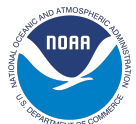


DRAFT

Lesson Slides
Middle/High School
Expo Lesson



Design a Resilient Future



These materials were developed by CIRES Education & Outreach at the University of Colorado Boulder.

<https://cires.colorado.edu/outreach/projects/HEARTForce>



Setting the Stage

Engineers, entrepreneurs, academics, and changemakers from around the world are using a Design Process to design solutions for a variety of problems. The process is human-centered, generates lots of ideas, and revolves around creativity and experimentation. The Design Process can be utilized on a rapid scale and completed in a few hours or can be stretched out to last a few weeks in the classroom. The [d.school](#) out of the Hasso Plattner Institute of Design at Stanford University is a leader in design education and we use their resources for the basis of this lesson.



Students develop ideas using the Design Process.
Photo Credit: Stanford's d school.

Driving Question:

- What improvement or solution would most benefit the resilience of your sector?

Lesson Overview

- **Activity 1** (*Introduction*): Design Process Overview
- **Activity 2** (*Empathize*): Interview and Research
- **Activity 3** (*Define*): Capture Findings and Take a Stand
- **Activity 4** (*Ideate*): Generate Solutions
- **Activity 5** (*Focus*): Choose One Solution
- **Activity 6** (*Prototype and Test*): Make Your Idea Tangible
- **Activity 7** (*Iterate and Launch*): Share Your Idea With the World



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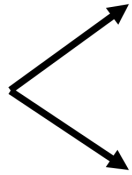
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Activity 1: Design Process Overview

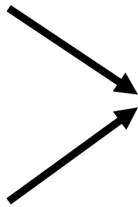
Divergent Thinking:

A thought process used to generate creative ideas by considering many possible solutions to one problem.

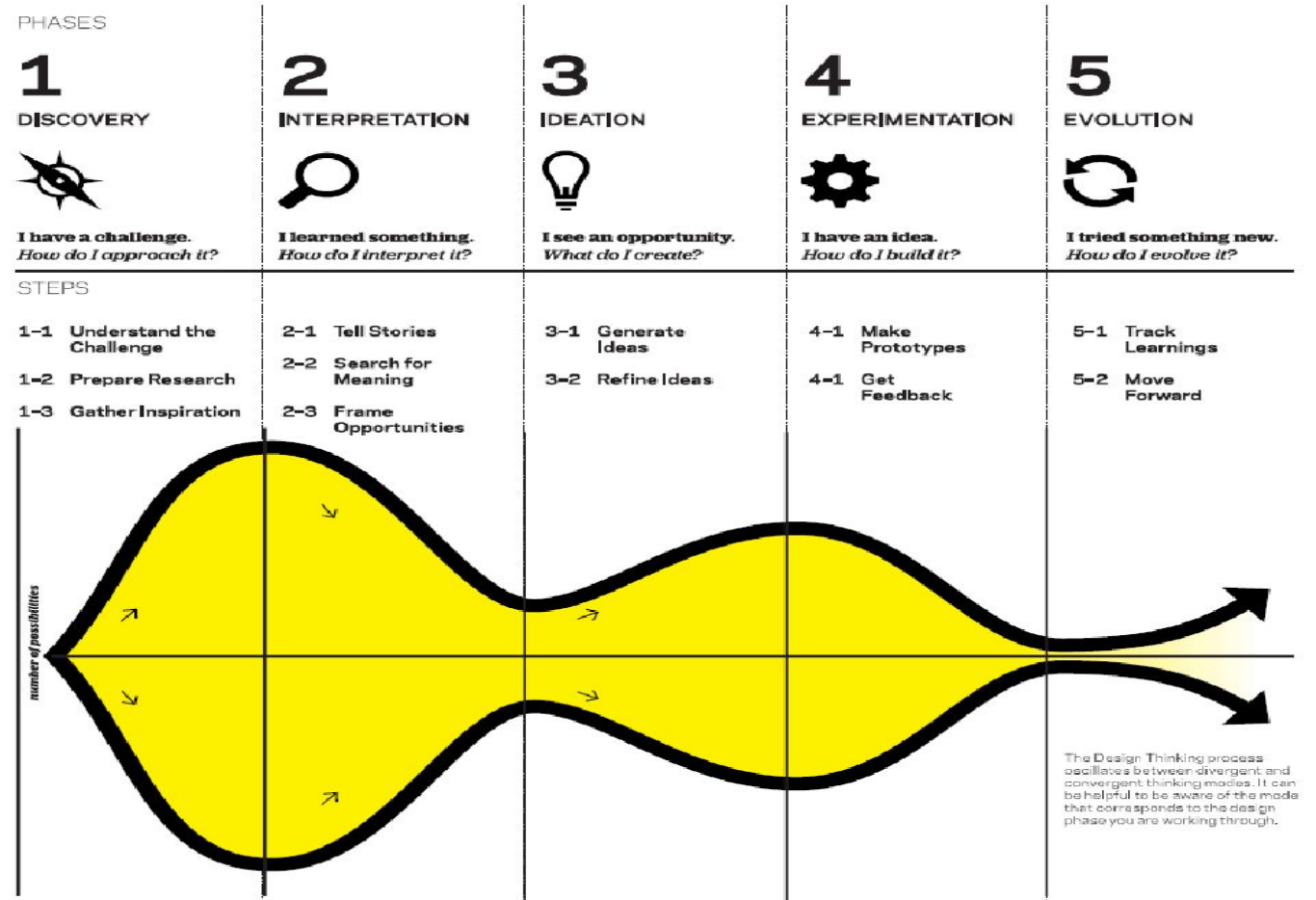


Convergent Thinking:

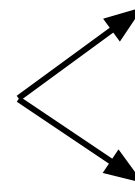
A thought process to evaluate ideas and decide on the “best” idea or solution.



Note: The divergent and convergent symbols will appear on the slides for each stage, to help guide your thinking.



Activity 2: Interview and Research



In the first stage of the Design Process, you will be interviewing an expert or community member who knows about your sector. Here are some ideas for experts to talk to:

Economic

- Small business owner
- Rancher/farmer
- Tourism industry (fishing guide, ski patroller, chamber of commerce)
- Unemployment office

Community

- City planner/county planner
- City manager
- Local government representative (city council member, county commissioner)
- Cultural center

Health and Social

- Public health expert
- Mental health center
- Department of health and human services
- Doctor or nurse
- Hospital community liaison

Housing

- Local housing authority
- Affordable housing organizations
- Home insurance agent
- Contractors and builders
- Affordable housing resident
- Mobile home park resident

Watersheds and Natural Resources

- Public lands office employee (U.S. Forest Service, BLM, National Park Service)
- Environmental engineer
- Water quality specialist
- Colorado parks and wildlife employee

Infrastructure

- City/county transportation planner
- Water treatment plant employee
- Utility company employee (water and/or electricity)
- Local dump employee/solid waste expert
- Communications expert

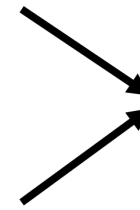


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Activity 3: Capture Findings and Take a Stand



Reflect on the interview(s) with the expert or community member to narrow in on a specific area within the sector that you would like to work on. Create a Point of View Statement to guide the rest of the design process.

“As a test, a good point of view statement:

- Provides focus and frames the problem
- Inspires your team
- Provides a reference for evaluating competing ideas
- Empowers team members to make decisions in response to the high-level goals of the team
- Fuels brainstorming by suggesting “how might we” statements
- Captures the hearts and minds of people you meet
- Saves you from the impossible task of developing solution concepts that are all things to all people
- You revisit and reformulate as you learn by doing
- Guides your innovation efforts.”

([d.](#)

[school bootcamp bootleg](#))

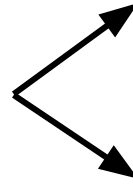


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Activity 4: Generate Solutions



Now it's time to come up with ideas! When you are brainstorming with your group, build on each other's ideas with “yes, and” instead of saying “yes, but.” Now is the time to think big without being critical.

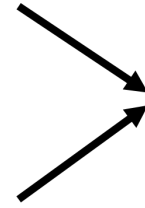
During the feedback session, consider asking these questions:

- What is your point of view statement?
- What did you learn in your interview that made you come up with your ideas?

Tell the other group which of the five ideas is your favorite (most innovative, most practical, most effective), and why. Ask these questions about your favorite idea:

- Who will your idea benefit?
- Will your idea promote resilience and help a community bounce back after a natural hazard? Is it a long term or short term idea?
- What kinds of resources will you need to carry out your idea?
- What kinds of challenges do you think you'll face?

Activity 5: Choose One Solution



With the feedback you were just given, decide to focus on one of your ideas, and start to develop it further.

Consider the following questions:

- What is the scope of your idea? Is local, regional, national?
- What steps would you need to take to implement the idea?
- What resources would you need to implement the idea?
- How would your idea benefit the community?
- What challenges do you foresee?
- Once you've implemented the idea, how would you make sure it is sustainable and continues on without you?

Write answers to these questions and sketch your idea in your student handout.

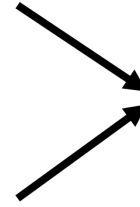


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Activity 6: Make Your Idea Tangible



It's time to make your idea tangible!

“A prototype can be *anything* that takes a physical form – be it a wall of post-it notes, a role-playing activity, a space, an object, an interface, or even a storyboard for a video.” ([d.school bootcamp bootleg](#))

Have fun!

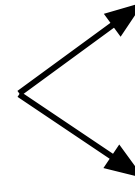


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Activity 7: Share Your Idea With the World



Incorporate the feedback on your prototype to refine your idea even further, and make it the best it can be.

Consider the following questions once more:

- What is the scope of your idea? Is local, regional, national?
- What steps would you need to take to implement the idea?
- What resources would you need to implement the idea?
- How would your idea benefit the community?
- What challenges do you foresee?
- Once you've implemented the idea, how would you make sure it is sustainable and continues on without you?
- How would you educate others about the value of your idea?
- What is the justification for your idea? Include anecdotes from your interview(s) to explain why the idea is important for the community.



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