# DETAILED PROJECT PLAN

**The project:** In this project, students will collaborate with each other and with community members to learn and practice a new skill, and share that skill at their Repair Fair.

**TEACHER TIP || Questions to ask when planning to roll-out this project*:**

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| | **Prior Knowledge:** *What prior knowledge (if any) do my students have about what happens to trash on our island(s)?* |
| **Authentic Audience:** *Who do I already know in the community who would be interested in mentoring my students and assisting in teaching new skills?* | |
| | **Context in Place:** *What research do I need to do in order to understand waste management in my students' community? What statistics and data exists?* |
| **Project Management:** *Will students work alone or in teams? If students work in teams, how will they be assigned? How will they be assessed individually vs. in a team?* | |

***Project-based learning vs. traditional lesson planning:** *In the midst of project-based learning (PBL), students are actively doing the work, learning, creating, and inquiring - eventually heading towards their end goal or product. Often misunderstood is that the organized chaos of what you might see in a PBL environment is carefully and intentionally designed by the teacher well before the project begins. The questions above should allow you to set the stage for student learning to unfold in the following project. Anticipating student questions and areas of need will help you to feel planned and ready in advance of a project.*

# Repair Fair

Climate Action Project Planner

| **Essential Question:** | How can we care for the finite space of our ʻāina by repairing and reusing resources? |
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**Skills and content needed to answer the Essential Question:** *Refine these skills and content standards to the scope and need of your project. This project is designed to be interdisciplinary - but if you don't teach a subject, it doesn't mean that that skill or standard can't still play a role in the experience! - These selected skills and content will be supported throughout the project with activities, formative assessments and additional resources.*

| Skills | Content/Standards |
|---|---|
| • Communication<br>• Critical Thinking<br>• Collaboration<br>• Reflection<br>• **Add other skills to practice in this project* | **C3 Framework: D2.Eco.3.6-8**<br>Explain the roles of buyers and sellers in product, labor, and financial markets.<br><br>**C3 Framework**: **D2.Eco.6.6-8**<br>Explain how changes in supply and demand cause changes in prices and quantities of goods and services, labor, credit, and foreign currencies.<br><br>**C3 Framework**: **D2.Eco.8.6-8**<br>Explain how external benefits and costs influence market outcomes.<br><br>**CCSS.ELA-LITERACY.W.7.2**<br>Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.<br><br>**CCSS.ELA-LITERACY.W.7.4**<br>Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.<br><br>**CCSS.ELA-LITERACY.W.7.9**<br>Draw evidence from literary or informational texts to support analysis, reflection, and research.<br><br>**CCSS.ELA-LITERACY.CCRA.SL.5**<br>Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.<br><br>**Add or remove standards to practice and assess in this project* |

**Activites, Products and Assessments:** *Below you will find the proposed activities, student products, and assessments for this project. Refine them to match the scope and need of your project, making sure that they align with the skills and content you chose to drive from in the previous section.*

## Final project & summative assessments:

Students share their new skills in a "Repair Fair".

**Teacher Tip: Present the project calendar early on to show students where they are headed.** *Students should know what is expected at the end from the beginning of the project. Use the templates provided to plan out the scope and sequence of the project. Include students in this process.*

# Fix-It Challenge

What can I do with used resources and materials?

**Launch the project** by setting up a Design Thinking challenge, such as a "Fix-It" Challenge, or "Build Something" challenge.

- **Option 1: Fix-It Challenge**
  - Gather broken or damaged household objects.
    - *I.e. old chromebook, vacuum cleaner, fan, torn clothing, etc.*
  - In addition to the object, provide 2-3 tools that might be needed.
  - Set the parameters for the challenge:
    - Can students use the internet to help them? (I.e. YouTube videos) If so, for how long?
    - How many people are on a team?
    - How much time will you provide?
  - **Set the challenge:**
    - ***In the time given, what can you do with the resources provided to attempt to "fix" the broken item?***

- **Option 2: Build Something Challenge** *(this is a good option if you have trouble obtaining broken items for the Fix-It Challenge)*
  - Gather a variety of materials that may or may not seem "useful" on their own.
    - *I.e. wood, screws, paper, fabric, paints, etc.*
  - In addition to the materials, provide 2-3 tools that might be needed to "create" something out of them.
  - Set the parameters for the challenge:
    - What do you want students to build?
    - Is there a client or a user that needs the object that student teams will build?
    - How many people are on a team?

**What to collect from students:**
-Students collaborate and participate in the challenge and debrief, and complete the challenge reflection

**Type of assessment:**
-Formative

**Skills and content:**
-Collaboration

-Reflection

- How much time will you provide?
- How will you judge the "completion" of the object?

- **Set the challenge:**
  - ***In the time given, what can you build with the resources provided (to meet the need of _____)?***

**Debrief** the experience with the following questions, and have students complete a reflection as a formative assessment.

- *After completing the challenge, what are you most proud of?*
- *Were you successful in "fixing" the item? Why or why not?*
- *What questions do you need to ask to learn more about fixing the item?*
- *What was the most challenging part of the activity?*
- *Describe the role collaboration played to complete this challenge.*

**Watch the film clip** from Episode 2 of *A Climate for Change.*

- **Launch the project** by introducing the essential question, the project calendar and the final product that students will be working towards. Generate questions that students might have about the project and write them on the board or on chart paper. **Revisit these questions throughout the project.**

# The Supply Chain

Where does my stuff come from? Where does it go when I throw it away?

**In this section, students will zoom out and learn more about the supply chain of common items, and learn about where their trash goes.**

**Background Information on Supply Chains:**

- The World's 2-Billion-Ton Trash Problem Just Got More Alarming - Supply Chain Brain
- Linear vs. Circular Supply Chain - SupplyChain 247
- The Circular Supply Chain - Cerasis

**Videos:**

- The Story of Solutions
  - *Important vocabulary:* ***linear system, finite planet***
- A different approach: Explaining the Circular Economy and How Society Can Re-think Progress

***Use the above resources to teach a lesson on supply chains - direct instruction, stations and jigsaw are great methods for content delivery.***

**What to collect from students:**
-Students Gather Information while learning about supply chains
-Applying what they learned, they map the circular supply chain for their household item and reflect

**Type of assessment:**
-Formative

**Skills and content:**
-Explain the roles of buyers and sellers (C3 Framework D2.Eco.3.6-8)

-Explain how changes in supply and demand cause changes (C3 Framework D2.Eco.6.6-8.)

# Repair Fair

Climate Action Project Planner

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| **Task**:<br>• Students choose a household item that would get thrown away if it broke<br>• Applying what was learned about the circular economy, students map out the circular supply chain for that item<br>• Reflect on the map from the perspective of the consumer | -Explain how external benefits and costs influence market outcomes (C3 Framework D2.Eco.8.6-8.)<br><br>-Produce clear and coherent writing (CCSS.ELA-LITERACY.W.7.4)<br><br>-Reflection |

## Audience + Scope. As you move into the next stage of the project, start determining who the final audience of the project will/can be, and what the scope of the project will be.

**Consider the following:** ***(use the planning document)***

A. **Audience:**
   a. **How can I tap into the skill sets of community members to support my students in their "skill" development?** (i.ei Who can I reach out to act as a community mentor to students? How much time will be asked of the mentor? What is expected?)
   b. **Who is a feasible final audience? How can I set this up prior to rolling out the next stage with students?** (i.e. Will students present their learning all in one event, at an Exhibition night, or will I set up a schedule for different Repair Fairs?)
   c. **How is the selected audience authentic to what students will be creating?** (i.e.: Who will benefit from learning the fix-it skills?)

B. **Scope:**
   a. **What scope of the final product do you want to work towards with your students?**
      i. **Collaboration:**
         1. **Group scope, no community:** Using the internet as their primary resource, students work in groups to identify a skill they want to learn and a household item that they want to diagnose and "fix".
         2. **Group scope, community:** With the help of community mentors, students work in groups to identify a skill they want to learn and a household item that they want to diagnose and "fix".

      ii. **Final Presentation:**
         1. **Exhibition of Learning:** Students will present their learning at a "Repair Fair" event or as a part of a larger exhibition of learning.
         2. **In-class clinic:** Students will present their learning during an in-class Repair Fair.
         3. **Digital option:** Students will develop digital ways to share their learning - making a video, creating a blog post, etc. - and share this with their community (see iFixit examples)

# Problem Diagnosis

What common household item can I learn how to fix? How do I diagnose a problem?

Have students **choose a common household item or an item of interest,** and organize them into their teams:

- **Possible Categories to Organize Teams**
  - Simple machines (ex. bicycle)
  - Small engines (ex. vacuum cleaner, lawn mower)
    - **small engine mechanics**
  - Furniture (ex. old wooden chair)
    - **skill(s): upholstery, woodwork**
  - Electronics (ex. old chromebook, old camera)
    - **skill(s): electronics repair technician skills**
  - Clothing (ex. torn clothing, worn clothing)
    - **skill(s): sewing, patchwork**
  - Other

Run a **Know/Need to Know** protocol in teams. Students will identify what they know, and want to (need to) know about the item in order to diagnose the common problems that might occur.

| **Item:** | |
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| **K** What do I know about the household item?: | **N2K** What do I need to know about the (item) in order to diagnose common problems? |
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**Use a resource like Google Jamboard to create this list digitally. Learn how here.**

Lead students teams through a problem diagnosis of their item to learn what the common problems might be.

**What to collect from students:**
-Students complete their Problem Diagnosis and skill identification

**Type of assessment:**
-Formative

**Skills and content:**
-Collaboration

-Critical Thinking

**Steps to Problem Diagnosis:**

1. Understand the system that operates the item (motor and/or engine).
2. Look for symptoms: what's not working? *(e.x. the motor won't start)*
3. Look for clues: What is working?
4. What skill do I need in order to fix this problem?
5. What parts do I need to fix this problem?

**Once teams have identified the common problems that often occur with their item, have them brainstorm a list of SKILLS that they might need to learn in order to fix these problems.**

Use the following sentence stems:

- Because (*item*) often has (*name of common problem*), I need to learn how to (*skill*).
- If I learn how to (*skill*), I'll be able to address (*name of common problem*), which occurs a lot with the (*item*).

**As a team, they can narrow their skill choice down to ONE skill that they want to learn together.**

**+Community Mentors+**
*If you are able to invite community mentors into the classroom, you may want to introduce them during this Learning Moment. Depending on who you are able to partner with, your team categories may change. For example, if you have a mentor whose trade is to work with cars, you may want to create a team that focuses on automobiles.* ***Community Mentors are those that can assist the students with learning the skills needed, as they prepare to teach this skill at the "Repair Fair".***

## Skill Building

What types of skills and trades can I learn from members of my community?

Begin this Learning Moment by watching the **iFixit Interview with the official "Fix-It Clinic" founder Peter Mui.** Have students look for clues as to what types of "skills" the Fix-It coaches have in order to work at these clinics.

Together, make a list of all of the resources that students have access to to learn different skills *(YouTube, my uncle (and other family members), businesses in the community, etc.)*

Students will then create a **Skills Action Plan** that outlines how they plan to learn the new skill(s) they need to repair common problems on their household item. Once their S.A.P. has been approved, they can move on to the Skill Building.

**What to collect from students:**
-Students create a Skills Action Plan

**Type of assessment:**
-Formative

**Skills and content:**
-Collaboration

-Critical Thinking

-Write informative/explanatory texts

**Share S.A.P. with Peers!** Promote more collaboration by having students share their plans with each other, while you conference with students to "approve" their plans for the next step.

**Skill Building Work Time**
During this project-work time, students will likely be engaging with a variety of different resources. Determine how you want to split up the time to manage behaviors and manage progress. This time may be spent doing any of the following:

**Self-guided or teacher-guided mini-lessons:**

- Fuel, air, compression
- Brakes, gears, bearings
- Materials + woodgrain
- Stitching + sewing
- Electronics basics

**+Skill building sessions with community mentors+**
If you are able to invite community mentors into the classroom, you will want to introduce them during this Learning Moment. Depending on who you are able to partner with, your team categories may change. *For example, if you have a mentor whose trade is to work with cars, you may want to create a team that focuses on automobiles.* **Community Mentors are those that can assist the students with learning the skills needed, as they prepare to teach this skill at the "Repair Fair".**

(CCSS.ELA-LITERACY.W.7.2)

-Produce clear and coherent writing
(CCSS.ELA-LITERACY.W.7.4)

-Draw evidence from informational texts to support analysis, reflection and research
(CCSS.ELA-LITERACY.W.7.9)

## Fair Prep

How will I teach my "fix-it" skill to others?

Prior to this Learning Moment, make sure to use the **Audience + Scope planning document** to determine what your "fair" will look like.

**WHOLE CLASS PREP**

**Have students explore the main components of other Repair Fairs, reflecting on the following questions:**

- What do these fairs have that we need to be sure to include in our Repair Fair event?
- What "new learning" do we want our participants to leave with?
- What is our role during the Repair Fair?

**Examples to explore:**

- Interview with Peter Mui, founder of the Fix-It Clinic
- Orange County's Fix-it, Don't Pitch It
- Official Fix-It Clinic

**What to collect from students:**
-As a whole class, create a list of the necessary components of the Repair Fair
-Teams will show their readiness for the fair by completing the Repair Fair Prep Plan

**Type of assessment:**
-Formative
-Summative

**Skills and content:**
-Communication

-Collaboration

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| • Culture of Repair Event<br>• iFixit Community Repair Events<br><br>**Make a class checklist** of the necessary components of your Repair Fair.<br><br>**TEAM PREP**<br><br>**In teams, students need to determine:**<br>• Who they will invite to the Fair?<br>• What type of broken items they will "accept" based on the new skills they've practiced?<br>• What materials need to be gathered to ensure that they can "repair" items?<br>• What they will need from their Community Mentor before and during the event?<br><br>Students can answer these prep questions by preparing their **Repair Fair Prep Plan.**<br><br>**INDIVIDUAL PREP**<br><br>Include an individual written component in the **Repair Fair Prep Plan -** students can use this to individually reflect on their role in the upcoming fair. | -Write informative/explanatory texts (CCSS.ELA-LITERACY.W.7.2)<br><br>-Produce clear and coherent writing (CCSS.ELA-LITERACY.W.7.4)<br><br>-Draw evidence from informational texts to support analysis, reflection and research (CCSS.ELA-LITERACY.W.7.9) |
| **Repair Fair**<br>How can I successfully apply my new skills to repair other people's household items? How can I transfer this new skill so that the participant is also learning?<br><br>**It's Fair Time!** Depending on the format of your Repair Fair (in-person, community event, online, small group) this section will look different.<br><br>**Key reminders:**<br>• Help students to effectively communicate with their Community Mentors prior to and during the event so that they clearly understand their role in supporting the students.<br><br>• Focus on transfer of knowledge. How will you support your students in "teaching" the new skill, not just "applying" it to the broken item?<br><br>• Keep it manageable. Remember, your students are still learning and practicing the skills. Keep the participant numbers manageable, and focus on quality of repairs versus quantity. You may even want to narrow the items allowed to 1 or 2 per team (for example, if students learned how to fix bicycle gears or give tune-ups, this should be the *only* service being offered during the Fair). | **What to collect from students:**<br>-Active participation in the Repair Fair<br><br>**Type of assessment:**<br>-Summative<br><br>**Skills and content:**<br>-Communication<br>-Collaboration |

# Reflection

So I learned a new skill, now what?

This Learning Moment is an opportunity **to tie the learning back to the original purpose of running a Repair Fair!** Return to the conversations at the beginning of the project around where trash goes, the supply chain economy, and changing consumer mindsets.

**Whole class discussion/debrief:** Using a protocol such as Gallery Walk or Circle Discussion *(or 1 of these great examples)*, debrief the Repair Fair and the learning that happened throughout the project. If Community Mentors are available, invite them to join the debrief.

Debrief questions might include:

- Think back to the beginning of the project, before you knew your new skill. What was the most exciting thing about learning how to do something new?
- How might you use this skill in the future?
- What was the most difficult thing about learning a new skill?
- What are other skills that you are now inspired to learn?
- How does our project connect back to the film and how trash is disposed of in Hawai'i?
- What are you left thinking about as we wrap up this project?

Students should then complete the **Project Reflection** that demonstrates their summative learning and takeaways from the project.

**What to collect from students:**
-Project Reflection

**Type of assessment:**
-Formative

**Skills and content:**
-Reflection