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A Common Ground for Effective Science

Carrie Armbrecht[1,2*], Annette deCharon[1,2], Jennifer Graves[1], Dr. Fei Chai[1]
1. University of Maine- School of Marine Science 2. COSEE-Ocean Systems
*carrie.armbrecht@maine.edu

Big Picture

To communicate science effectively there are challenges scientists should consider when trying to craft audience-appropriate messages. The use of concept maps, people as facilitators, and effective teaching strategies can help scientists communicate effectively.

Background

Challenges in Communication

1) Packaging the message
2) Complexity & uncertainty of content
3) Understanding and engaging with the message
4) Nature of the learner
5) Transferring the message
6) Nature of the specialist

Increase Message Effectiveness by Using

- ☑ **Concept Maps**
- ☑ **Facilitators**
- ☑ **Effective Teaching Strategies**

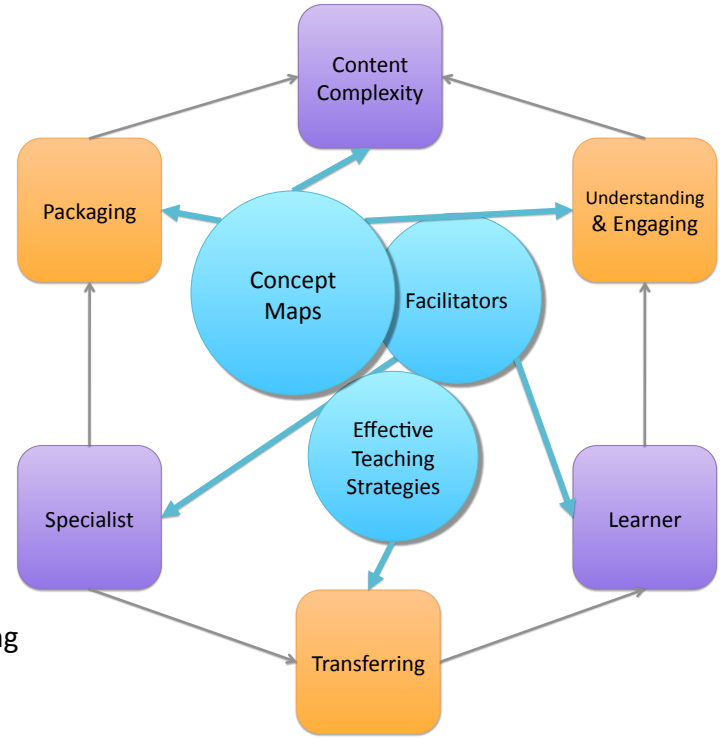

Figure 1. Communication of climate change involves people and content (purple) and processes (orange). Problems can happen at any of these points. The use of concept maps, facilitators, and effective teaching strategies (blue) help clarify communication and increases its effectiveness.

Connections

Concept mapping allows both specialists and learners to see connections among related concepts. It shows the big picture, while also allowing one to focus in on details. When a learner makes connections between concepts, her/his understanding of the material deepens[1].

Take Home Message

Using concept maps is a skill that helps create a common ground for effective science communication.

Results from the case study below will be integrated into recommendations for effectively teaching climate change material.

Use of Concept Maps to Enhance Communication – A Case Study

This study looks at challenges which can occur during message packaging and understanding. Specifically it focuses on the use of concept maps as an effective tool for creating audience appropriate packages *(figure 2)*.

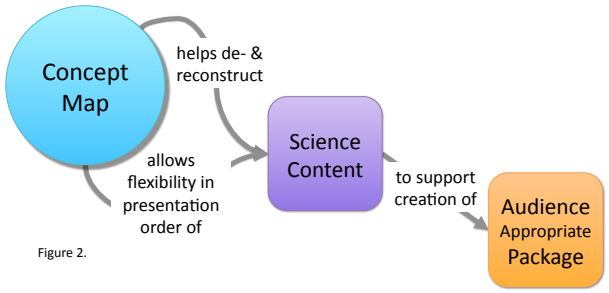

Figure 2.

Using climate change responses in the Arabian Sea *(figure 3)* as an example, we utilize concept mapping to clarify the complexity of the story *(figure 4)*. The concept map is enhanced with attached supporting resources (images, videos, articles, etc). We will present the concept maps to high-school, college, and web-based audiences. Levels of structure and order of the presentation will vary, and the audiences will evaluate the concept maps and presentations for effectiveness.

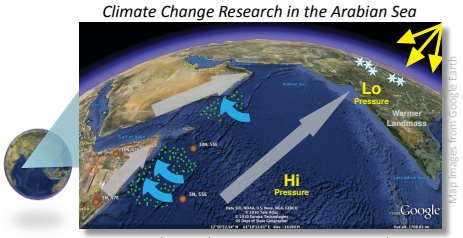

Figure 3. Lower snow cover in the Himalayas (white) causes an increased air pressure gradient (yellow). This gradient leads to stronger summer monsoonal winds (grey arrows). As a result upwelling (blue arrows) is stronger and there is more phytoplankton (green).

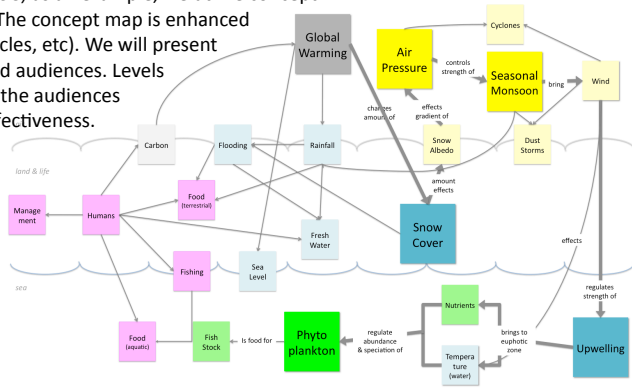

Figure 4. Global warming (grey) lowers snow cover in the Himalayas (blue), and causes an increased air pressure gradient (yellow). This gradient leads to stronger summer monsoonal winds (yellow). As a result upwelling (blue) is stronger and there is more phytoplankton (green).

Reference: 1. deCharon, A., J. Albright, et al. (2009). "Online Tools Help Get Scientists and Educators on the Same Page." EOS, 90(34): 289-290.
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