionLink

This was Columbia's attempt at centralizing all the organizations and events on campus. It's poor mobile view, lack of an app, lack of integration into current Columbia systems, and an extremely messy and broken portal for clubs made adoption fail. It shows that there is interest in a solution similar though.

LionLink Events

There have only been 6 events on LionLink posted in the last two years, and there are no upcoming events. Clubs, administrators, and students have abandoned LionLink as a centralized solution.

PROPOSING



Undergraduate Student Life

Student Life's website has a section about creating clubs, but it is extremely vague beyond creating a constitution. It also provides information about the student councils before the governing boards when the councils are not involved in the proposal process. Tiny links at the bottom of the page lead users to the home page of the governing boards.

Student Governing Board

The new group applications section of the website is tucked away and is not the easiest to find. The steps to creating a new group for SGB include doing at least two semesters of programming. Where does SGB expect you to organize this programming if there's no place to advertise new clubs and if you can't reserve space on campus until you're recognized as a club by a board?

Activities Board at Columbia

The new group recognition page is extremely clear on their website, but shows that there are a long list of prerequisites for recognition as a new clubs. Specifically, the club has to have at least 20 members for two consecutive semesters when the clubs aren't recognized and can't reserve space for 20 members to meet. They mention there's 5 different boards that clubs can get funding from, and none of them have the same process.

Barnard Clubs & Events

I couldn't find where to propose for a new club through Barnard, Columbia's sister school, but I did find that their events and clubs have their own calendar that isn't integrated in Columbia University overall. This shows the decentralized information across our various undergrad schools as well.

Wednesday, meet in your TA section.

- **Individual Warm up** due Wednesday before your TA session
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