

What does it mean when a student says,
I understand?....

Does *understanding* mean the same thing to that student that it does to another student or to you, the professor?.....

How can students demonstrate their
understanding to others?

Good Assignments Provide Accountability

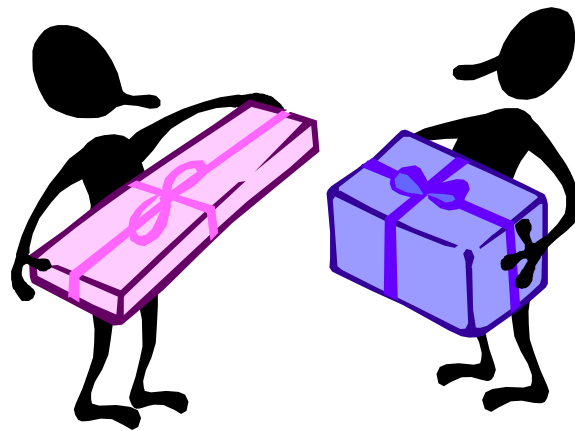
Students can demonstrate what they understand.

Instructors can assess how well students understand.

Good Assignments Provide Closure to PBL Problems

- PBL problems are typically open-ended.
- Students within a single group often pursue different learning issues.
- Students frequently have difficulty knowing what the instructor thinks is important.
- Assignments focus on central issues and bring closure to PBL problems

There are different ways to Wrap-up PBL Problems



Concept Mapping:

An Instructional Tool to Organize Content and Assess Student Learning

- What is a concept map?
- What are the features of a concept map?
- How do you construct a concept map?
- How do you use concept maps?

What is a Concept Map

“a general method with which one can clarify and describe people’s ideas about some topic in a graphical form”

Katsumoto 1997

a pictorial representation that shows the relationships between and among a connected set of concepts and ideas

Purposes for Concept Mapping

- Generate ideas (brainstorming)
- Design complex structures (long texts, web-sites)
- Communicate complex ideas
- Aid learning by explicitly integrating new and old knowledge
- Assess understanding or diagnose misunderstanding

Stages in the Construction of a Concept Map

Brainstorming Stage

Organizing Stage

Layout Stage

Linking Stage

Revising Stage

Finalizing Stage

Brainstorming Stage

- List any and all terms and concepts associated with the PBL.
- Write them on cards, one word or phrase per card.
- Don't worry about redundancy, relative importance, or relationships at this point.
- The objective is to generate ten cards.

Brainstorming Stage



Organizing Stage

- Spread concepts on table so that all can be read easily.
- Create groups and sub-groups of related items. Try to group items to emphasize hierarchies.
- Identify terms that represent higher categories and add them.
- Feel free to rearrange items and introduce new items omitted initially.
- Some concepts will fall into multiple groupings. This will become important in the linking stage.

Organizing Stage



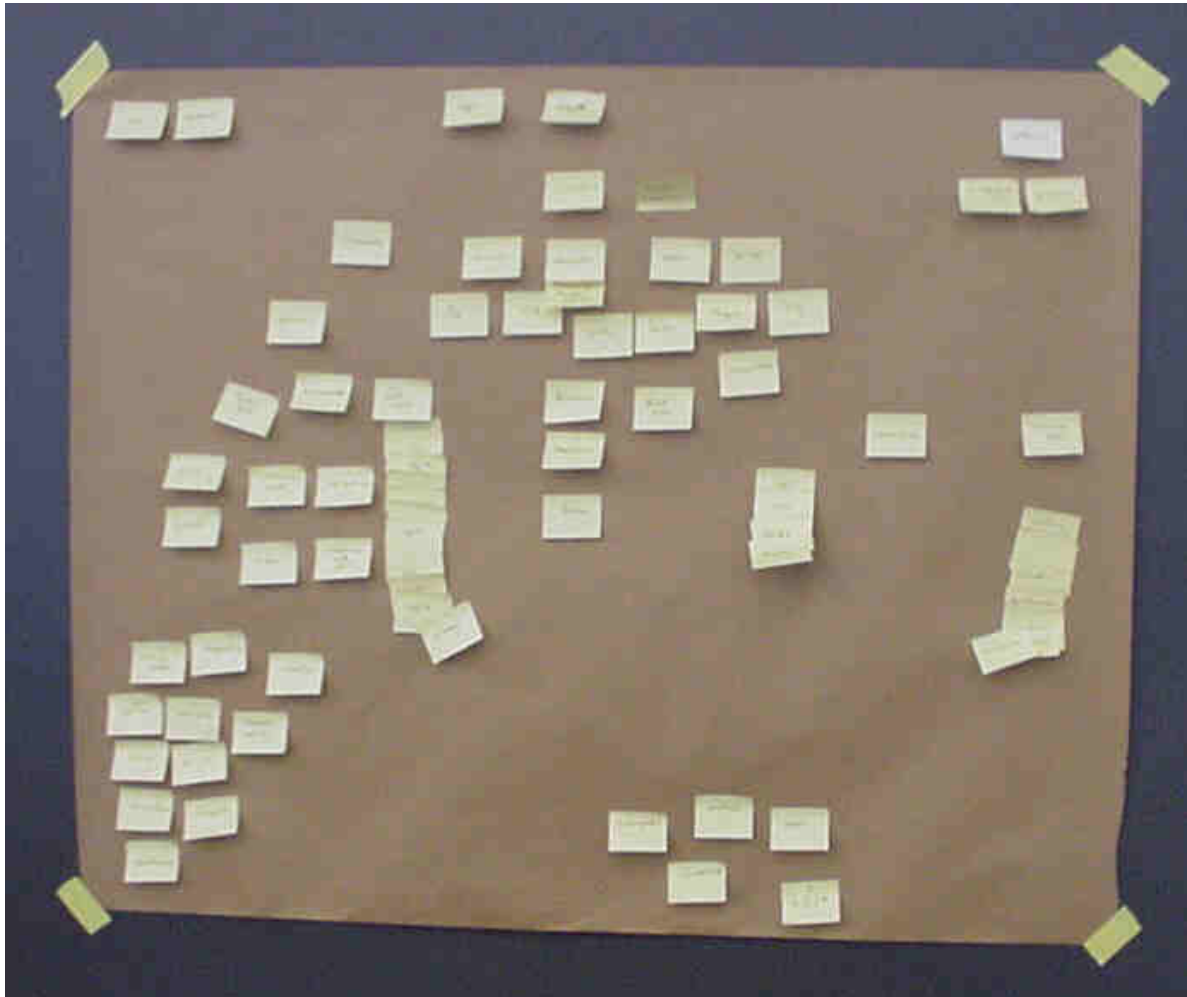
Layout Stage

- Arrange terms so that they represent your collective understanding of the interrelationships and connections among groupings.
- Use a consistent hierarchy in which the most important concepts are in the center or at the top.
- Within sub-grouping, place closely related items near to each other.
- Think in terms of connecting the items in a simple sentence that shows the relationship between them.
- Feel free to rearrange things at any time during this phase.
- Do not expect your layout to be like that of other groups.

Layout Stage



Layout Stage



Linking Stage

- Use arrows to connect and show the relationship between connected items.
- Write a word or short phrase by each arrow to specify the relationship.
- Many arrows can originate or terminate on particularly important concepts.

Revising Stage

- Carefully examine the draft concept map.
- Rearrange sections to emphasize organization and appearance.
- Remove or combine items to simplify.
- Consider adding color or different fonts.
- Discuss any aspects where opinions differ

Finalizing the Concept Map

- After your group has agreed on an arrangement of items that conveys your understanding, convert the concept map into a permanent form that others can view and discuss.
- Be creative in a constructive way through the use of colors, fonts, shapes.

Develop a Concept Map

Problem-Based Learning

Wrap-up and Discussion of Concept Maps

- How similar or different were the concept maps produced by the different groups?
- How do you think you might use concept mapping in your courses?
- What do you perceive as problems in using concept mapping as an assignment?
- Was this session helpful?