

Mapping Your Course for Outcomes Based Education

Diane Salter
November 7 and 14 2007

Educational
Development
Centre



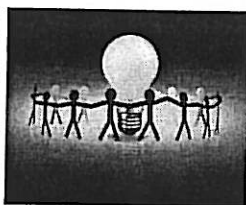
Welcome ! 歡迎 !

While we are waiting.... Have a seat
and introduce yourself to people at
your table

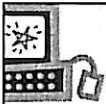
- In your group, discuss: 'What are
your goals for today's session'?
- Identify one **question** that you would
like to ask and one **goal** that you have
for today's session
- Appoint a spokesperson to share your
question and goal with the full group



Introductions and 'Ground Rules'



- This will be an 'active
classroom'
- Ask questions
- Be free to disagree
- Start and finish on time
- Phones off
- Other??



The Plan: A 'two-session journey' to explore 'mapping'

- Consider a model for 'outcomes-based' approaches to course design
- Consider a framework for mapping out your course
- Consider how teacher 'mapping' can help students meet learning outcomes
- Consider 'tools' for mapping' – paper based and online

Program Development

Curriculum Planning Requires:

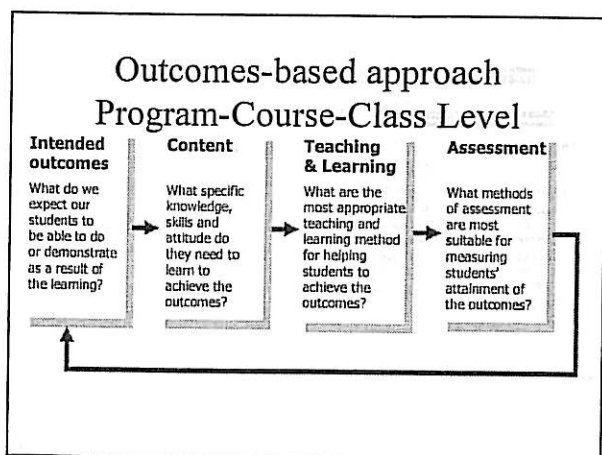
- Consideration of Stakeholder Needs
- Consideration of Government or Accreditation Requirements
- Consideration of Program LO's
- Consideration of Selection of Appropriate 'courses' of study within the program
- Consideration of the 'fit' of CLO's with PLO's
- Consideration of the Learning Activities within each course

What is 'The Curriculum'?

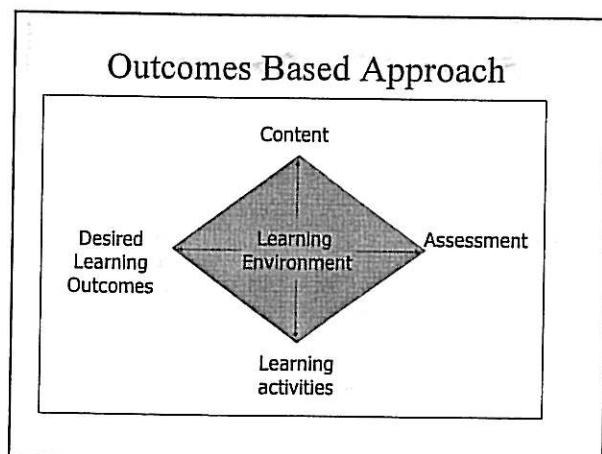
Curriculum \neq Subject content

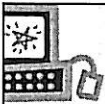
Includes the planning of Program and Course level definitions, learning outcomes, assessment and instructional strategies.

A 'mapping' out of the entire student learning experience and 'critical learning performance'.



| Program Learning Outcomes | | | | | | |
|---------------------------|--------------------------|---|---|---|---|---|
| | Course Learning Outcomes | | | | | |
| Semester 8 | ■ | ■ | ■ | ■ | ■ | ■ |
| Semester 7 | ■ | ■ | ■ | ■ | ■ | ■ |
| Semester 6 | ■ | ■ | ■ | ■ | ■ | ■ |
| Semester 5 | ■ | ■ | ■ | ■ | ■ | ■ |
| Semester 4 | ■ | ■ | ■ | ■ | ■ | ■ |
| Semester 3 | ■ | ■ | ■ | ■ | ■ | ■ |
| Semester 2 | ■ | ■ | ■ | ■ | ■ | ■ |
| Semester 1 | ■ | ■ | ■ | ■ | ■ | ■ |





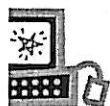
An approach to mapping:

- The T5 model for planning an 'outcomes-based' approaches to planning the learning environment
- Learning mapping to plan the curriculum

Instructional / Learning strategies

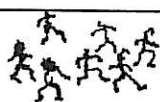
Underlying Assumptions (based on learning theory):

- Ideally a substantial amount of learning takes place within a framework of 'social participation' vs in an individual's mind
- Learning and performance are not separated, students learn through the experience of collaborating
- Important to consider implications for assessment



T5 Model:

Tasks *learning tasks with deliverables and feedback*
Tutoring *feedback*
Teamwork *collaboration work*
Topics *content resources to support activities*
Tools *for developing task, delivery options and administration*



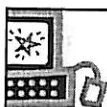
The Guiding Principles of the T5 Model

- a learning-centred approach to course delivery
- an emphasis on designing learning tasks to promote student engagement with the content
- an emphasis on the importance of prompt feedback

Learning Mapping

Provides a framework for mapping out a complete course, unit of study or single instructional challenge, with recommended instructional strategies, task exemplars & templates

Can be paper based (with templates) and/or
With 'web-based tools' with online
templates— eg. WIDS Worldwide
Instructional Design System



The 'learning mapping' process:

- Guides instructors to consider the most appropriate places to integrate learning tasks and feedback in a course
- Helps in mapping out the types of instructional activities appropriate for each unit of study.
- Guides instructors to consider the 'cognitive complexity' of the learning outcomes and instructional challenges



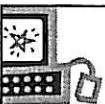
During the 'learning-mapping' process, instructors develop a 'paper-prototype' of their new course design by mapping out course learning modules / units of learning.

T5 + Learning Mapping = Interactive Content

•Instructors are encouraged to:

- View tasks as a key vehicle to learning
- Incorporate a strong emphasis on feedback
- Maximize collaboration among learnings on tasks
- View content as resource to support tasks
- Re-assess class time & independent student learning time

NB: While pedagogically informed, Learning Mapping does not require instructors to become experts in instructional design or theory. This approach encourages re-use of learning materials, eg, textbooks, learning objects

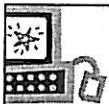


Online Tools for Mapping

WIDS – Worldwide Instructional
Design System

<http://www.wids.org>

Other commercial tools



What is WIDS?

- a commercial software product
- was created by a partnership in 1993
(16 colleges and the Wisconsin Technical
Colleges System Foundation Inc. (WTCSF))
- Now serves clients in 33 states in the USA
and 6 other countries



What does WIDS Do?

WIDS software provides:

- A centralized curriculum development tool that provides a
consistent framework for developing curriculum and
training in any discipline or delivery mode
- A way to link curriculum to external or college-wide
standards
- A tool to create syllabi, performance assessments,
learning plans, teaching plans, program designs,
and DACUM charts and surveys
- A tool to build learning outcome matrices



Online Tools for Mapping

WIDS – Worldwide Instructional
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<http://www.wids.org>

General Steps in Learning Mapping

- Define learning outcomes and assessment strategies at the **course** level
- Define **learning outcomes** at the unit of learning/**module** level – ensure match with course learning outcomes
- Define **topic resources** for each unit of learning/module

Steps in Learning Mapping (cont.)

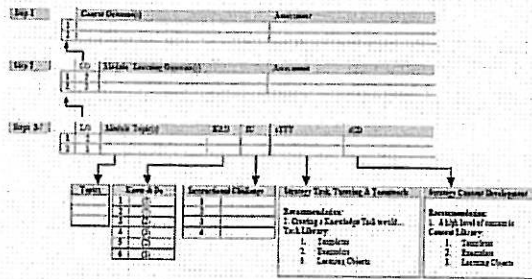
- Define level of learning/cognitive complexity for each learning outcome using Bloom's taxonomy.
- Define difficulty level
- Identify the type of instructional/learning strategy (active lecture/lab/group work/PBL, active classroom techniques (see trace tips) etc.)

Steps in Learning Mapping (cont.)

- Identify appropriate junctures in the course for tasks
- Design tasks or look for reusable task/topic ideas

Steps in LearningMapIt

Steps in LearningMapIt



Bloom's Taxonomy

Topic Title

(Step 4) Define what you want the learner to **Know** and be able to **Do** in relation to this Topic.

| Know & Do | |
|------------------|--|
| 1. Remembering | <input type="checkbox"/> Reproducing - Recalling knowledge to memory that is consistent with presented material <input type="checkbox"/> Recall - Recalling relevant knowledge from long-term memory |
| 2. Understanding | <input type="checkbox"/> Interpreting - Changing form and form of representation in another <input type="checkbox"/> Exemplifying - Finding a specific example or illustration of a concept or principle <input type="checkbox"/> Classifying - Determining that something belongs to a category (e.g., concept or principle) <input type="checkbox"/> Summarizing - Drawing a logical conclusion from presented information <input type="checkbox"/> Inferring - Inferring a general theme or major point <input type="checkbox"/> Comparing - Detecting correspondences between two ideas, objects, etc. <input type="checkbox"/> Explaining - Constructing a cause-and-effect model of a system |
| 3. Applying | <input type="checkbox"/> Executing - Applying knowledge (often procedural) to a routine task <input type="checkbox"/> Implementing - Applying knowledge (often procedural) to a non-routine task |
| 4. Analyzing | <input type="checkbox"/> Differentiating - Distinguishing relevant from irrelevant parts or important from unimportant parts <input type="checkbox"/> Organizing - Determining how elements fit or function within a structure <input type="checkbox"/> Attributes - Determining the point of view, bias, values, or intent underlying presented material |
| 5. Evaluating | <input type="checkbox"/> Checking - Detecting the accuracy or validity within a process or product <input type="checkbox"/> Critiquing - Detecting the appropriateness of a procedure for a given task or problem |
| 6. Creating | <input type="checkbox"/> Generating - Creating up with alternatives or hypotheses based on evidence <input type="checkbox"/> Planning - Designing a procedure for accomplishing a task <input type="checkbox"/> Producing - Creating a product |

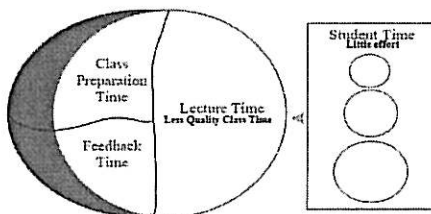
Instructional Challenge

Select:
Know & Do
Instructional Challenge
Classroom Practice

(Step 5) Select the type(s) of instructional challenge and occurrence patterns students are having with this topic.

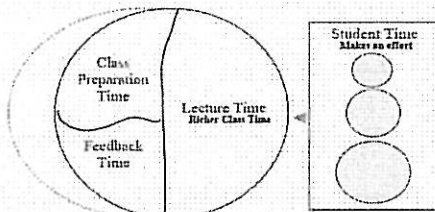
| Student Difficulty | | Instructional challenge occurrence patterns | | | |
|---|--|---|--------------------------|--------------------------|--------------------------|
| Instructional challenge variables | | Fewer 0% | Small 5-9% | Moderate 10-35% | Extreme 35-100% |
| Students do not prepare for class time | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Difficulty in motivating students to engage with this topic | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Students struggle with large volumes of information | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Diversity of the student population in the class | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Less time is spent reaching basic information | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| No time to cover topics in depth | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Difficulty providing feedback to individual students in large classes | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Difficult concept to teach/learn | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| No time for discussion in class | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

When mapping course work – Consideration of Time Instructor Student Reality



Time

Instructor Student Possibility



The Old Britannia School House, Ontario



Why tasks?

Shift in thinking from:

'How to I teach this material?'

to

'How can students best learn this material.'

ACTIVE LEARNING PARADIGM

What drives learning? (How do students learn)

- time on task
- student/instructor interaction
- timely feedback
- active with content
- interaction with peers (teams)
- rewards/motivation

"I don't lecture, I create an environment for them to learn"
Albert Einstein

Relationship of learning tasks to content

Tasks
are open questions
which students
respond by engaging
with the content.



Content
is a resource to help the
student to resolve the task.

Learning time

Class time

x hour
Instructor directed
but encouraging
active engagement

Learner time

x+y hours (online or
off)

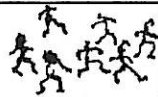
Engaging in **tasks**
related to course
content: e.g.

- Prep for class tasks
- Team tasks
- Assignments
- Online quizzes
- Online discussion
- Reflective blogs
- Others

Might use
technology
to enrich out-of-
-class activities

Active Instructional Strategies for: (in class and out of class)

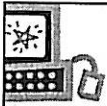
- Exchange Based learning
- Observation Based Learning
- Simulation Based Learning
- Practice Based Learning
- Problem or Case Based Learning



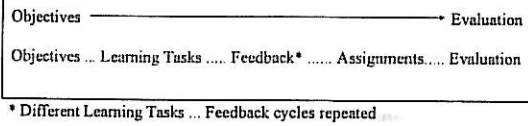
Knowledge arises from:

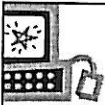
"ongoing conversations about things that matter, conversations that are themselves embedded within larger traditions of discourse that we have come to value (science, the arts, history, literature and mathematics, among many others)." Applebee, 1996

(Curriculum as Conversation: Transforming Traditions of Teaching and Learning.
Arthur Applebee, 1996, Chicago: University of Chicago Press)

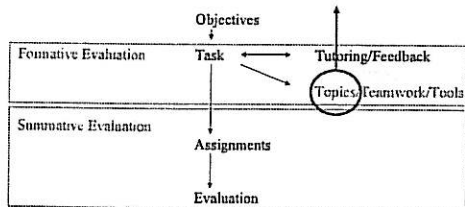


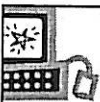
Course Design:



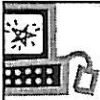


Course Plan:



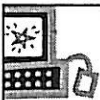


Applying the mapping
process (see handout)



Homework

- Try out the mapping process using your course outline
- Explore the WIDS site –
<http://www.wids.org>
(perhaps download the free trial)



Next session Nov. 14

- Bring your course outline
- Bring questions / comments about mapping or WIDS
- Consider the question:
“How might the mapping process help/not help you to achieve an outcomes based approach?”



Questions and Feedback Form

Learning mapping Activity

Using the mapping process, identify LO's and challenge areas to incorporate tasks/activities

Basic requirements of a course outline?

- course description
- expected learning outcomes
- assessment plan - a grading policy that is clearly based on course learning outcomes
- number of units of study (hours per week or other time schedule/labs or tutorials etc)
- pre-requisites/co-requisites

Other elements

For 'learning-mapping' and planning course delivery, a listing of the topics associated with each unit of learning is necessary. Learning outcomes for units of learning can be matched to course learning outcomes.

What is 'learning-mapping'?

The 'learning mapping' process guides instructors to consider the most appropriate places to integrate learning tasks and feedback in a course. The process guides instructors to consider the cognitive complexity of the learning outcomes and instructional challenges. Bloom's taxonomy (Bloom et al 1956) is used in the learning mapping process to help instructors write learning outcomes and design appropriate learning tasks to help students achieve the learning outcomes.

The goal in using the 'mapping' approach is to help instructors avoid the tendency to use too many tasks without considering a pedagogical reason for choosing when to incorporate a task. Exemplars are provided during the process to help instructors to consider the different types of tasks to incorporate, depending upon the desired learning outcome. During the 'learning-mapping' process, instructors develop a 'paper-prototype' of their new course design by mapping out course learning modules / units of learning. The learning mapping process involves the following steps:

1. Define learning outcomes and assessment strategies at the course level
2. Define learning outcomes at the unit of learning/module level – ensure match with course learning outcomes
3. Define topic resources for each unit of learning/module
4. Define level of learning/cognitive complexity for each learning outcome using Bloom's taxonomy.
5. Define difficulty level
6. Identify appropriate junctures in the course for tasks
7. Design tasks or look for reusable task/topic ideas

Planning Template

Course Title:

Instructor:

Course Learning Outcomes:

- >
- >
- >
- >

Course Description:

| |
|--|
| |
|--|

Assessment Plan

| |
|--|
| |
|--|

Topical Outline / Learning Mapping

| Class | Topic and Expected LO's | Cognitive Level Difficulty Level | Learning Resources | Tasks and Feedback | Assessment |
|-------|-------------------------|----------------------------------|--------------------|--------------------|------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Step 1

Think about one of your courses. You can choose a course that you are currently teaching, a course that you plan to teach in a future term, or a course that you have taught in a previous term. Identify a unit of study that is instructionally challenging. Indicate why it is instructionally challenging.

Unit of Study/Learning Outcome:

You can use the Know and Do Chart (Table 1) to help you identify the know and do for the Unit of Study.

At the end of this unit of study I expect that my students are able to know and be able to do

Step 2

Identify the level of difficulty students may have with this unit of study .

Unit of Study

You can use the 'Instructional Challenge Categories (Chart B) to help you identify the instructional challenges that may interfere with students' achievement of the learning outcome for this unit of study.

Students often have difficulty with this topic because

Step 3

Design a learning task to help students overcome the instructional challenge. Identify the task, and the deliverables

you expect from the learner. During class time, what will the student do? How will the instructor lead the activity? If the task is out of class work, how will this change the use of class time? Will feedback be given in class? Will the tasks and topics be discussed in class?

Unit of Study / Learning Task Description:

Learning tasks can be designed for a student to do alone or for a student to work with peers. Students can also be asked to do learning tasks that engages them in a dialogue with outside experts or people who have a different field of study that might relate to the field of study that you are working within.

When you are creating your learning tasks it is important for you to think about how this learning task fits in with your course objectives.

Depending on where you are in the course you would use a different type of learning task. These different types of tasks require different levels of cognitive complexity – as in moving up Bloom’s hierarchy of cognitive skills. An inductive task connects the student with what they already know. Inductive work is something that relates to real life experience – the types of learning tasks that you are already doing with your students. An input task is a learning task where you ask a student to think about new input and concepts that they might not have thought about before in order that they are able to develop different skills and attitudes. Implementation asks the student to do something with this new content – putting the it to use. The integration level asks the student to integrate the new learning and move it into a real life experience.

Based on Blooms Taxonomy.

Table 1: Categories for cognitive outcomes based on Bloom's Revised Taxonomy (2005) [4]. [Categories are used to define what the instructor wants the learner to know and be able to do. *At the end of this unit of study I expect that my students are able to know and be able to do* decide upon the 'cognitive complexity' and choose appropriate learning activities

| Know & Do | | |
|-----------|---------------|--|
| 1 | Remembering | ○ Recognizing - Locating knowledge in memory that is consistent with presented material |
| | | ○ Recalling - Retrieving relevant knowledge from long-term memory |
| 2 | Understanding | ○ Interpreting - Changing from one form of representation to another |
| | | ○ Exemplifying - Finding a specific example or illustration of a concept or principle |
| | | ○ Classifying - Determining that something belongs to a category (e.g., concept or principle) |
| | | ○ Summarizing - Drawing a logical conclusion from presented information |
| | | ○ Inferring - Abstracting a general theme or major point |
| | | ○ Comparing - Detecting correspondences between two ideas, objects, etc. |
| 3 | Applying | ○ Explaining - Constructing a cause-and-effect model of a system. |
| | | ○ Executing - Applying knowledge (often procedural) to a routine task. |
| | | ○ Implementing - Applying knowledge (often procedural) to a non-routine task. |
| 4 | Analyzing | ○ Differentiating - Distinguishing relevant from irrelevant parts or important from unimportant parts. |
| | | ○ Organizing - Determining how elements fit or function within a structure |
| | | ○ Attributing - Determining the point of view, bias, values, or intent underlying presented material. |
| 5 | Evaluating | ○ Checking - Detecting inconsistencies or fallacies within a process or product. |
| | | ○ Critiquing - Detecting the appropriateness of a procedure for a given task or problem |
| 6 | Creating | ○ Generating - Coming up with alternatives or hypotheses based on criteria. |
| | | ○ Planning - Devising a procedure for accomplishing some task. Producing |

Table 2: Instructional Challenge categories, will help instructors identify the Instructional Challenges for a given Topic and their Occurrence Patterns in terms of the proportion of students involved. We have developed a simple rubric for use in estimating occurrence patterns, as follows: *None*, *Mild* [affecting up to 5% of the class], *Moderate* [affecting 5-30% of the class], or *Extreme* [affecting 30-100% of the class].

| Student Difficulty | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Instructional challenge occurrence patterns | | | | |
| Instructional challenge variables | None 0 % | Mild 0- 5% | Moderate 5%- 30% | Extreme 30-100% |
| Students do not prepare for class time | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Difficulty in motivating student to engage with this topic | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Students struggle with large volumes of information | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Diversity of the student population in the class -not all students start from a common foundation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lab time is wasted teaching basic information | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| No time to cover topics in depth | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Difficulty providing feedback to individual students in large classes | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Difficult concept to teach/learn | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| No time for discussion in class | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Feedback:

Mapping Your Course for Outcomes Based Education

Date: Nov. 7, 2007. Facilitator: Diane Salter.

Thank you for providing feedback regarding this session. Your comments will help with planning for the future workshops.

A. About this workshop

1. What were your expectations for this workshop?

| |
|--|
| |
|--|

2. Were your expectations for this workshop met? Please comment on how or how not.

| |
|--|
| |
|--|

3. What is your overall rating of this workshop as a learning experience?

| | | | | |
|-----------------|------|---|---|---|
| Excellent | Poor | | | |
| 5 | 4 | 3 | 2 | 1 |

4. How useful were ideas discussed in this workshop to your practice as a teacher?

| | | | | |
|-------------------|------------|---|---|---|
| Very Useful | Not useful | | | |
| 5 | 4 | 3 | 2 | 1 |

5. Please identify any ideas from this workshop series that will be the most useful to you:

6. What did you like best about the workshop?

7. What could be improved in this workshop?

8. Is there anything else that you would like to add?

9. Are you able to attend the second component of this workshop on Nov. 14? (you do not have to re-register but we would like to have an idea of expected numbers for Part B)

10. Are there any specific things that you would like to make sure we incorporate into the second session? Or specific questions that you would like addressed?

Thank you for taking the time to complete this form.