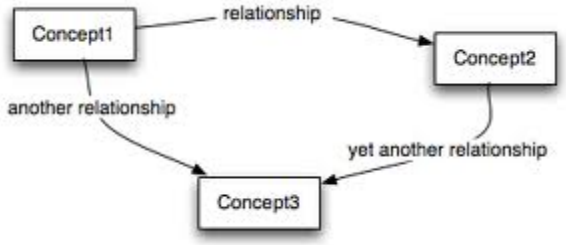
Concept Mapping

Concept Mapping is the process of creating a visual representation of your knowledge. This type of system predates the development of alphabets and the written word and is a deeply embedded way that humans organize and communicate information. It is a graphic organizer that not only gives a visual representation of concepts and the relationships between and among them and then identifies how they relate to each other.

You start with concepts or ideas that are placed in circles (or boxes, or clouds) and then connected with lines and arrows. Along these lines you will write phrases such as: "gives rise to", "results in", "is required by," or "contributes to" (Novak & Cañas, 2006, p.3) that indicate relationships and movement. This technique for visualizing relationships among different ideas is called "Concept Mapping". Mind Mapping is similar but only defines connections and not relationships.

Concepts Maps can be used to:



- Develop an understanding of a body of knowledge.
- Explore new information and relationships.
- Access prior knowledge.
- Gather new knowledge and information.
- Share knowledge and information generated.
- Design structures or processes such as written documents, constructions, web sites, web search, multimedia presentations.
- Problem solve options.

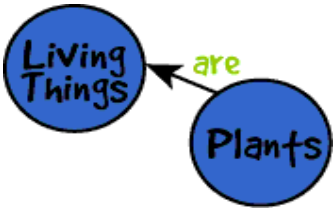
All of these are parts of the papers and documents that you need to produce in your university courses. A Concept Map is a way for you to organize materials so that you can do the academic writing needed.

Why Use Concept Maps?

Mapping is an active learning strategy that moves you beyond rote memorization to critical thinking and helps you to learn about how you learn. This gets you beyond just knowing to reflecting on what you know and how you know it.

Concept Mapping requires that you break down component parts to see how things are put together. This promotes a richer construction of knowledge because you must organize, select, relate and interpret data. It provides an explicit, encapsulated representation of important ideas on one page which is great for review. It also helps you to see gaps in knowledge and areas of oversimplification, contradiction, or misinterpretation.

Why Relationships?



When you are organizing your understanding of ideas and concepts, it is critical to define for yourself how they relate to each other and the context in which they occur. This reflection on connections and relationships broadens and deepens your understanding of how things work.

By using a diagrammed series of "nodes" consisting of linked topics (core concepts) and subtopics (which include examples and evidence for the topics) you can identify and name connections by cause/effect, relationships and inter-relationships, differences, or hierarchies (University of Guelph , handout on Concept mapping, p.1)

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How Do I Make a Concept Map?

First: Identify a main theme and then brainstorm for all related key words or phrases.

Second: Organize the major points and rank the key words from the most abstract and inclusive to the most concrete and specific.

Third: Cluster concepts that function at similar level of abstraction and those that are closely related.

Fourth: Arrange concepts on a map, working from the core concept, to major points, to significant details.

Samples of Concept Maps:

https://hsiestage5resources2013.wikispaces.com/file/view/Concept-Map-web%20bees.jpg/401571886/542x581/Concept-Map-web%20bees.jpg
http://cmap.ihmc.us/Publications/ResearchPapers/TheoryCmaps/Fig5CmapSeasons-large.png
http://ecrp.uiuc.edu/figures/v8n2-birbili/images/fig2conceptmap.gif

Fifth: Use branches, arrows, and other symbols like stop signs or yield signs to indicate the nature of the relationships between ideas. Write in phrases and propositions that link the ideas. Include detailed explanations, definitions, rules, formulae or equations as appropriate.

Sixth: Analyze the resulting map by asking the following questions:

- Is the core concept accurately defined and positioned?
- How do the ideas fit together?
- Have I considered all of the related information gathered from lectures, texts, labs?
- Have I noted all relevant relationships, exceptions, and conditions?
- Does the map have adequate validity, logic, complexity and detail?
- What is the muddiest point and what can be done to clarify it?

Suggestions:

Use a top down approach, working from general to specific or use a free association approach by brainstorming nodes and then develop links and relationships.
Use different colours and shapes for nodes & links to identify different types of information.
Finally: Revise the map as your understanding of the material improves.

Software

Use shapes and text boxes in Microsoft Word to create the diagram.
Cmap software offers a free download (http://cmap.ihmc.us/download/) of a well-developed and supported program that can be used to create concept maps.

References

Novak, J. D. and Cañas, A. J. (2006). *The theory underlying concept maps and how to construct and use them*. Pensacola FL, USA: Florida Institute for Human and Machine Cognition. Retrieved from: http://cmap.ihmc.us/Publications/ResearchPapers/TheoryCmaps/TheoryUnderlyingConceptMaps.htm

Saskatoon Public Schools (2009) *Concept Maps*. Instructional Strategies Online. Retrieved from: http://olc.spsd.sk.ca/DE/PD/instr/strats/conceptmap/index.html

University of Guelph (2012) *Concepts Mapping.* Retrieved from: http://www.lib.uoguelph.ca/assistance/learning_services/handouts/concept_mapping.cfm