

PERSONAL LEARNING

Developer:

Pacific Science Center

Category:

How People Learn

Approximate length:

20 – 45 minutes

Format:

Workshop

MAIN IDEA:

This is a brief introduction to the idea that individuals enter learning situations with their own personal sets of experiences, interests, curiosities, motivations, misconceptions, and understandings—key ideas in constructivist theories of learning. This element focuses on building scientists' theoretical understanding of this concept, rather than providing opportunities for practical application.

RELEVANT OBJECTIVES:

- Scientists develop a broader understanding of how people learn.
- Scientists understand the importance of developing personal connections with audiences based on shared experiences.

**HOW THIS RELATES TO OTHER
PROFESSIONAL DEVELOPMENT ELEMENTS:**

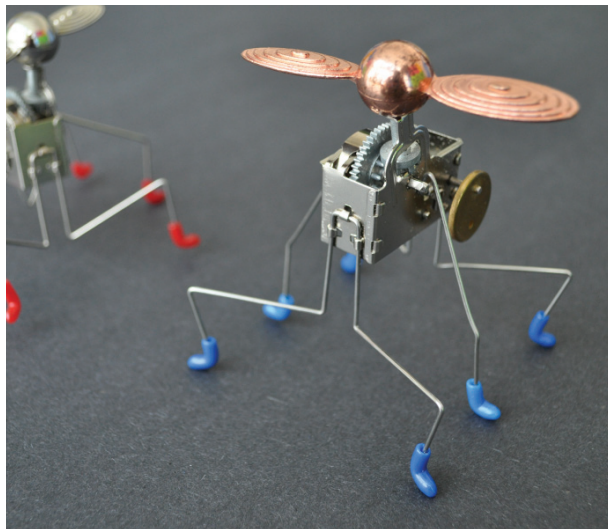
This is an introductory concept, so it is best placed early in the professional development experience. It can provide a framework for further exploration of the topic and practical applications. As this element focuses on theoretical understanding, it can be effective to have it precede an element that allows scientists to experience how the theory affects communication in practice. Elements such as *Building a Common Vision* and *Talk to Your Neighbor* can help illustrate this concept.

ASSUMED PRIOR KNOWLEDGE AND EXPERIENCE:

We assume scientists are interested in learning some of the concepts that form the basis of how people learn in general, and constructivist theories of learning in particular.

ROOM SETUP AND MATERIALS PREPARATION:

No specific setup is required. Have the materials or toys ready to be passed out at the beginning of the activity.



PROCESS:

Part 1: Activity (10 minutes)

- Give each scientist some kind of novel material, piece of equipment, or toy that they can play with. It is important that all participants receive identical objects. Pacific Science Center uses Pintacuda wind-up toys from Kikkerland Design (see photo). Let the scientists experience their materials and play without any further instructions for about three minutes.
- Pass out the Personal Learning Worksheet that accompanies this element and ask scientists to record their thoughts about this experience. The prompts on the worksheet include:
 - The first word that came to mind when I saw it was...
 - It reminds me of...
 - I'm curious about...
 - I know the following about how it works...

Let the scientists continue to play a few minutes longer while they fill out the worksheet.

- Regain the focus of the whole group. Explain that you will lead a “round robin” to share reactions to the objects. Read each line on the worksheet, “The first word that came to mind when I saw it was...” and then go around in a circle with each scientist saying aloud his/her written response. Continue for each line on the worksheet.

The first word that came to mind when I saw it was...

Silly (in a good way)

It reminds me of...

a grasshopper

I'm curious about...

if you can keep winding forever

I know the following about how it works...

turning the propeller turns ~~gear~~ gears & winds up a metal coil. it bounces from the weights

- This exercise is often funny, as diverse perspectives on the same object come up. For example, one person sees a bug and is curious about how well it will move upside down, while another sees a “golden snitch” and wants to figure out how they could modify it to make it fly. One person “knows” that gears affect its movement, while another “knows” that it is painted red. See the example to the left.

Part 2: Reflection and discussion (5 minutes)

- Explain that this activity demonstrates a concept important to learning: People enter environments and situations with their own personal motivations, curiosities, understandings, interests, conceptions, and misconceptions. We can create engaging and meaningful experiences by acknowledging and accommodating what individuals bring with them to activities.
- Facilitate a group reflection on this topic. Questions may include:
 - Where did similarities and differences in what each participant brought to the table occur?
 - If we were to extend the experience, how could we respond to individual interests and curiosities?
 - What would you like to explore next? How is that different than the person sitting next to you? How could we accommodate that difference?

Part 3: Presentation and discussion (5 - 10 minutes)

- Read or paraphrase key parts of *Fish is Fish* by Leo Lionni. It is not necessary to read the entire book. A good stopping point is page 20, or the page of illustrations right after the line, “Ah, if he could only jump about like his friend and see that wonderful world.” Use the story to demonstrate, once more, how new knowledge is layered on top of prior knowledge, and how new knowledge is influenced by our individual and personal motivations and curiosities.
- Emphasize that it is important for facilitators to acknowledge and value what learners bring into any learning experience. Always consider, “In what way is the learner like the fish in the story?” Research shows that when prior ideas are taken into account, learning is richer.
- It is important to remind scientists that, just as they should not assume that visitors are familiar with particular concepts, the reverse is true, as well. They should not assume that visitors have no familiarity with particular concepts. Scientists don’t want to end up in the awkward situation of explaining a cell to a molecular biologist!
- Explain that it is important to have a two-way dialogue where you can pick up on cues and assess each individual’s prior knowledge and understanding as you go along. However, be careful of the, “Do you know what X is?” question. These questions can be intimidating and put visitors on the spot.

- Reflect on how this understanding of how people learn can and will influence the design and facilitation of scientists' Portal to the Public activities. Ask, "What are some concrete suggestions for designing experiences that will assess and respond to an individual's personal interests, knowledge, and motivations?"

Part 4: Reflection (10 - 20 minutes) OPTIONAL

- Pass out the Audience Prior Knowledge and Interest Worksheet found at the end of this element. Ask participants to spend about 10 minutes reflecting on and filling out their worksheet. The questions on it include:
 - What do you think most school-aged children know about your topic? What part of your topic do you think they will be most interested in?
 - What do you think most adults know about your topic? What part of your topic do you think they will be most interested in?
 - How will you assess and respond to the individual levels of prior knowledge and the unique interests of your audiences?
- Alternatively, you can have the workshop participants discuss these questions with partners or small groups without using the worksheet by having the workshop facilitator share the questions with participants orally and prompting groups when it is time to move from one question to the next..
- Allow time for small groups or pairs to share their insights and reflections. Then, regroup and facilitate some large group sharing and reflection. The most important insights typically center on the techniques for how to assess and respond to the audience's knowledge and interest.

MATERIALS:

- o Some type of novel material or piece of equipment, one per participant. Pintacuda wind-up toys can be found at <http://www.kikkerlandshop.com/1528.html>. It is important that each participant play with the same item, so that reactions can be contrasted.
- o Personal Learning Worksheet for each participant. It does not need to be printed on a full sheet of paper – a half-sheet or quarter-sheet should be fine.
- o Audience Prior Knowledge and Interest Worksheet
- o Pens
- o *Fish is Fish* by Leo Lionni

ADDITIONAL RESOURCE:

Bransford, John D., Ann L. Brown and Rodney R. Cocking, eds., *How People Learn: Brain, Mind, Experience, and School* (Washington, DC: National Academies Press, 1999)

Personal Learning Worksheet

Personal Learning

The first word that came to mind when I saw it was...

It reminds me of...

I'm curious about...

I know the following about how it works...

Audience Prior Knowledge Worksheet

Personal Learning

What do you think most school-aged children know about your topic? What do you think individuals might be interested in?

What do you think most adults know about your topic? What do you think individuals might be interested in?

How will you assess and respond to the individual levels of prior knowledge and the unique interests of your audiences?