Concept Mapping: Rationale, Technologies, Types, and Applications

Slide Commentary:

1. C & S Introductions

2. C: Why concept mapping?

3. C: A recurring challenging confronting all of us is maintaining our focus on   
 why we do that which we do….why we teach.

4. C: What’s the problem…What’s the solution to facilitating CT?

5. C: My dilemma…so much content…15 chapters in 15 weeks… or CT

6. C: P 21, American Psychological Association. (2008). *Teaching, learning, and assessing in a   
 developmentally coherent curriculum.* Washington, DC:   
 American Psychological Association, Board of Educational Affairs.

7. C: Progressive development of CT

8. S: Associative Learning is an “internal” cognitive process. Concept Mapping is   
 an “external” graphic depiction of the “structure of knowledge”.

9. S: How many words is a picture worth for you? Terry would choose   
 “pictures and line drawings” over abstract words.

Terry, W. S. (2003). *Learning and memory basic principles, processes, and procedures.   
 2nd Edition.* Boston: Allyn and Bacon.

10. S: We’ll use a concept map to describe “concept maps”.

11. S: We thought about having you turn to someone and exchange your ages, but,  
 as an alternative, turn to someone and estimate our ages (CmH and Shenghua).

12. S & C: Charles says, “Now that you know my chronological age,   
 what do you know about me? Answer: Only sociocultural information.

13. S & C: Audience participation:   
 Distribute the Hand Out: Keep the “Concept: Age” side up [Demonstrate].   
 Don’t turn paper over or look at the reverse side until instructed to do so.

Allow time for reading the Concept: Age, then say, “Now, turn your sheet over   
 and take the brief quiz WITHOUT looking back at the text for the Concept: Age.

Allow time for completion of the quiz.

Query group for answers to the quiz, then go to next slide.

14. C: Direct attention to the text for answers to the quiz.

15. C: Display concept map of “coherence” among the concepts of age.

16. C: Display concept map of “interaction” among the concepts of age.  
 (1) Functional Ages interact. (2) Secondary Aging (B,P,S>C)

17. S: There are technologies for concept mapping that make it possible  
 to use concept mapping with groups of any size.

18. S: Shenghua, after your introductory comments about the Features, click to show each   
 of the four technologies and finally the arrow showing that Cacoo is our current choice.

19. S: First, click on “Cacoo” to display the Youtube URL for a short video demonstrating   
 concept mapping with Cacoo. Then, play the Youtube Cacoo video.

20. S: There are many types of concept maps. No one type is always the best choice   
 for all situations or for all people.

21. S: We will briefly display the defining characteristic of each of four of the most commonly   
 used types of concept maps.

For Systems Concept Maps, the key words are “comprehensive and integrated data”.

For Spider and Hierarchical Concept Maps, the key words are   
 “Do not depict integration of data…”

For Flow Chart Concept Maps, the key words are “Depict minimal data…”

22. C: Display depiction of integration of data

23. C: Display unintegrated content.

24. C: Display unintegrated content.

25. C: Display conversion from “H” to Systems CM

26. C: Display “minimal data”

27. S: Ask the audience, “In what ways have you used concept maps?”

After audience response, go to next slide.

28. S: The “Model Critical Thinking” sequence is based on Vygotsky’s two concepts:  
 (1) the Zone of Proximal Development and (2) Scaffolding.

After the instructor demonstrates and the student replicates critical thinking, Vygotsky emphasizes that students should be given an opportunity to state (a) What they did, (b) How they did it, and (c) Why they did it. The outcomes are that students both exercise critical thinking and comprehend the process of critical thinking.

Zone of Proximal Development: The level at which a student can almost, but not fully perform a task independently, but can do so with the assistance/modeling of someone more competent.

Scaffolding: The support for learning and problem solving that encourages independence and cognitive development.

29. S: Overview of our two studies.

30. S & C: In Study One, we compared the Concept of Age scores of students who used the   
 concept mapping (Sections 2 and 4) and who did not (Sections 1 and 3) when preparing  
 for their tests.

Significant differences are found on students' scores on *Concepts of Age* (p<0.01). Students in Section 2 had the highest score. Students in Sections 1 and 3 had the lowest score.

The chart represents the Means of Critical Thinking of Students’ Score in the Test of *Concepts of Age* in the Four Sections. The Y-axle refers to the means of the critical thinking score while the X-axle represents the four sections in Study One.

31. S & C: We also compared the Memory scores of students who used the concept mapping   
 (Sections 2 and 4) and who did not (Sections 1 and 3) when preparing for their tests. There is   
 statistically significant difference between session means as determined by one-way ANOVA   
 (F(3,235) = 4.485, P <0.01).  In particular, students in Sessions 2 and 4 had significantly better   
 performance than students in Session 1 (p1-2<.05, p1-4<.01).

The chart represents the Means of Critical Thinking of Students’ Score in the Test of *Memory* in the Four Sections. The Y-axle refers to the means of the critical thinking score while the X-axle represents the four sections in Study One.

32. S & C: In Study Two, we examined the Concept of Age scores of students who were asked  
 to submit their concept maps before the tests (Sections 1 + 2) and who submitted their  
 concept maps immediately after the class (Section 3 + 4).

Significant differences were found on students' scores on *Concepts of Age* (p<0.01). Students’ who were asked to submit their concept maps before Test 1 had better scores on the Concepts of Age then students who were asked to submit their concept maps immediately after class.

The chart represents the Means of Critical Thinking of Students’ Score in the Test of *Concepts of Age* in the Four Sections. The Y-axle refers to the means of the critical thinking score while the X-axle represents the four sections in Study Two.

33. S & C: We also examined the Memory scores of students who were asked to submit their   
 concept maps before the tests (Sections 1 + 2) and who submitted their concept maps   
 immediately after the class (Section 3 + 4).

No significance were found in this test.

34. S & C: Conclusion