# Define: Achieving Clarity
# Actions of Innovation

Grades 9-12     Science, English Language Arts, Social Studies

**the Henry Ford®**
**INNOVATION LEARNING**

## Driving Question

When working through the "Define" phase of an innovation journey, how can students define a specific problem or need to address?

## Learning Objectives

**Students will be able to:**

- Collect research, data and observations on a possible problem or need to solve.
- Determine what information is valuable and what is not.
- Organize their research to discover and define a specific problem or need.
- Understand the importance of identifying a single need to address, as opposed to attempting to address multiple needs at once.

## Why This Matters

Teaching students to be deliberate in their organization of information and research will guide them to make logical, thoughtful conclusions about what they learned. Using a visual organizer, like a concept map, students will see topics in multiple ways and draw meaningful connections between ideas that may not have been evident before. Concept maps can be easily modified to meet student and topic needs.

## Standards

**Common Core:** CCSS.ELA-LITERACY.RI.9-10.8, CCSS.ELA-LITERACY.RI.11-12.1., CCSS.ELA-LITERACY.W.9-10.1A, .ELA-LITERACY.W.11-12.1A, CCSS.ELA-LITERACY.SL.9-10.2; CCSS.ELA-LITERACY.SL.11-12.2; **NGSS:** HS-ETS1-1; **C3 Framework:** D2.His.14.9-12, D3.1.9-12.

## Prep Activities

Students will analyze and discuss a content-related image that exemplifies a problem or need and begin extracting information and observations to understand the value of organizing information.

## Core Activities

**Formative Performance Task:**
Students will create a concept map that organizes their research, data and observations. Students will analyze their concept map to define a specific problem or need to address.

## Follow-Up Project

**Students will explore other forms of concept maps.**

# Model i

Throughout this lesson, there will be opportunities to practice and develop Model I's Habits of an Innovator and Actions of Innovation. Listed below are the Habits and Actions that students will be developing and practicing.

## Developing Habits of an Innovator

**Stay Curious**

Students will explore and research a topic.

**Collaborate**

Students will work together to design a concept map.

**Challenge the Rules**

Students will challenge the rules as they discover new relationships and connections in their research.

**Take Risks**

Students will think BIG as they define a specific problem or need to solve.

## Practicing Actions of Innovation

**Uncover**

Students will gain insight and a deeper understanding for a problem or need.

**Define**

Students will use their new perspectives to name a specific problem or need.

## Prep Activities

Display a photograph or image that reflects a content topic you are exploring in the classroom.

     -An example photograph, "Spraying Apple Trees c.1925" can be found here: https://www.thehenryford.org/collections-and-research/digital-collections/artifact/160522/#slide=gs-478284

     -Or use The Henry Ford's collections to find a photograph at https://www.thehenryford.org/collections-and-research/digital-collections/

Ask students – What is happening here? Be sure students support their observations with evidence.

Record student responses where everyone can see them.

Once students have shared a dozen or so comments, point out that some items relate to others and could be grouped together.

     -Mark items that are similar using the same symbol.

     -For example: If using The Henry Ford image "Spraying Apple Trees," some comments might relate to the safety of the men and animals - circle them. Other comments might all reflect the chemicals used - place a star next to them. Etc.

Point out that some ideas and topics relate to other ideas. Ask students how we might show these relationships?

The list will become quite messy.  Show students an example of a concept map. Explain that sometimes a list of information is helpful, but organizing the ideas in a new way, a way that might expose relationships, could be very helpful.

     -Many concept map examples can be found with a quick internet search.

## Core Activities

**Formative Performance Task:**

Explain to students that they will create their own concept map on a research topic of the teacher's choosing.

     -Students should have completed some research or collected information prior to creating the concept maps.

Working individually or in small groups and using large newsprint paper, instruct students to write the topic of their research in the middle of the paper. Then, draw a large circle around it.

     -For example: "Spraying Apple Trees"

Instruct students to review their research and identify patterns or similarities. Then using a new marker color, add "Big Idea" bubbles around the center topic.

     -Draw circles around these Big Ideas.

     -Connect each to the center topic circle with a line.

     -For example: Students could write "Safety," "Animals", "Bugs," and "Chemicals". Then each word would be circled and connected to the center topic bubble.

Then, using a third marker color, write details that relate to each Big Idea around the bubble.

     -Students will circle these words and call them "Detail Bubbles." Connect these details to the Big Idea circle with lines.

-For example: Students might write details such as, "Men breathing chemicals" and "Men eating chemicals on apples" around the Big Idea Bubble of "Safety."
-Depending on the students, teachers can make this as detailed or broad as needed.

Students should label the connector lines by explaining HOW each of the small details relates to the larger idea or topic.

Once complete, have students evaluate the concept map. Answer questions like:
-What did you learn about this topic by organizing your research?
-Does it look like there is an area where you might need more information?
-What do you wonder now that you see your topic in this visual way? Students can add "Question Bubbles" to the concept map.

Explain to students that it's now time to define one, needs-based actual problem. Explain to them that they cannot solve all the problems at once.
-Using their concept map information, can they identify a single problem or need that they could attempt to act on?
-At first, students might identify several problems or needs. Guide them in choosing just one.

Guide them in choosing just one by focusing on ideas, such as:
-Is this a reasonable problem to try to solve?
-Do materials exist that could help me solve the problem?
-Are there people who could help me or give me advice?

Write this problem or need on the concept map.
-Encourage students to stay focused on identifying the problem or need. They are not yet stating HOW they would solve it.
-For example: Students might suggest solving the problem of horses breathing in chemicals, men breathing in chemicals, or people eating the chemicals with the apples. But solving all three at once would be difficult and confusing. Picking just one will help students stay focused in the next innovation phase: Design a solution.

As students work through each part of the project, encourage them to reflect on how they are using or might use the Model i Habits and Actions to guide their project building.

## Follow-Up Project

If time permits, have students share their concept maps with the class or another group. Point out that there is more than one "right way" to make a concept map.
-Classmates can suggest additional Big Idea, Detail, or Question Bubbles to add.

Teachers can search the internet for more examples of concept maps, showing students that the format can change and the maps can be organized differently to help the student make sense of their information.

## Standards

**Common Core State Standards In English Language Arts**

CCSS.ELA-LITERACY.RI.9-10.8. Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.

CCSS.ELA-LITERACY.RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.

CCSS.ELA-LITERACY.W.9-10.1A. Introduce precise claim(s), distinguish the claims from alternate or opposing claims, and create an organization that establishes clear relationships among claims, counterclaims, reasons, and evidence.

CCSS.ELA-LITERACY.W.11-12.1A. Introduce precise claim(s), distinguish the claims from alternate or opposing claims, and create an organization that establishes clear relationships among claims, counterclaims, reasons, and evidence.

CCSS.ELA-LITERACY.SL.9-10.2. Integrate multiple sources of information presented in diverse media or formats evaluating the credibility and accuracy of each source.

CCSS.ELA-LITERACY.SL.11-12.2. Integrate multiple sources of information presented in diverse media in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.

**Next Generation Science Standards**

HS-ETS1-1. Analyze a major [global] challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

**College, Career and Civic Life (C3) Framework for Social Studies State Standards**

D2.His.14.9-12. Analyze multiple and complex causes and effects of events in the past.

D3.1.9-12. Gather relevant information from multiple sources representing a wide range of views while using the origin, authority, structure, context and corroborative value of the sources to guide the selection.