CONCEPT MAPPING

Developer:
Pacific Science Center

Category:
Activity and Materials Development

Approximate length:
20 – 60 minutes

Format:
Workshop or One-on-One Meeting

MAIN IDEA:

Concept Mapping is an exercise designed to help scientists identify and develop the main concepts they would like to share with public audiences. Scientists are guided to think about strategies they might use to communicate their work. If scientists are creating a hands-on activity, the concept map can help focus and define the activity's scope.

RELEVANT OBJECTIVES:

- Scientists develop communication strategies that support inquiry.
- Scientists and informal science education staff work together to design and facilitate materials-rich and other learning experiences that actively involve and affect all parties.
- Scientists understand the importance to learning of developing personal connections with audiences based on shared experiences.

HOW THIS RELATES TO OTHER PROFESSIONAL DEVELOPMENT ELEMENTS:

This element is used as a brainstorming tool in one-on-one or workshop professional development settings. It is best used after foundational concepts have been covered, such as theories on how people learn, and strategies for effective communication. In a one-on-one setting, this element can be used in conjunction with the *Scientist Interview* element. Placing this element directly prior to the *Talk to Your Neighbor* element in a workshop allows scientists to apply their concept maps to a practical situation right away. Alternately, it can be placed directly after *Activity Showcase*, when scientists are ready to begin brainstorming about their own topics and activities.

ASSUMED PRIOR KNOWLEDGE AND EXPERIENCE:

We assume the scientists value communicating their work to the public, and that they understand the importance of the strategies and considerations discussed in the concept map.

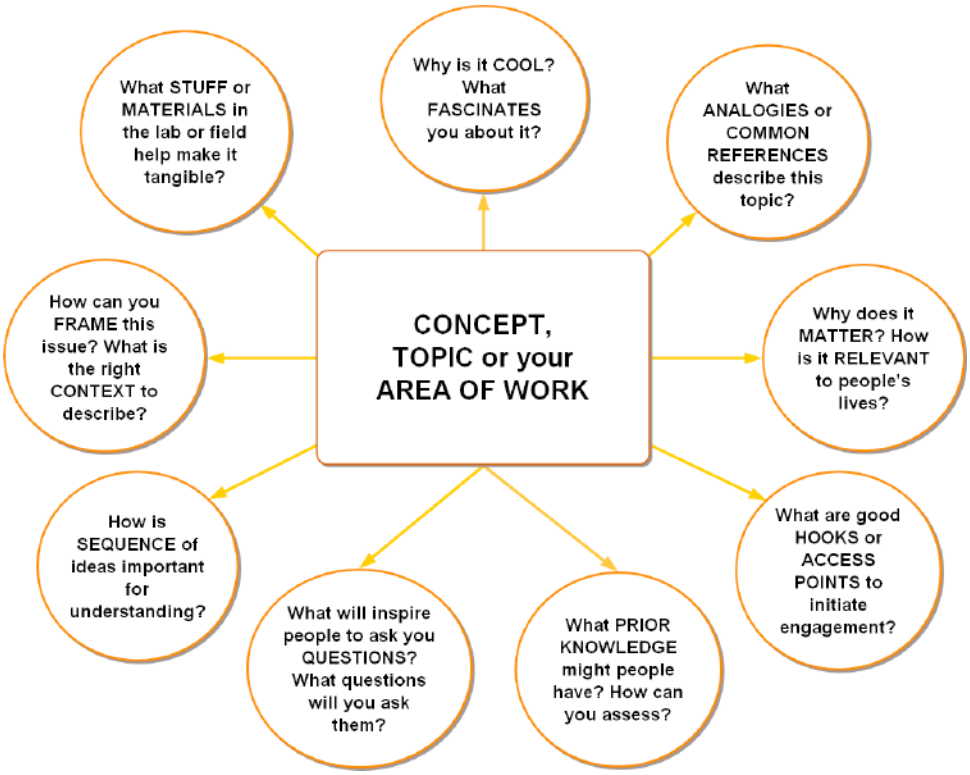
ROOM SETUP AND MATERIALS PREPARATION:

Post concept map posters in visible areas within the classroom. Prepare screen, computer, and projector if using PowerPoint instead. Have a copy of the concept map and scratch paper for each participant.

PROCESS:

Part 1: Introduction (5 minutes)

- Explain that the goal of the concept map is to help scientists select and reflect upon a science concept specific to each scientist's own work. This concept can then be used for activity development, and/or as a focus for the scientists' Portal to the Public public program. The goal of this element is not to outline a specific presentation, but rather to build a toolbox of strategies and approaches for scientists to use as they seek to communicate a particular concept or slice of their work to a general audience.
- Present a concept map like the one below, referring to the wall poster or a PowerPoint slide. Pass out the concept map handouts and scratch paper. Describe each "bubble," providing examples to illustrate or define the terms and ideas within that "bubble." Draw connections to ideas that have been discussed in previous parts of the scientists' professional development experience.



Part 2: Activity and reflection (20 - 45 minutes)

- Invite scientists to freestyle their own concept map on a piece of scratch paper. Encourage them to consider developing their concept map utilizing a different format, such as an outline, bullet list, narrative, or pictures, as some people do not find the map format helpful. Allow at least twenty minutes (ideally more) for scientists to work individually or in small groups. In a one-on-one setting, this process may be more conversational between the scientist and ISE staff.
- The facilitator should circulate around the room to answer questions, help brainstorm, and provide encouragement.
- If scientists have been working individually, allow time for partners or small groups to share, discuss, and critique each other's concept maps.

Part 3: Discussion and closing (10 minutes)

- Facilitate a large-group discussion and debrief of the process. Suggested questions are:
  - Which parts of the map were easy to develop?
  - What new ideas are you most excited about?
  - What was challenging?
  - What new revelations did you have?

- Facilitate a group-brainstorm to help people who are stuck with a particular concept or bubble.
- Conclude with the idea that the concept map is a tool your scientists can come back to as they are developing an activity, as well as over time as they continue public engagement work.

MATERIALS:

- o Concept Map handout (see attached)
- o Concept Map poster or PowerPoint slide
- o Scratch paper
- o Writing utensils

VARIATIONS OR MODIFICATIONS:

- You can consider providing each participant with a template-style worksheet of a blank concept map ready to fill out. However, testing this element at Pacific Science Center revealed that staff had more success with the flexible, freestyle approach. Letting scientists design their own maps encouraged creativity and allowed them to prioritize, enhance, or discard specific bubbles. Concept mapping can also be a helpful tool during *One-on-One Activity Development* meetings as a way to help focus or develop a scientist's activity ideas.
- If your organization chooses not to present the *Concept Mapping* element, the concept map can still be a useful resource for scientists to explore on their own time.