Concept Mapping: Making Learning Meaningful

Based on a presentation by Ginny Cathcart of VCC
Meaningful learning

• What was something you learned in a course that was **personally meaningful** to you?

• **How** did you learn it? Through lecture, a project or research paper, class discussion, class activities?

• **Why** was it meaningful?
Rote Learning

• What do we mean by this term?
• What is an example of rote learning?
Arbitrary verbatim non-substantive incorporation of new knowledge into cognitive structure.
Definition of meaningful learning

Rote learning
• Arbitrary
• Verbatim
• Non-substantive

Meaningful learning
• ______________
• ______________
• ______________
Social constructivist view of learning

• learning is an **interactive** and **collaborative** experience

• **individual** cognition occurs within a **social context**

• **collaboration** between individuals in a social learning environment facilitates learning
Vygotsky

- Through interaction and collaboration with capable peers or under adult guidance, children “grow into the intellectual life of those around them” and their **potential** developmental level becomes their **actual** developmental level.
Negotiation of meaning

From collaboration to individual reflection

• Sharing and comparing information
• negotiating meaning by applying newly constructed knowledge and reflecting on what you have learned
Learning and cognition

• Ausubel: a primary process in learning is subsumption in which new material is related to relevant ideas in the existing cognitive structures.
Schema Theory

• “Existing cognitive structures” = schemata
• Schemata = organized framework of knowledge or schema
• A blueprint constructed through life experience, prior learning (both formal and informal)
Schema theory

• Schemata is our **prior knowledge** ...
• 1) a framework that allows us to **infer**, **anticipate**, and **predict**
• 2) a way to organize text to **retain and remember** information, and
• 3) a way to **elaborate** information.
Novak’s Concept Mapping Technique

• "Meaningful learning involves the assimilation of new concepts and propositions into existing cognitive structures"
Concept Mapping

- Novak and Gowan’s (1984) theory of instruction
- based on Ausubel's meaningful learning principles
- "concept maps" are used to represent meaningful relationships between concepts and propositions.
Concept Mapping

• Concept map: a “kind of visual road map showing some of the pathways we may take to connect meanings of concepts.”
Concept Mapping

• Concept mapping is a technique for representing knowledge in graphic form.
• Networks consist of nodes and links.
• Nodes represent concepts and links represent the relations between concepts.
Concept maps are used to...

• to generate ideas (brain storming, etc.)
• to design a complex structure (long texts, hypermedia, large web sites, etc.)
• to communicate complex ideas
• to aid learning by explicitly integrating new and old knowledge
• to assess understanding or diagnose misunderstanding
Students can use concept maps to:

**learn course material**
- take class notes.
- organize class notes or course material.

**integrate course content**
- connect material learned throughout the semester.

**integrate material across different courses**
Instructors can use concept maps to...

- assess changes and growth in the students' conceptual understanding throughout the course
Steps

1. Identify important terms or concepts to include on map
2. Arrange concepts in a pattern that best represents the information

- can be a flowchart, web, or any structure
3. Use circles or ovals to enclose an important term or concept within it
   - Each circle or oval should enclose only one term or concept.
   - However, terms can be more than one word.
4. Use straight lines with arrows (single or double-headed) to **link terms** that are related

- Each line should link only **two** concepts.
- However, there is no limit to the number of links stemming from any one term.
5. Use a word or phrase of words as **labels along the lines** to designate the **relationship** between two connected terms.
Each line should have a label that describes the relationship between the two terms it connects. Example:
Example of Concept Map