MS Teams Overview

Before we start

Let us know if you can hear us when we do **Audio checks**

Turn on live captions for closed captioning (see screenshot)

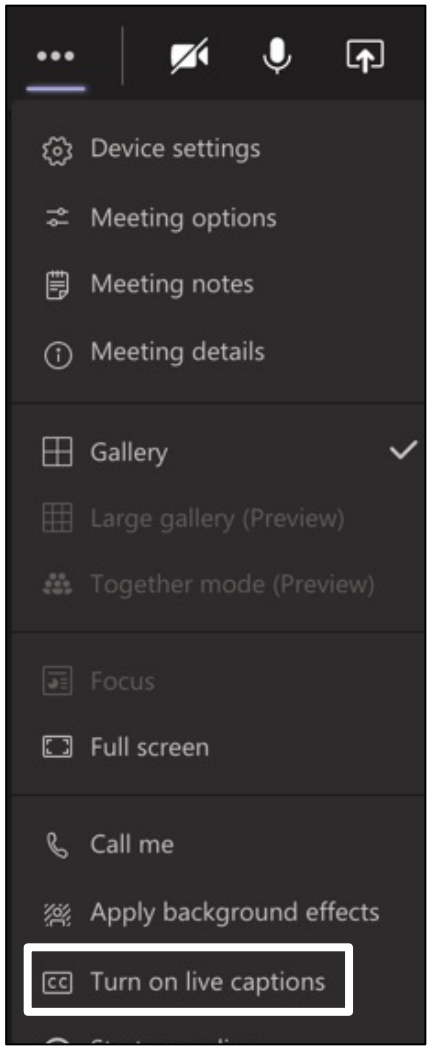
During the session

Please leave your microphones off

Type questions and comments into the **Chat**

After the session

Complete **Feedback Survey**



ACUE Association of College and University Educators

CTSI ACUE-Certified Faculty Lunchtime Series

May 18, 2022

Using Concept Maps to Improve Course Design and Assessment

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UNIVERSITY OF TORONTO

CENTRE FOR TEACHING SUPPORT & INNOVATION

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What are you seeking from today's session?

Outline

1. What are concept maps and how can instructors use them in course design?
2. How can concept map assignments help students learn?
3. An example of a concept map assignment.
4. Applying concept maps to your own course design.

1. What are concept maps and how are they helpful for course design?

Concept maps are visual representations of information which can help instructors…

- Streamline courses
- Organize and prioritize content and skills
- Plan assessments and design assignments

For new course design concept maps can

- **Display** and **organize ideas** and the **connections** amongst these.
- Ensure that student learning is effectively assessed by **showing the link between assessments and the overall course structure**.

McDaniel, E. A., Roth, B. F., & Miller, M. S. (2005). Concept mapping as a tool for curriculum design. *Issues in Informing Science & Information Technology*, *2*, 505+. https://link.gale.com/apps/doc/A205363604/AONE?u=tplmain&sid=googleScholar&xid=acb6bb60

For course redesign concept maps can help instructors

- Identify which concepts need pruning from the map and which need additional emphasis.
- Reconceptualize courses and provide meaningful learning experiences for students.

McDaniel, E. A., Roth, B. F., & Miller, M. S. (2005). Concept mapping as a tool for curriculum design. *Issues in Informing Science & Information Technology*, *2*, 505+.

https://link.gale.com/apps/doc/A205363604/AONE?u=tplmain&sid=googleScholar&xid=acb6bb60

2. How can concept map assignments help students learn?

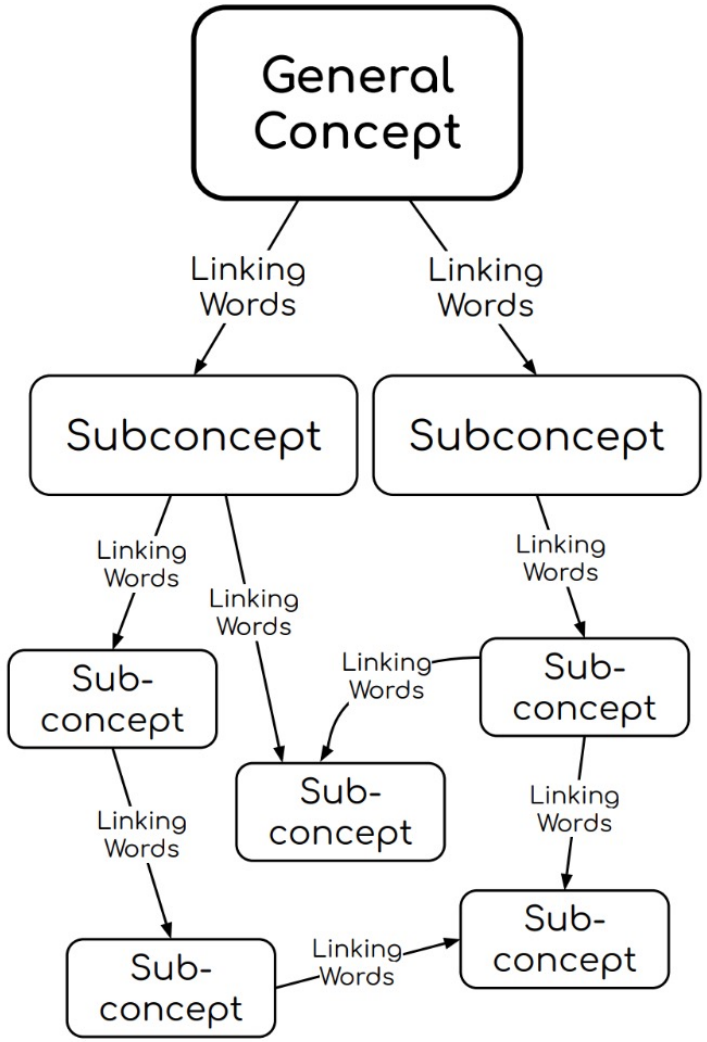
Concept maps can

- "Show" the bigger picture
- Help organize content
- Reveal relationships and patterns
- Facilitate deeper thinking
- Support integration of course material

Concept maps consist of

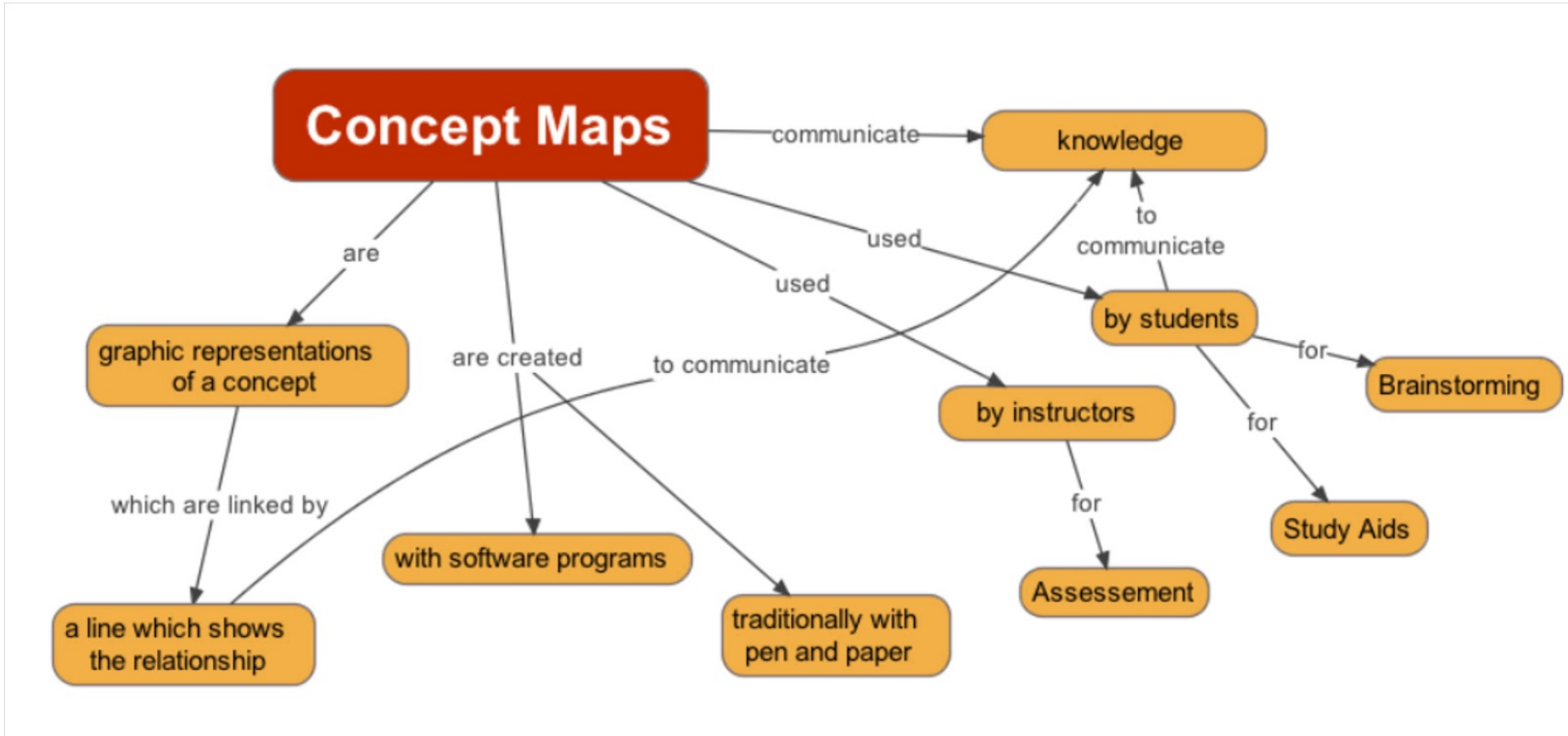
- Nodes indicate concepts or ideas
- Propositions – two linked concepts
- Labels indicate relationships between concepts
- Colours or shapes indicate hierarchies or groupings

Linking concepts through visualization



https://uclalibrary.github.io/creates/c/

A concept map of a concept map



https://maryannenestor.com/2011/09/15/concept-mapping/

An example of a concept map assignment

The Human Microbiome in Health & Disease

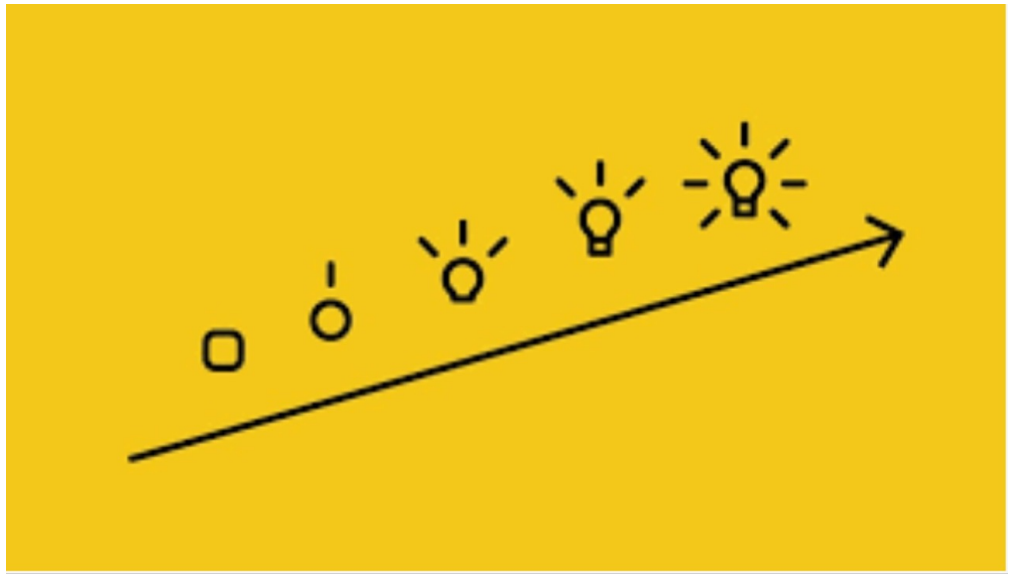
Creating a concept map

1. Identify the key concepts
2. Organize the concepts
3. Link and label the connections
4. Make crosslinks

Quinn, H. J., Mintzes, J. J., & Laws, R. A. (2003). Successive concept mapping: assessing understanding in college science classes. Journal of College Science Teaching, 33(3), 12–16.

Scaffolding & Evolution:

Building on concepts step-by-step



Rubric for a Concept Map

Concept map element	Excellent
Scope	Map includes all the important concepts Provides enough relevant examples with links
Propositions	Links are in correct direction Labels succinctly & accurately describe the relationships between concepts
Hierarchy	Map has multiple clear hierarchies Sub concepts are appropriately connected to the main idea Logical and thoughtful arrangement
Complexity	Most concepts interlinked with several other concepts
Design & layout	Map is contained in a single page Main concept clearly identified Clear layout Exceptional visual appeal Colour used effectively for emphasis appropriate font size No spelling or grammatical errors
Evolution (Development over time-where a concept map is built incrementally as the term progresses and new concepts are learned)	Final map shows considerable cognitive progression from Base map and a significantly greater depth of understanding of the domain

Based on the concept map rubric designed by the Centre for Teaching Excellence, University of Waterloo. Modified by Prof. Naomi Levy-Strumpf

Benefits (student perspective)

- ✓ Scaffolded learning- make connections early on- gradually integrating information into a complex conceptual framework
- ✓ Active learning- design their own representation of knowledge → mindful learning
- ✓ Deep reflective thinking → Meaningful learning
- ✓ Identify relationships → "see" the bigger picture
- ✓ Identify gaps
- ✓ Develop knowledge organization
- ✓ Conceptual understanding of complex concepts
- ✓ Higher order thinking & mastery
- ✓ Less influenced by students' language skills! (Bank, Carl-Georg; Daxberger, Heidi Journal of College Science Teaching. Vol. 49 Issue 6, p65-75. 11p (2020))

Benefits (Instructor perspective)

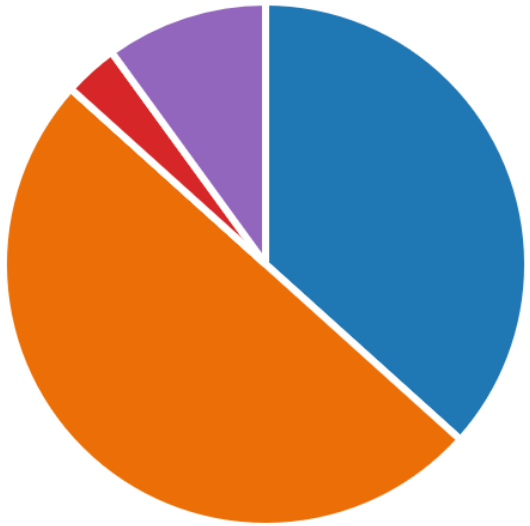
- ✓ Glean insights
- ✓ Identify patterns

Students' Feedback

In your opinion, the concept map (please check all that apply)

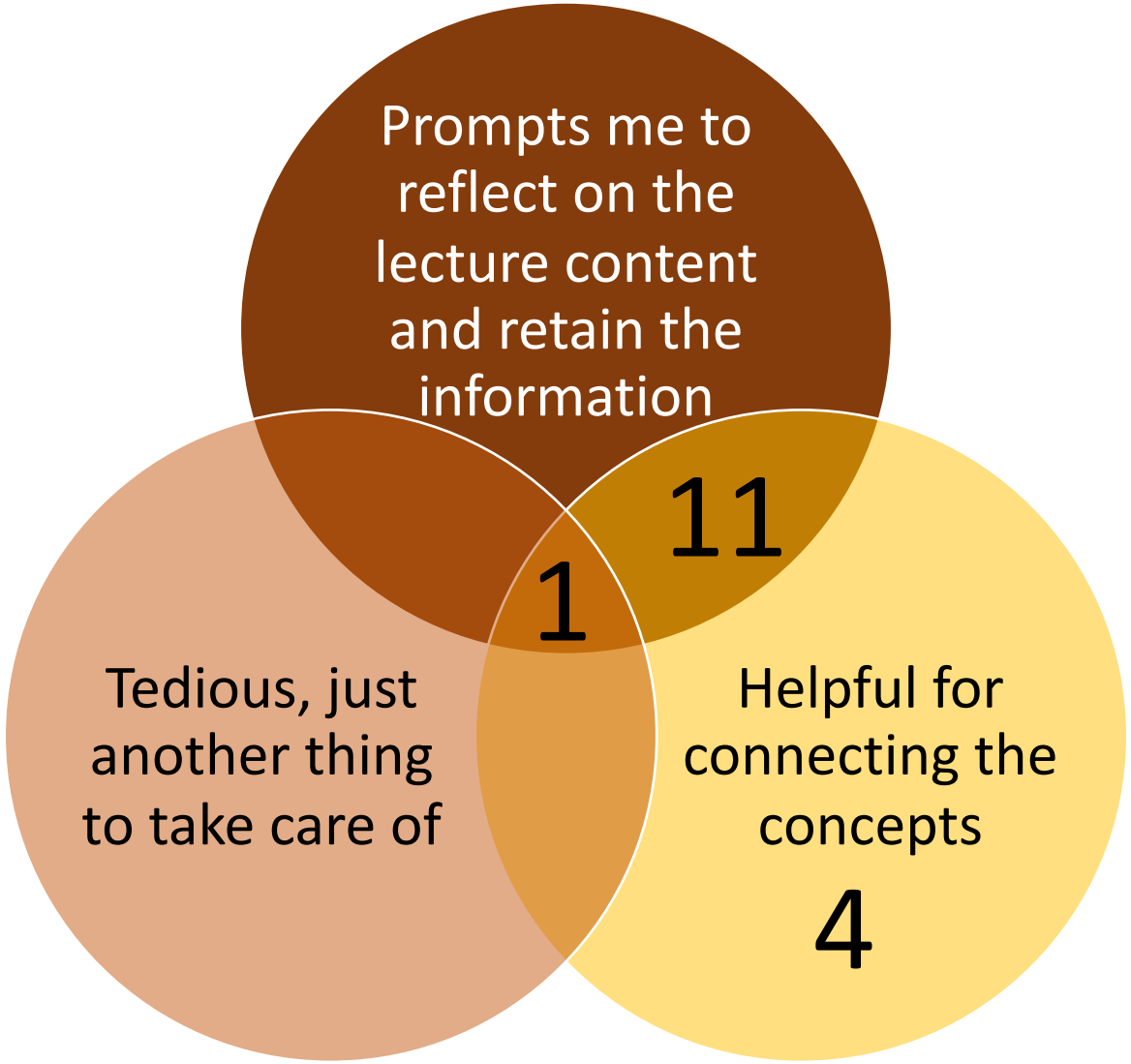
More Details

Prompts me to reflect on the lecture content and retain the information	11
Helpful for connecting the concepts	15
Useless, I simply complete it for marks	0
Tedious, just another thing to take care of	1
None of the above	3



Responses 18

Student feedback



"helps me connect important concepts and ideas to the big picture! Love it so far!"

Concept Maps for Structuring Instruction and as a Potential Assessment Tool in a Large Introductory Science Course. Bank, Carl-Georg; Daxberger, Heidi Journal of College Science Teaching. Vol. 49 Issue 6, p65-75. 11p (2020).

Rubric developed for fast grading of concept maps on the final exam.

/3 concepts/ideas are meaningful, specific, relevant
- (3) 5 concepts
- (2) 4 concepts
- (1) 3 or 2 concepts
- (0) 1 concepts

/5 propositions/links are accurate, brief, have direction
- (5) 7 links
- (4) 6 links
- (3) 5 links
- (2) 4 links
- (1) 3 or 2 links
- (0) 1 or 0 links

/2 visual appearance: 0.5 pts each for
- neat and legible
- balanced, organized, focussed
- ideas are boxed, links on arrows
- thoughtful arrangement

4. Applying concept maps to your course design

Applying concept maps to your course design

1. Individual: Develop your course concept map by analyzing the alignment between outcomes and assessments. (15 minutes)

2. Collaborative in breakout rooms: Share and discuss with your partner or group. (20 minutes)

Individual:

Take 15 minutes on your own to do the following:

1. Choose one of your courses.
2. Identify the key 3-5 key learning outcomes.
3. Consider your main assessments or assignments and map these to the learning outcomes.
4. Link and label the connections across the assignments & learning outcomes.

Breakout Rooms:

In your breakout room give everyone *a few minutes* to explain their map and receive feedback on it. (20 minutes)

Questions to consider:

1. What do you notice?
2. How well do the assessments and learning objectives align?
3. Where are there gaps or repetitions?
4. How clear are the links?
5. Do you have any suggestions?

Group Debrief

Learn More About ACUE and if it's the right PD for you!

COURSE IN EFFECTIVE TEACHING PRACTICES (ETP)

- **9-month online course**
- **25 self-paced online modules** (each module takes up to 3 hours to complete and involves both application and reflection)
- Learn a **range of practices** that can be applied in teaching both in-person and online courses
- **Cohort based -** meet at key points in the year with facilitators and colleagues to discuss their experiences implementing strategies and approaches learned through the modules in their own classrooms.
- **Optional supports** available to further cohort connections and course goals (e.g., Coffee Chats, Course Mentors, module work sprints).

Interested? email ctsi.teaching@utoronto.ca with your questions.

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