

COOPER HEWITT



Smithsonian Design Museum



ACCESS CHECK

DURING OUR TIME TOGETHER:

- Mute yourself so everyone can hear the speaker.
- Choose how you participate.



WHAT TO EXPECT



Interactive work with a small cohort of fellow educators.



Easy materials: grab a pen or pencil and piece of paper.



Everyone can be an expert.

HELLO



NIKE



SAMSUNG



BMW



WHAT DO THESE THINGS HAVE IN COMMON?



PEOPLE!



**RESEARCH IS
LEARNING ABOUT
PEOPLE.**

NIKE



NIKE



SAMSUNG



SAMSUNG





BMW

BMW





DESIGN IS...

Design makes things better

Design makes things better

Design is about people (human-centric)

Design makes things better

Design is about people (human-centric)

Design finds new solutions

Design makes things better.

Design is about people (human-centric)

Design finds new solutions

Design creates desire/enthusiasm

**WHAT KINDS OF
THINGS ARE
DESIGNED?**

OBJECTS ARE DESIGNED



TOOLS ARE DESIGNED



SPACES ARE DESIGNED



INTERFACES ARE DESIGNED

NOOKstudy

Contemporary Business... | NOOKstudy User Guide | ArtHistoryNotes.pdf | biology.pdf | week1_lecture_notes.pdf

figure 1.2
DEDUCTIVE REASONING: HOW ERATOSTHENES ESTIMATED THE CIRCUMFERENCE OF THE EARTH USING
day when sunlight shone straight down a well measured the length of the shadow cast by a 800 kilometers (km) away. 2. The shadow's sides of a triangle. Using the recently developed Eratosthenes calculated the angle, α , to be 7° angle α is $1/50$ of a circle, then the distance well (in Syene) must be equal to $1/50$ the had heard that it was a 50-day camel of a camel travels about 18.5 km per day and well as 925 km (using different units of measure, of course). 5. Eratosthenes thus deduced the circumference of the Earth to be $50 \times 925 = 46,250$ km. Modern measurements put the distance from the well to the obelisk at just over 800 km. Employing a distance of 800 km, Eratosthenes's value would have been $50 \times 800 = 40,000$ km. The actual circumference is 40,075 km.

philosophy, and it is used to test the validity of general ideas in all branches of knowledge. For example, if all mammals by definition have hair, and you find an animal that does not have hair, then you may conclude that this animal is not a mammal. A biologist uses deductive reasoning to infer the species of a specimen from its characteristics.

Inductive reasoning
In inductive reasoning, the logic flows in the opposite direction, from the specific to the general. Inductive reasoning uses specific observations to construct general scientific principles. For example, if poodles have hair, and terriers have hair, and every dog that you observe has hair, then you may conclude that all dogs have hair. Inductive reasoning leads to generalizations that can then be tested. Inductive reasoning first became important to science in the 1600s in Europe, when Francis Bacon, Isaac Newton, and others began to use the results of particular experiments to infer general principles about how the world operates. An example from modern biology is the action of homeobox genes in development. Studies in the fruit fly, *Drosophila melanogaster*, identified genes that could cause dramatic changes in developmental fate, such as a leg appearing in the place of an antenna. When the genes themselves were isolated and their DNA sequence determined, it was found that similar genes were found in many animals, including humans. This led to the general idea that the homeobox genes act as switches to control developmental fate.

Hypothesis-driven science makes
Scientists establish which general principles are true from

figure 1.3
HOW SCIENCE IS DONE. This diagram illustrates how scientific investigations proceed. First, scientists make observations that raise a particular question. Then, they generate a number of potential explanations (hypotheses). They then

Testing hypotheses
We call the test of a hypothesis an **experiment**. Suppose that a room appears dark to you. To understand why it appears dark, you propose several hypotheses. The first might be, "There is no light in the room because the light switch is turned off." An alternative hypothesis might be, "There is no light in the room because the lightbulb is burned out." And yet another hypothesis might be, "I am going blind." To evaluate these hypotheses, you would conduct an experiment designed to eliminate one or more of the hypotheses. For example, you might test your hypotheses by flipping the light switch. If you do so and the room is still dark, you have disproved the first hypothesis: Something other than the setting of the light switch must be the reason for the darkness. Note that a test such as this does not prove that any of the other hypotheses are true; it merely demonstrates that the one being tested is not. A successful experiment is one in which one or more of the alternative hypotheses is demonstrated to be inconsistent with the results and is thus rejected. As you proceed through this text, you will encounter many hypotheses that have withstood the test of experiment. Many will continue to do so; others will be revised as new observations are made by biologists. Biology, like all science, is in a constant state of change, with new ideas appearing and replacing or refining old ones.

Establishing controls
Often scientists are interested in learning about processes that are influenced by many factors, or **variables**. To evaluate alternative hypotheses about one variable, all other variables must be kept constant. This is done by carrying out two experiments in parallel: a test experiment and a control experiment. In the test experiment, one variable is altered in a known way to test a particular hypothesis. In the control experiment, that variable is left unchanged. In all other respects the two experiments are identical.

Using predictions
A successful scientific hypothesis needs to be not only valid but also useful—it needs to tell us something we want to know. A hypothesis is most useful when it makes predictions because those predictions provide a way to test the validity of the hypothesis. If an experiment produces results inconsistent with the predictions, the hypothesis must be rejected or modified. In contrast, if the predictions are supported by experimental testing, the hypothesis is supported. The more experimentally supported predictions a hypothesis makes, the more valid the hypothesis is. As an example, in the early history of microbiology it was known that nutrient broth left sitting exposed to air becomes contaminated. There were two hypotheses proposed to explain this observation: spontaneous generation and the germ hypothesis. Spontaneous generation held that there was an inherent property in organic molecules that could lead to the spontaneous generation of life. The germ hypothesis proposed that preexisting microorganisms that were present in air could contaminate the nutrient broth. These competing hypotheses were tested by a number of experiments that involved filtering air and boiling the broth to kill any contaminating germs. The definitive experiment was performed by Louis Pasteur, who constructed flasks with curved necks that could be exposed to air, but that would trap any contaminating germs. When such flasks were boiled to sterilize them, they remained sterile, but if the curved neck was broken off, they became contaminated (figure 1.4).

figure 1.4
EXPERIMENT TO TEST SPONTANEOUS GENERATION VS. GERM HYPOTHESIS. Pasteur built swan-necked flasks to prevent airborne contamination. When the flask is heated, it

WELLS FARGO

Show Balances
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13 More Accounts

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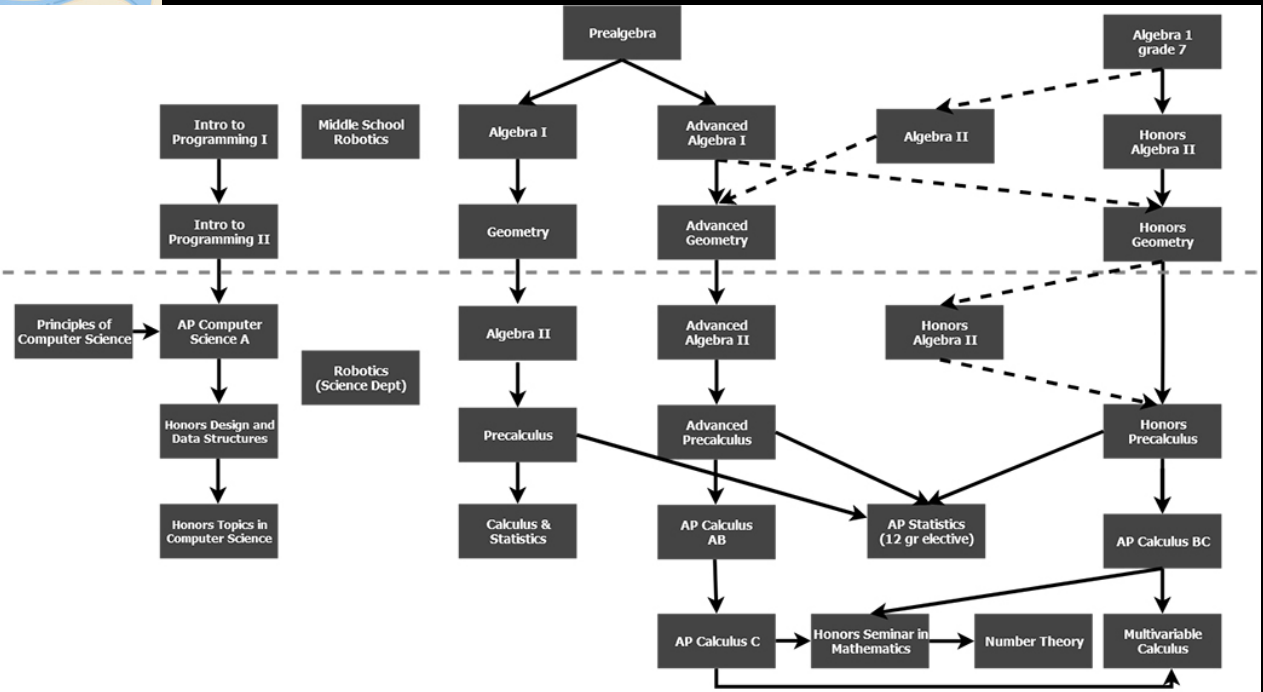
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and More

SYSTEMS ARE DESIGNED



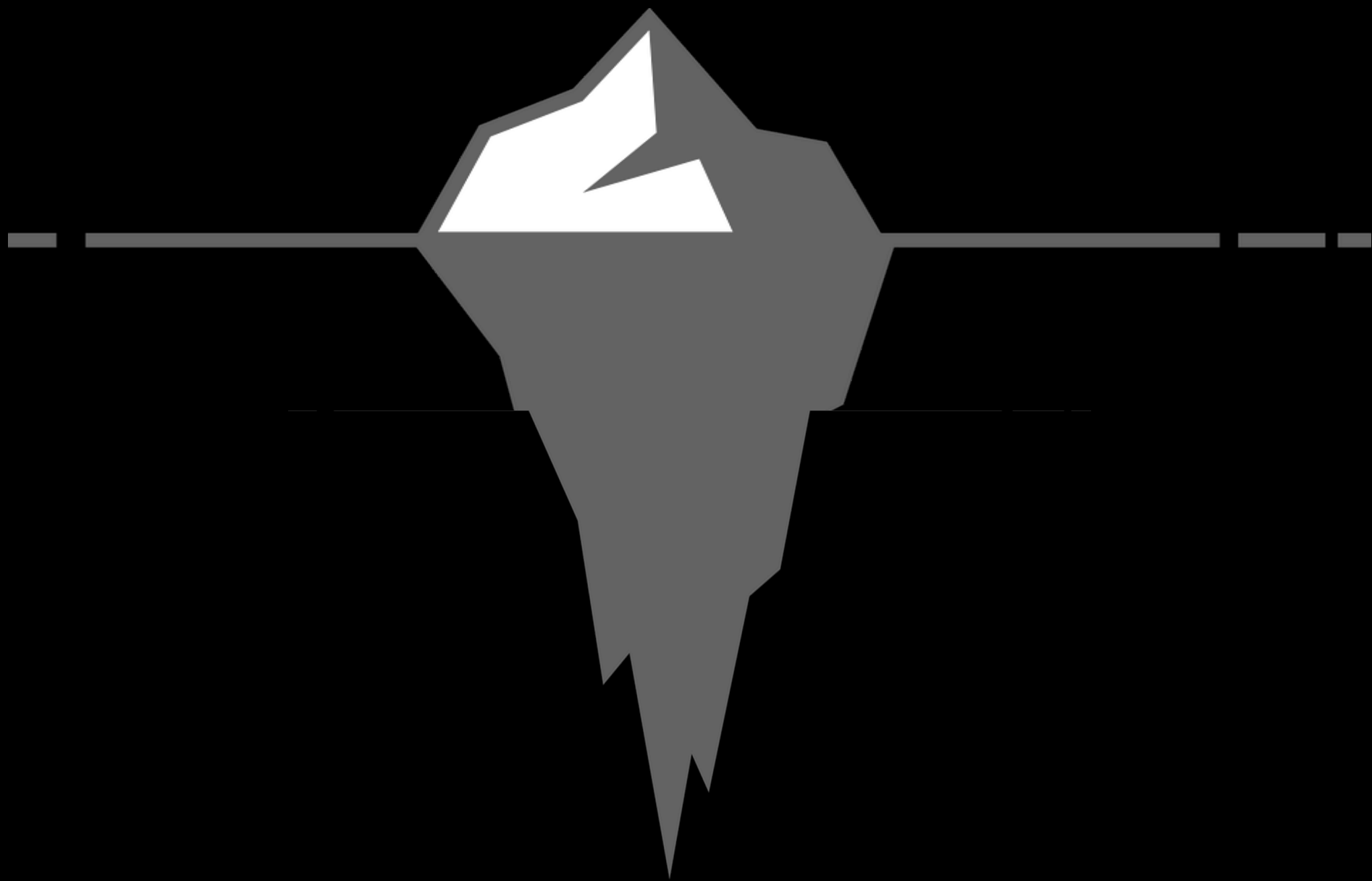
Middle School

Upper School



EXPERIENCES ARE DESIGNED







DEFINE



EMPATHIZE



BRAINSTORM



PROTOTYPE



TEST



LAUNCH!

DEFINE

New
Dialogs

Human
Insights

FRESH
IMPULSES
(POROUSITY)

POROUSITY
what kinds of visionary
processes, technologies
+ activities are being
invented? what can we
learn

VISIONARY MOBILITY
· ecosystem thinking
· new biz models
· new living exp.
· new partnerships
GAME CHANGER

[VISIONARY
MOBILITY]

SHOW ME HOW



**How might we create a
classroom experience
that makes students
feel?**



DEFINE



EMPATHIZE



BRAINSTORM



PROTOTYPE

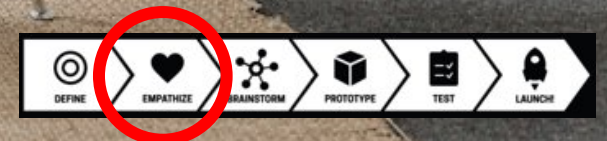


TEST



LAUNCH!

EMPATHIZE



BREAKOUT SESSION # 1:

What do you miss most about a physical classroom?

On the other hand, what has been a pleasant surprise about virtual teaching?

**10 MINUTES
NO NOTETAKING NEEDED**

**LET'S IMAGINE A
BETTER EXPERIENCE
FOR OUR STUDENTS**

ON YOUR OWN: Make a list of students' key classroom needs (at least 10) using the prompt:

**A great classroom
experience means students
feel**

**15 MINUTES
TAKE A BREAK AS YOU NEED!**

BREAKOUT SESSION # 2:

Share the **top three needs** you can directly impact as an educator.

5 MINUTES
NO NOTETAKING NEEDED



DEFINE



EMPATHIZE



BRAINSTORM



PROTOTYPE

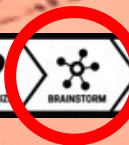


TEST



LAUNCH!

The image shows a collaborative design session. A person is using a pen to write on a sticky note. The workspace is covered with a map and various sticky notes. Some sticky notes are printed with text like 'Scenario', 'Johan (38) Father', and 'Instructions'. Others are handwritten, such as 'Rentat', '2 WEEKS', 'Key?', and 'Super-mon issue'. A smartphone is visible on the right side of the table. At the bottom right, there is a navigation bar with icons for different stages of the design process: DEFINE, EMPATHY, BRAINSTORM (highlighted with a red circle), PROTOTYPE, TEST, and LAUNCH.



BRAINSTORM WORKSHEET

How might we create a classroom experience that makes students feel _____?

- 1. Fill in the center blank with one of your key student needs from the Top 3 Feelings chart at right
- 2. Fill in the left-hand column below with a solution that would address this need.
Imagine new Objects, Tools, Places, Interfaces, systems, or Experiences that solve the problem.
- 3. Fill in the right-hand column with a description of how it would work or how it would benefit students

Choose the top three feelings you can impact as an educator:

1.

2.

3.

<div><i>A visual display that can create different scents</i></div>	will make students feel <i>focused</i> by	<div><i>using familiar classroom smells to engage more of their senses</i></div>
<div></div>	will make students feel _____ by	<div></div>
<div></div>	will make students feel _____ by	<div></div>
<div></div>	will make students feel _____ by	<div></div>



WELCOME BACK!



DEFINE



EMPATHIZE



BRAINSTORM



PROTOTYPE

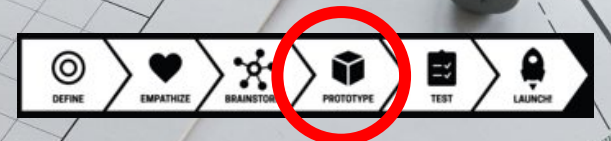
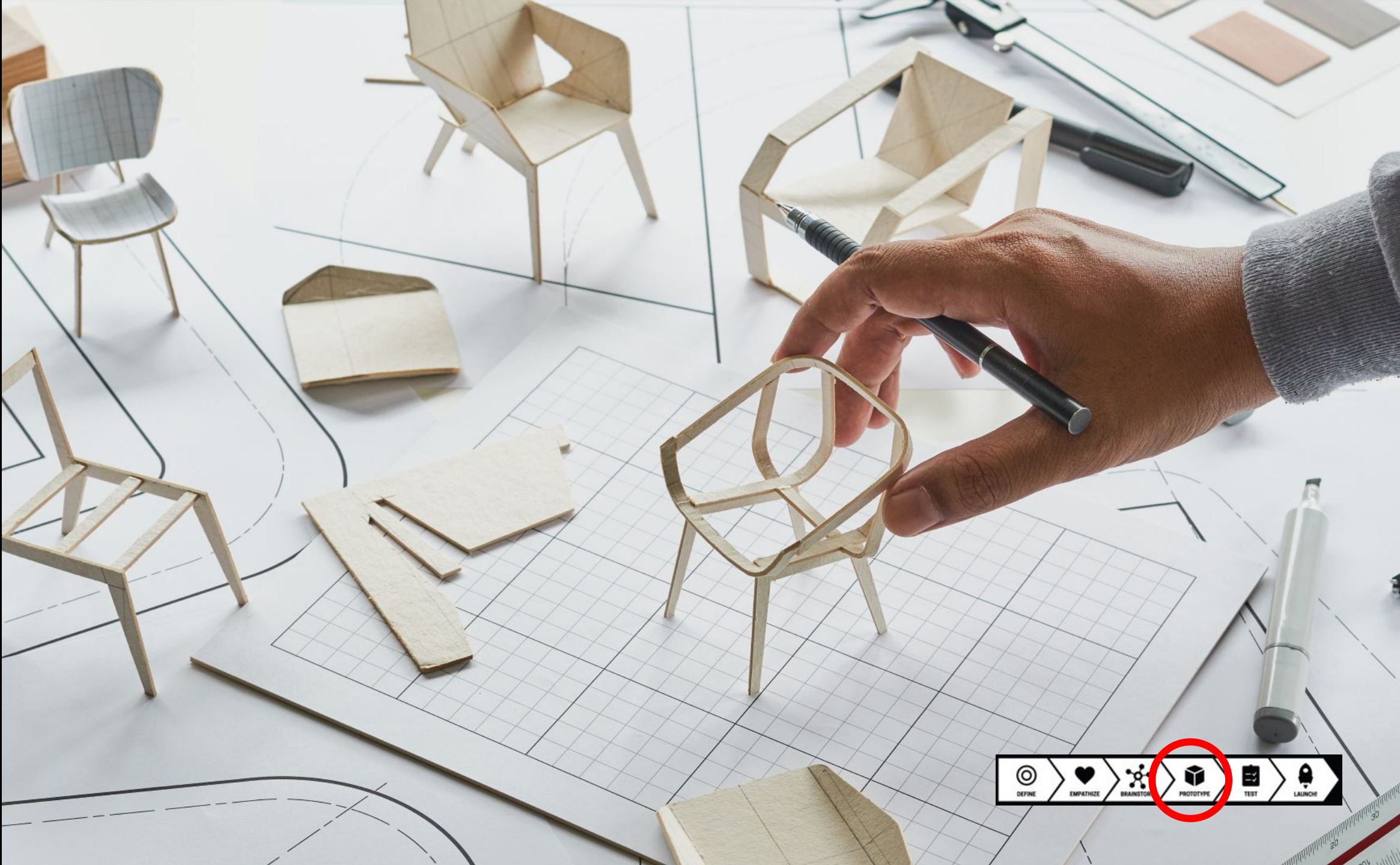


TEST



LAUNCH!

PROTOTYPE



A PROTOTYPE IS ...

A PROTOTYPE IS ...

- AN EXPERIMENT

A PROTOTYPE IS ...

- AN EXPERIMENT
- A LO-FI SKETCH

A PROTOTYPE IS ...

- AN EXPERIMENT
- A LO-FI SKETCH
- ITERATIVE

PROTOTYPES CAN BE...

3D MODEL

Low-fi physical mock up of products, online platform, space layout, ecosystem, etc.

ROLE PLAY

Role play as service provider and customer

COMIC STRIP

A series of 6 or more images that show activities and /or thoughts over time

TODAY/ TOMORROW DIAGRAM

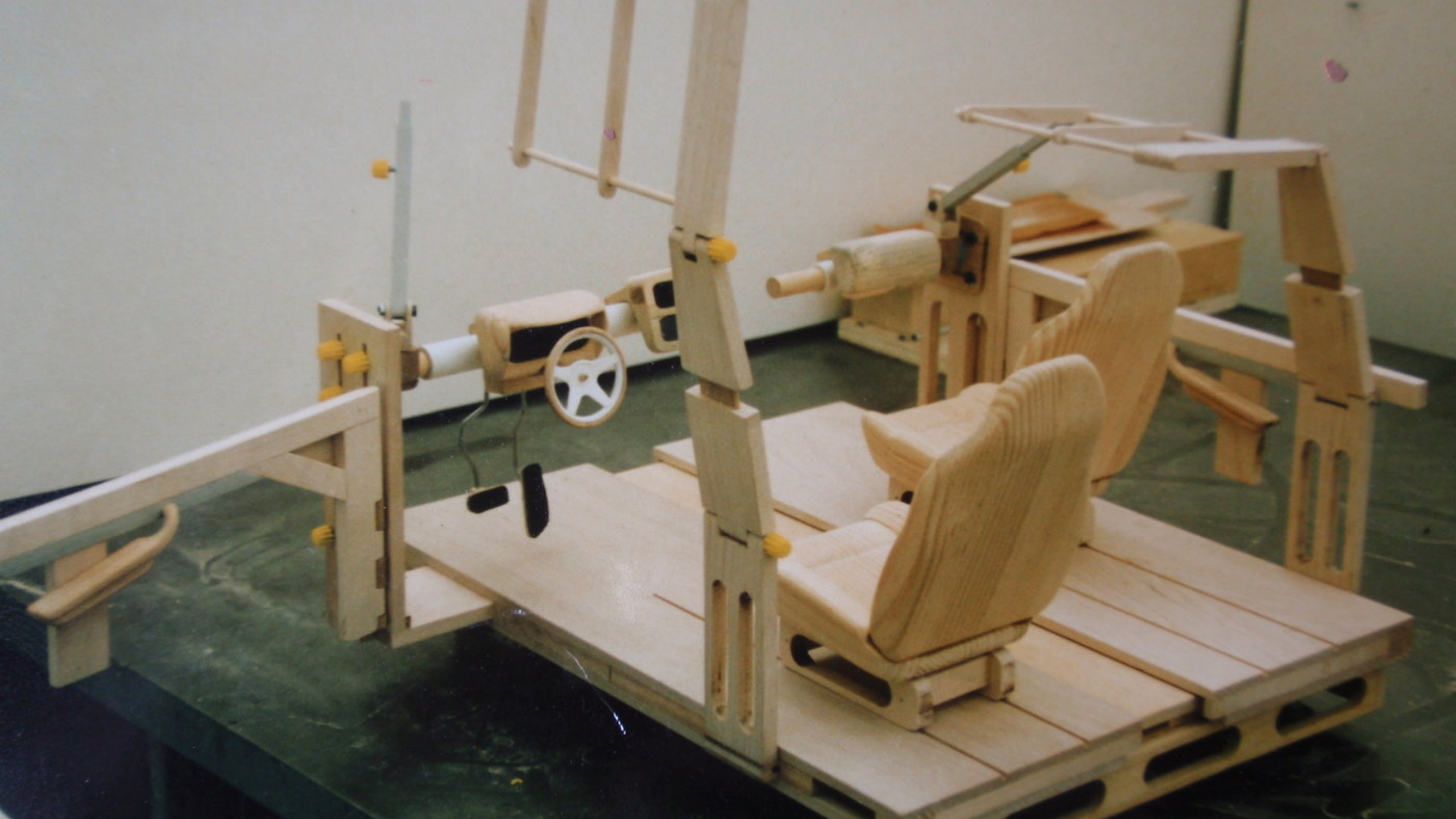
FUTURE AD

Newspaper cover page from the future, event flyer, sample meeting agenda

WIREFRAME/ BLUEPRINT

Loose sketch/mock up of a digital interface

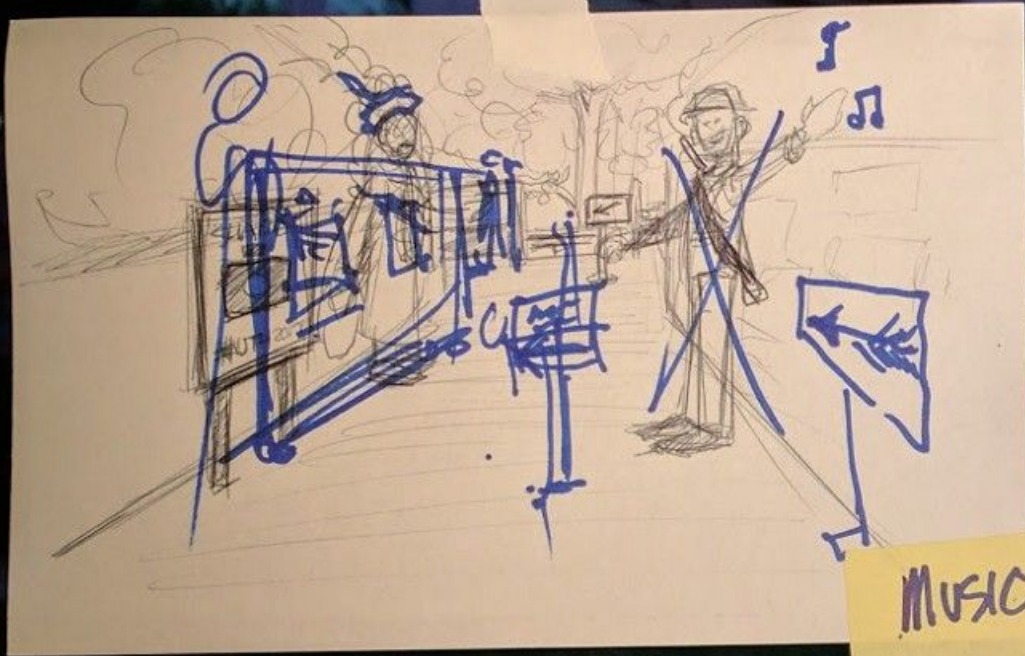








UP FOR
VIP LOUNGE



MUSIC
WARM +
WELCOME

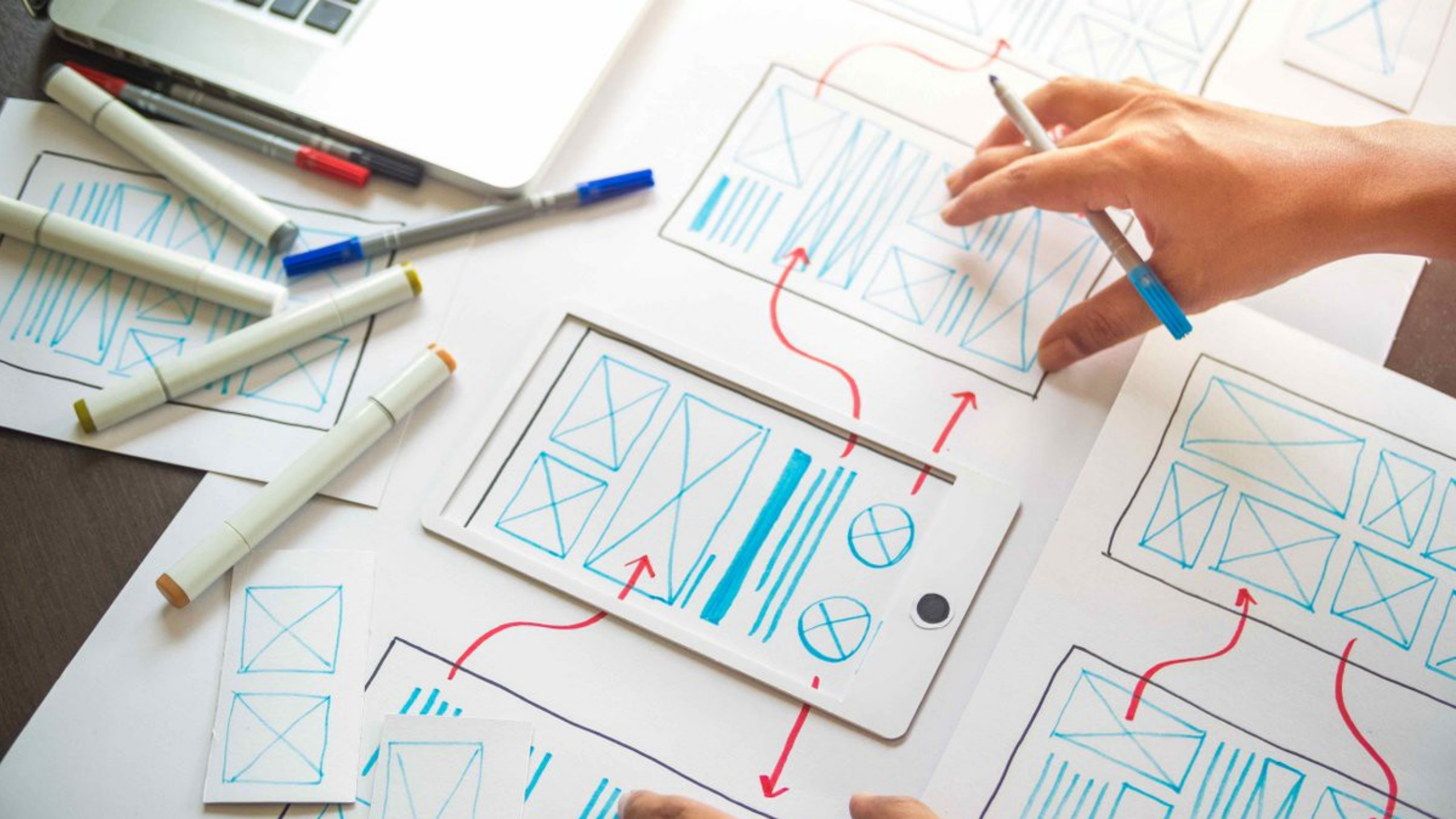


PHOTO
GRAPHICAL
MOMENT

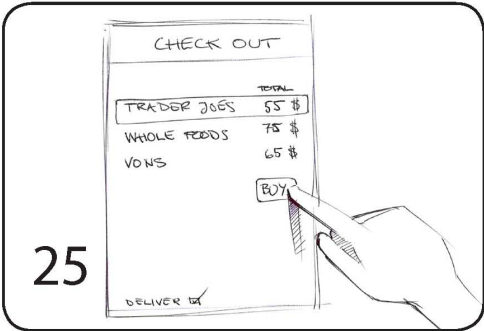


Desktop Mirror

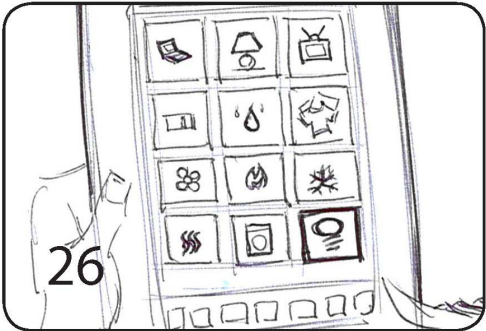
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MORNING/LUNCH



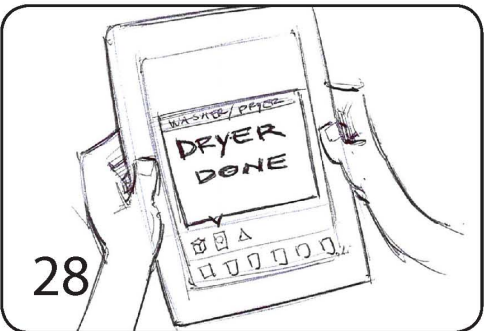
The display provides a list of purchase options from her favorite grocery stores that stock the items she needs, including the costs. She selects Trader Joe's and is provided the option to pick up the groceries or have it delivered. She chooses delivery.



Next, Ellen presses the **dashboard icon** to view her savings from using Smart Grid connected appliances during off-peak hours. The dashboard menu allows Ellen to check and control all the appliances in her household.



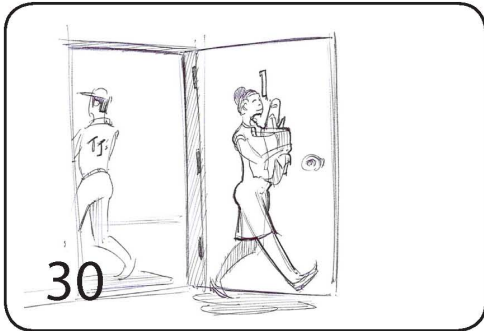
The s-pad displays her total monthly energy savings. Ellen checks her utilities bill and pays it online directly on the s-pad.



She also gets a reminder on-screen that Tom's gym clothes have finished drying. Shortly after, she hears the grocery delivery man ring her doorbell.



The grocery delivery man brings Ellen's groceries from his van to her doorstep.



Ellen pays for her purchases and tips the delivery man and takes her groceries into the house.

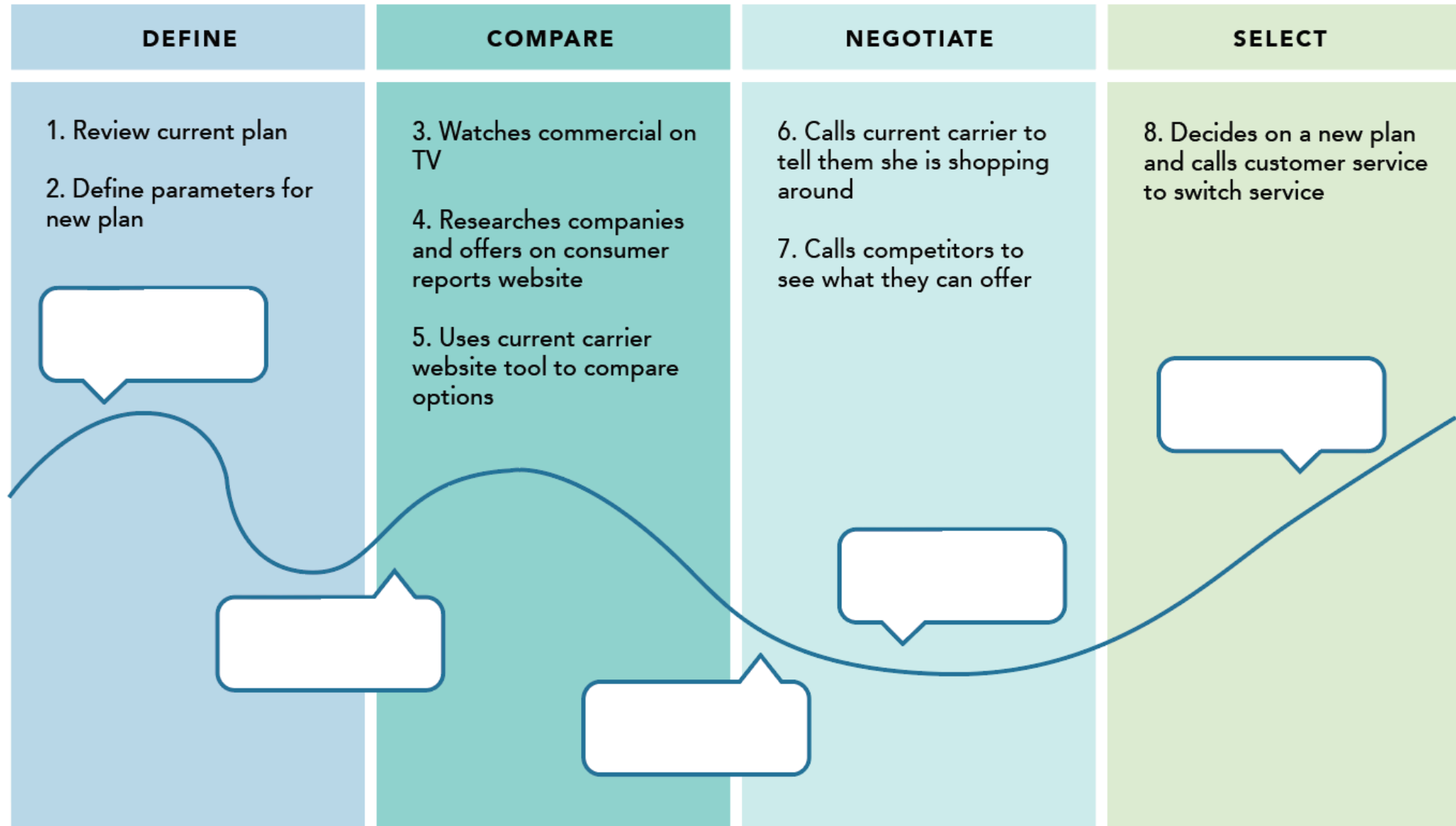


JAMIE

Scenario: Jamie needs to switch her current mobile plan. She wants a plan that can save her money without having to sacrifice usage limits.

EXPECTATIONS

- Clear online information
- Ability to compare plan breakdowns
- Friendly and helpful customer support



ONCE UPON A TIME...
Context: Who, What, When, and Where?

EVERY DAY...
Status Quo

ONE DAY,..
Something Changes

BECAUSE OF THAT...
New Need or Solution

BECAUSE OF THAT...
New Need or Solution

UNTIL FINALLY...
Problem Solved!

Once upon a time...

A family lived underwater. They wanted to get around without disturbing fish, as well as a fast and easy way.

Every day...

the dad goes to work, the mom swims to get groceries, and the kids go to school. The dad makes a commute to the gym after work everyday as mom picks the kids up from school.

One day...

the family realizes that fish have been disturbed because of the way they transport themselves through the water.

Because of that...

the family wanted to create a revolutionary way to get from place to place, a fast and easy way without disturbing the fish.

Because of that...

the family wrote up ideas, until they decided what to build. It was a whole tube system with cars, bikes, trains, people and buses! It was safe, reliable and efficient.

Until finally...

the fish builders came in, and made the idea a reality. And so, life went on the same way.

Once upon a time...



Because of that...



Every day...



Because of that...

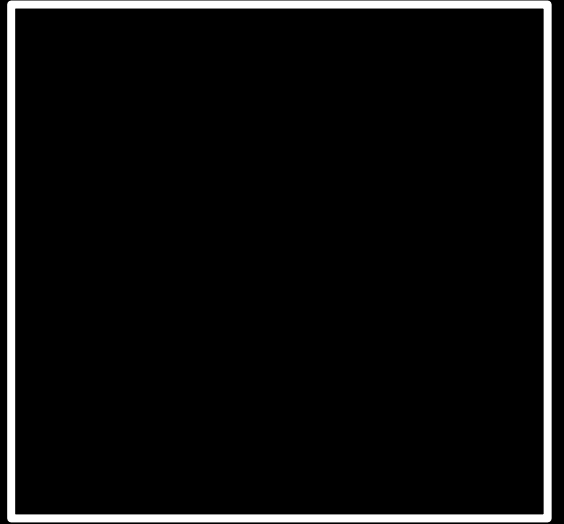
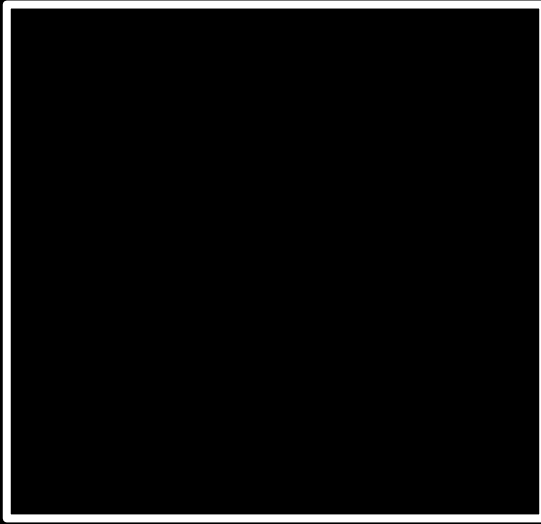
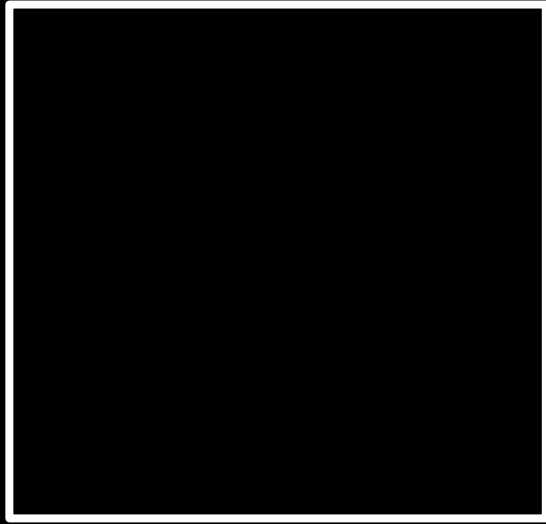
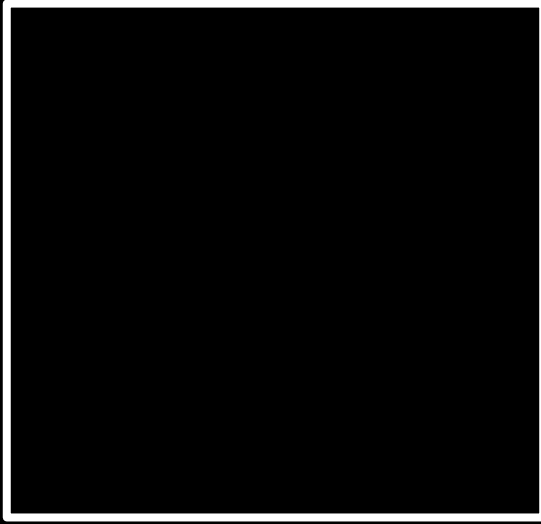
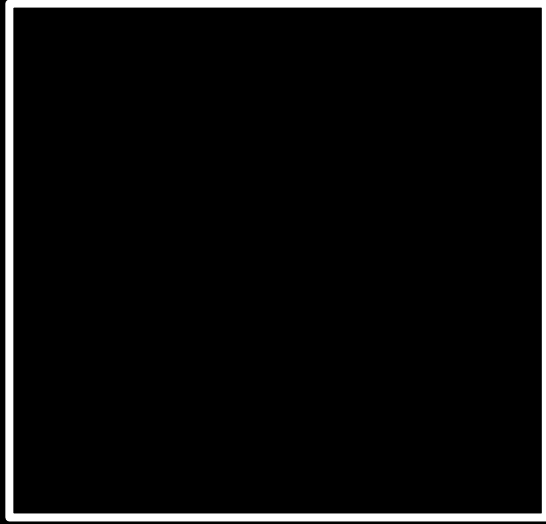


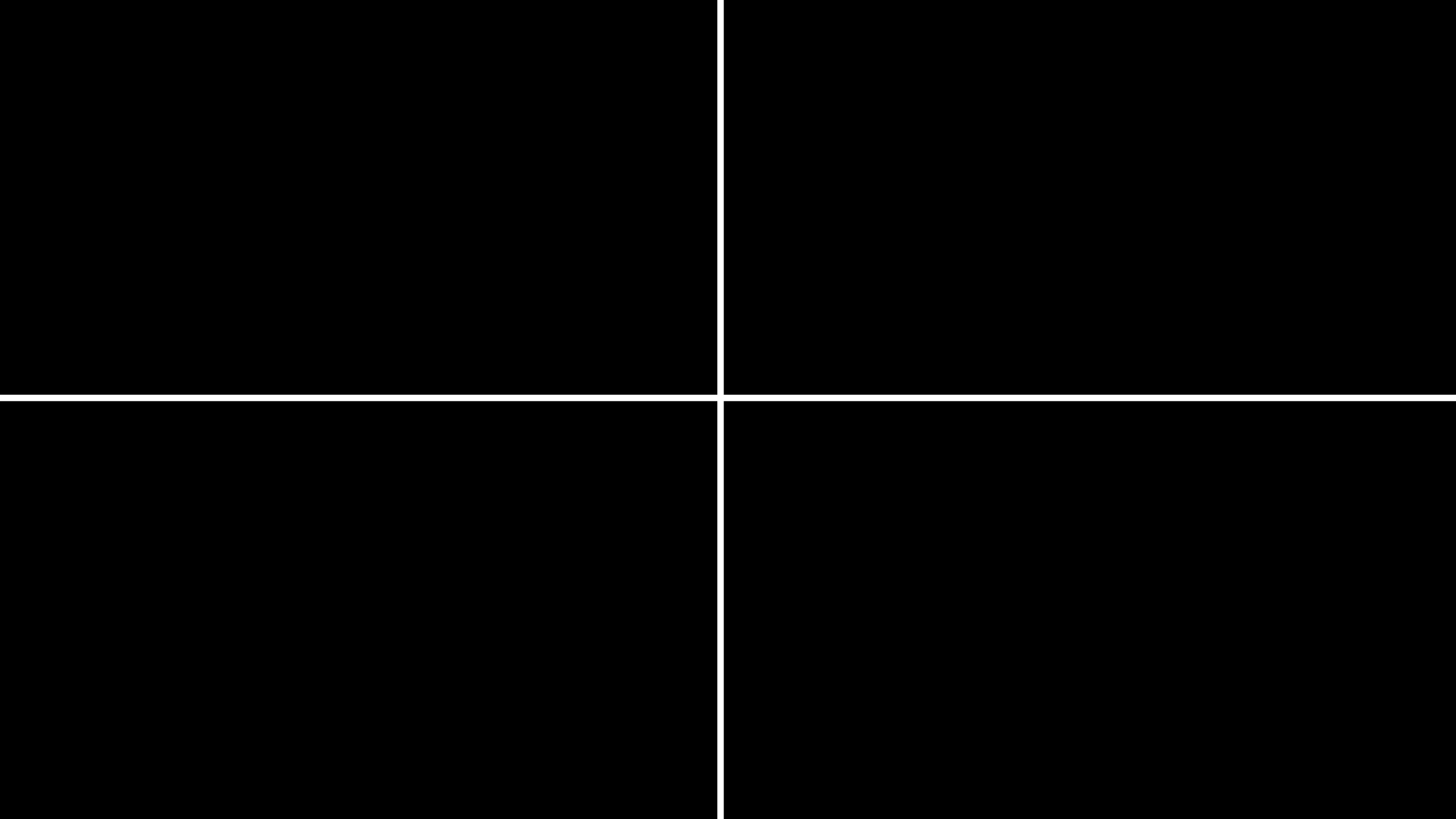
One day...



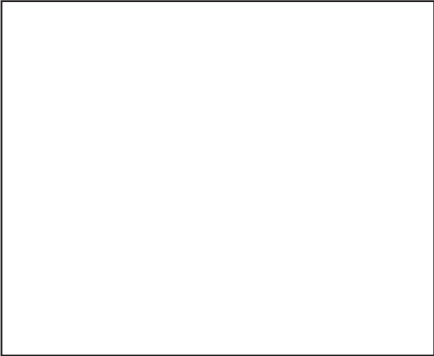
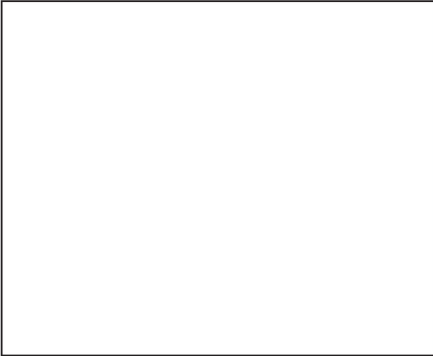
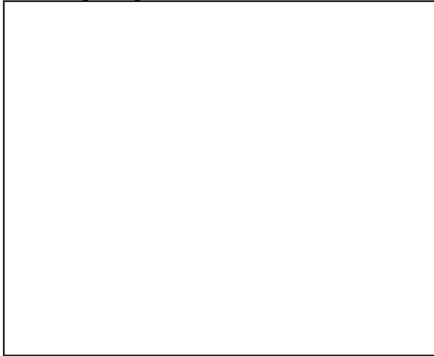
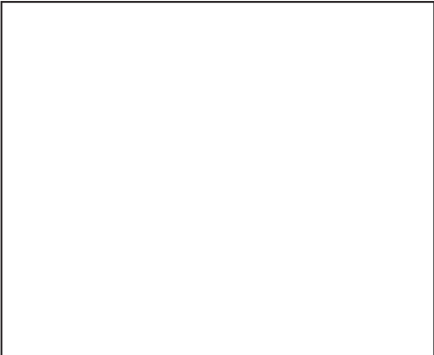
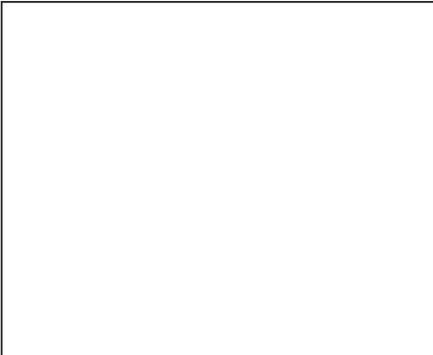
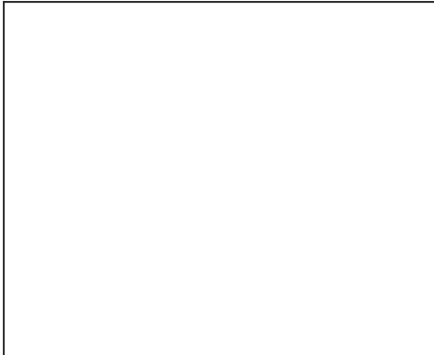
Until finally...







ON YOUR OWN: Use a storyboard to develop one (or a few!) ideas you brainstormed.

ONCE UPON A TIME... Context: Who, What, When, and Where?	EVERY DAY... Status Quo	ONE DAY... Something Changes
		
BECAUSE OF THAT... New Need or Solution	BECAUSE OF THAT... New Need or Solution	UNTIL FINALLY... Problem Solved!
		

**20 MINUTES
TAKE A BREAK AS YOU NEED!**



DEFINE



EMPATHIZE



BRAINSTORM



PROTOTYPE



TEST



LAUNCH!

TEST



FEEDBACK IS ...

FEEDBACK IS ...

- A WAY TO CONSIDER THINGS FROM ANOTHER ANGLE

FEEDBACK IS ...

- A WAY TO CONSIDER THINGS FROM ANOTHER ANGLE
- A MECHANISM FOR FINE TUNING SOLUTIONS

FEEDBACK IS ...

- A WAY TO CONSIDER THINGS FROM ANOTHER ANGLE
- A MECHANISM FOR FINE TUNING SOLUTIONS
- NOT JUST CRITICAL

“I WISH...”

“I LIKE...”

“I WONDER...”

BREAKOUT SESSION:

Each participant will share their prototype for about 1 minute. They will then receive feedback from the group.

Optionally, you may use “I like, I wish, I wonder”.

15 MINUTES
ADJUST YOUR PROTOTYPE

**"During my session I
learned _____, therefore I
am adjusting my
prototype to _____"**

REFLECTION

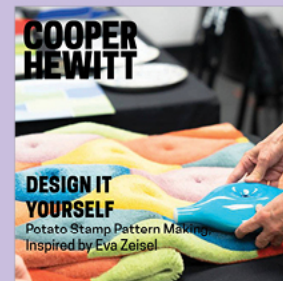
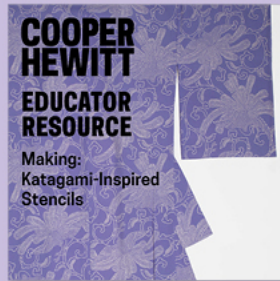


QUESTIONS?

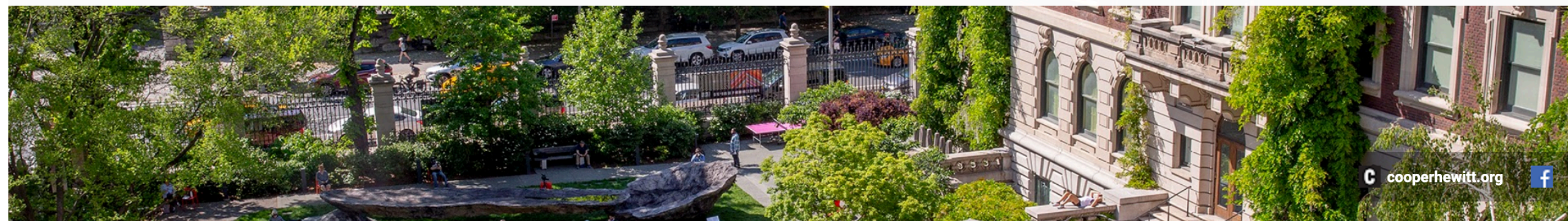
TAKE IT FURTHER...

COOPER HEWITT RESOURCES

FREE RESOURCES FOR EDUCATORS AND STUDENTS



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WARMUP



Cooper Hewitt Presents: Planet Bushwig Warmup

577 views • 1 week ago

In celebration of Pride Month, Cooper Hewitt presents: Planet Bushwig Warmup!

The House of Bushwig returns to Cooper Hewitt virtually for an electrifying performance hosted by House mother Horrorchata, co-founder of the celebrated annual Brooklyn drag festival Bushwig.



Design at Home: Design a Zine

www.youtube.com/user/cooperhewitt

739 views • Jun 10, 2020

👍 28

💬 1

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⌵ SAVE

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SMITHSONIAN RESOURCES

Educator Resources

Learn with Smithsonian



A wealth of resources and digital tools support inquiry-based learning and active engagement to spark creativity and curiosity. The [Smithsonian Learning Lab](#) allows you to create personal collections and individualized educational experiences. The digital [Game Center](#) of the Smithsonian Science Education Center offers fun experiences for the young STEM learner. Smithsonian's [History Explorer](#) offers hundreds of free, innovative resources for learning about American history.

For questions and requests to Smithsonian educators, [email us at learning@si.edu](mailto:learning@si.edu).

Distance Learning Resources From The Smithsonian



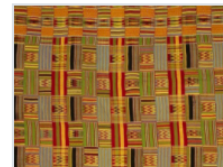
Smithsonian Learning Lab

Discover more than a million resources and create personal collections and educational experiences with the Center for



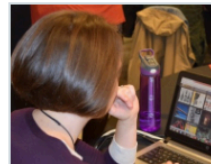
African American Museum

Programs and resources designed to ignite critical thinking skills and creativity for diverse audiences.



African Art Museum

Teacher workshops, videos for loan, and online curriculum you



Smithsonian Learning Lab

Distance Learning

The Smithsonian is committed to supporting teachers and their students around the globe as they face unprecedented new learning challenges.

www.si.edu/educators/resources



Talking About Race

Talking about race, although hard, is necessary. We are here to provide tools and guidance to empower your journey and inspire conversation.

A lifelong journey

Talking about race starts with personal reflection:

- When were you first aware of your race?
- What do you remember from childhood about how you made sense of human differences? What confused you?
- What childhood experiences did you have with friends or adults who were different from you in some way?
- How, if ever, did any adult give you help thinking about racial differences?



www.nmaahc.si.edu/learn/talking-about-race

THANK YOU!