



Future Design Challenge

Optional extension

Design Challenge

Your goal for this project is to...

Design an invention that will help solve an environmental challenge that the River faces today.

The purpose of the project:

1. Research and choose an environmental topic
2. Design a solution to the environmental challenge
3. Pick 3 goals of the design
4. Create a model and/or research poster
5. Draft, write, and revise a speech to give to the class
6. Display and present a finished model

Lesson 2

Learning research skills



Think like a Scientist

What is an environmental scientist?

How can you practice being an
environmentalist in your own community?



Annotating

- Annotating is when you interact with a text by circling, taking notes, or using symbols around key pieces to further your understanding.
- Scientists use annotation to help them better understand what they read
- Ways to annotate:
 - Use symbols!
 - Circle
 - Take notes in the margins

Example of how scientists annotate:

Water Quality of the LA River

Starting in the 1930s, Los Angeles covered roads and the River in concrete. We created a system of storm drains to prevent our streets and neighborhoods from flooding during heavy rain. This system also flushes tons of pollution into the LA River and to the ocean in Long Beach after a storm. The City of Long Beach estimates that 4,000 tons of debris and trash from storm drain runoff are being hauled from local beaches every year.



The West Beach at the end of the Los Angeles River in Long Beach, Los Angeles County Department of Public Works.

Oils, copper, fertilizers, pesticides, cigarette butts, pet waste, plastic bags and food wrappers that have collected on streets, parking lots, freeways are **?** examples of non-point source pollution. When it rains, these pollutants are washed off the streets and into storm drains that lead directly to the L.A. River and ocean in Long Beach. Unfortunately this is not just in Los Angeles, non-point pollution and runoff is the major source of pollution in most waterways throughout the United States.

City agencies have found that 94% of the pollution comes from non-point sources and consists of trash and chemicals on our streets. Some of the large trash gets caught in the natural bottom parts of the L.A. River, but most of it still makes its way to the ocean in Long Beach.

To do:

Choose an article to read. Possible topics:

- Climate change
- Water Pollution
- Air Pollution
- Flood protection
- Wildlife & Habitat
- Water Supply
- Green Space
- Plastics
- Eco Friendly Buildings

Practice annotation

Complete the **LA River Research Notes Worksheet**



Discussion

What environmental challenge are you interested in researching? Why is this important?



Lesson 3

Environmental Model and Research Poster Guidelines



Design Challenge

Remember, your goal for this project is to...

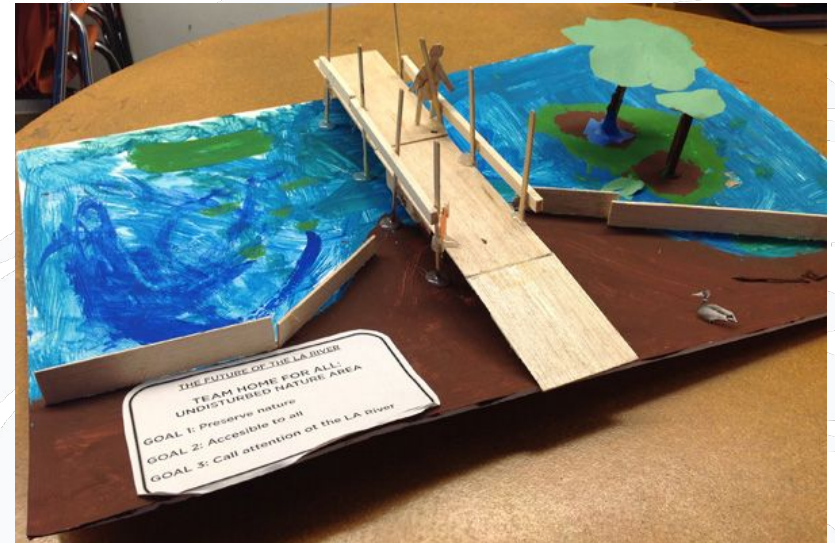
Design a solution to a problem the LA River is facing that improves quality of life and ecosystem health so that we could have a better future.

Examples of models



What materials do you think you'll need for your model?

Examples of models



What materials do you think you'll need for your model?

What makes a good poster?

- Important information should be readable from about 10 feet away
- Title is short and draws interest
- Word count of about 300 to 800 words
- Text is clear and to the point
- Use of bullets, numbering, and headlines make it easy to read
- Effective use of graphics, color and fonts
- Consistent and clean layout
- Includes acknowledgments, your name and institutional affiliation

What is a research poster?

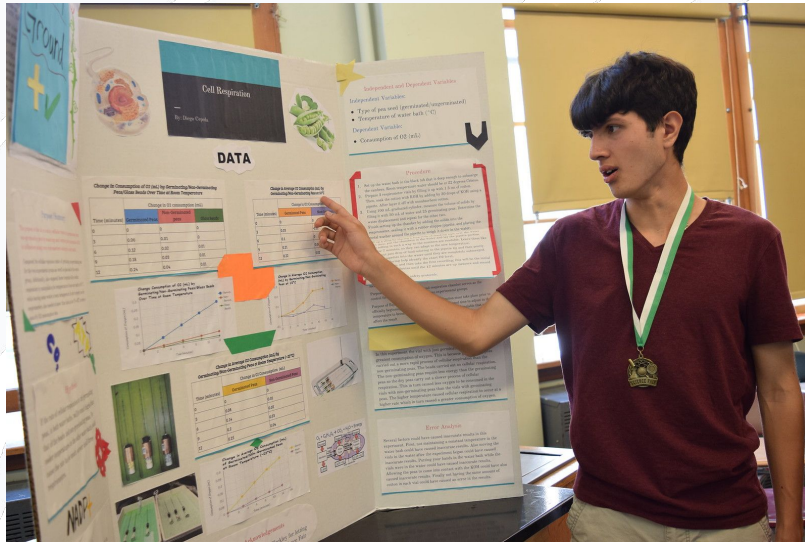
- Posters are widely used in the academic community, and most conferences include poster presentations in their program.
- Research posters summarize information or research concisely and attractively to help publicize, raise awareness, and generate discussion.
- The poster is usually a mixture of a brief text with tables, graphs, pictures, and other presentation formats. At a conference, the researcher stands by the poster display while other participants can come and view the presentation and interact with the author.

Where do I begin?

Answer these three questions:

1. What is the most important/interesting/astounding finding from my research project?
2. How can I visually share my research with conference attendees? Should I use charts, graphs, photos, images?
3. What kind of information can I convey during my talk that will complement my poster?

Examples of poster



What materials do you think you'll need for your poster?

Lesson 4

Action Plan



Creating an action plan

An action plan helps you identify the tasks you need to complete to achieve your goals.

Action Plans:

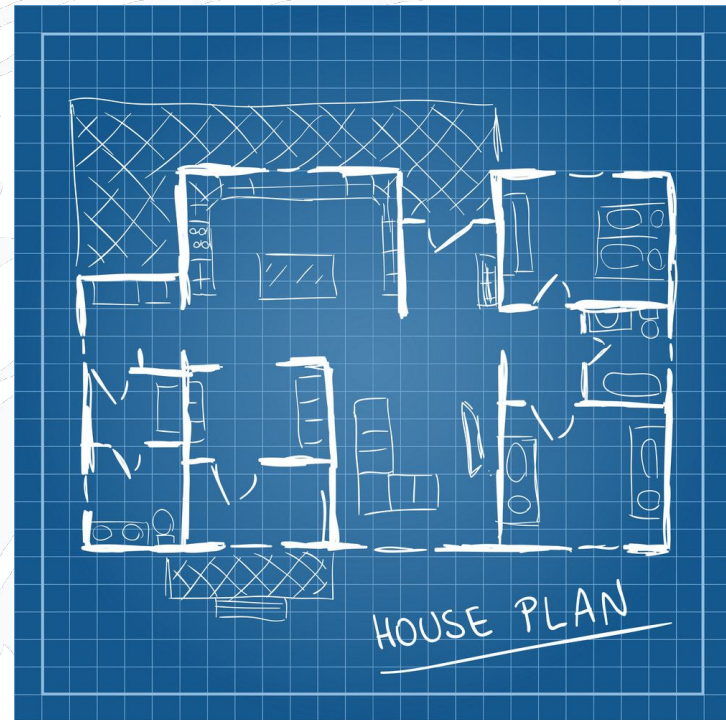
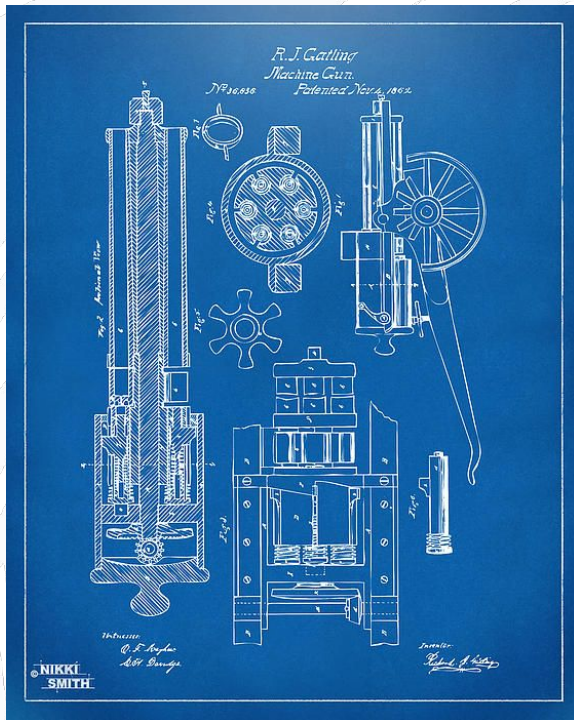
- give you a framework for thinking about how you'll complete a project efficiently
- help you finish activities in a sensible order
- ensure that you don't miss any key steps.

Creating a blueprint for your design

What is a blueprint?

- A blueprint serves as a design plan
- Drawing that shows the specific details of a project

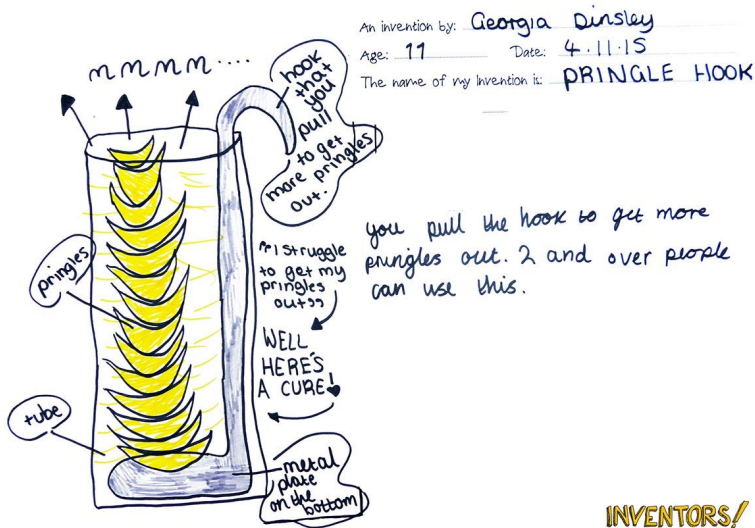
Examples of blueprints



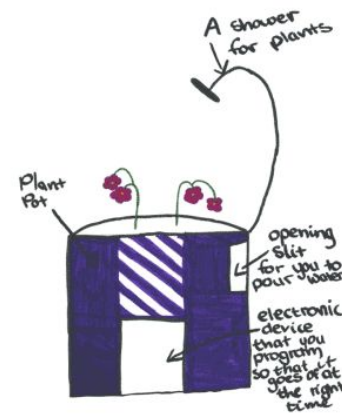
To do:

- Use the **Future River Design Action Plan Worksheet**
- Brainstorm
- Prioritize your tasks
- Draw out a **blueprint**
- Create an **outline** for your research poster

Examples of blueprints



INVENTORS!



Self Water Plant Pot

by Kaja Jach age 10

"A self watering plant pot which you program so it sets off at the right time. It will make life easier so people don't kill their plants."

INVENTORS!



Lesson 5

Building day!



To do:

- ❑ Students build their model using their blueprints, action plan, and supply list

Lesson 6

Putting together your research poster



To do:

- ❑ Expand revised outlines into paragraphs
- ❑ Glue printed paragraphs onto presentation board
- ❑ Add photos and diagrams to board as necessary
- ❑ Binder clip process (worksheet, blueprint, outline, etc.) to the back of the board

Lesson 7

Public Speaking



Discussion

Turn to a partner and talk about a time that you've spoken in front of a lot of people.

How did it feel?



What makes a good speech?

1. Starting strong (hook)

- a. Open by asking a question
- b. Share a surprising fact
- c. Tell a story about your main idea
- d. Get your listeners engaged early

What makes a good speech?

2. Having a structure

- a. Have a path and a destination. You want to know where you're going and why.
- b. As you write and revise, focus on structuring and simplifying.
- c. Remove anything that's extraneous, contradictory, or confusing.
- d. Remember: If it doesn't help you get your main message across, drop it.

What makes a good speech?

3. Set the Right Tone

- a. Who is my audience? Why are they here? And what do they want?
- b. Writing a speech involves meeting the expectations of others, whether it's to inform, motivate, entertain, or even challenge.

What makes a good speech?

4. End strong

- a. Recap your biggest takeaway
- b. Tie everything together
- c. Share a success story
- d. Make a call to action

What makes a good speech?

and a few other tips...

- Eye contact
- Smiling
- Project voice
- Tall posture
- Speak slowly
- Speak clearly

[Watch this video on public speaking](#)

Lesson 8

Presentation practice on your own



To do:

- ❑ Complete a presentation outline
- ❑ Add as many details as possible to your outline
- ❑ Meet with teacher to discuss presentation
- ❑ Make any necessary changes to your outline

To do:

- ❑ Transfer your presentation outline to notecards (this should be the final draft and what will be used to guide you during your final speech)
- ❑ Practice your presentation in front of a mirror, your friends and/or family.

You CAN do this!

Lesson 9

Presentation practice



Presentation practice

- Form small groups
- Practice giving your speech to one another
- Divide groups in half
- Alternate visiting other groups and asking other groups questions about their projects
- What are some examples of thoughtful questions you can ask other groups?

Rewatch [video on public speaking](#) if necessary

Reflection Questions

What went well?

What could go better?





Lesson 10

Presentation day!!

