Content, Assessment and Pedagogy (CAP): An Integrated Design Approach

Instructional Team:

Ruth Streveler, Karl Smith & Rocío Chavela

2009 Workshop for
The Committee for the Formation of Engineers Puebla-Tlaxcala

Session 1 – June 30, 2009

It could well be that faculty members of the twenty-first century college or university will find it necessary to set aside their roles as teachers and instead become ***designers of learning experiences***, processes and environments.

James Duderstadt, 1999 [Nuclear Engineering Professor Emeritus; Former Dean, Provost and President of the University of Michigan]

Session 1 Overview

- Welcome & Facilitator Introductions
- Overview & Workshop Model
- Participant Introductions
  - Participant “Think-Pair-Share” – Prior knowledge about CAP
- Design Site (Context) Selection
- Student Learning Outcomes Development
  - Especially enduring understanding
- Course Content Mapping
- Assignments & Next Steps

Welcome

- Your workshop facilitators
- Introduce yourself to two to three people you do not know
  - Name, institution, discipline
  - Your course design/redesign experience
  - Things that would make this workshop valuable for you.
- **Please record name, institution, discipline and your course on an index card to be handed in**

Desired Results (Outcomes)

- Start to get to know one another
- Describe key elements of CAP model
- Relate CAP model to inquiry model
- Embrace an integrated design approach
- Engage fully in reflection and small group (intellectual neighborhood) and large group dialogue
- Commit to course design/re-design

Think-Pair-Share about CAP

- Reflect on your experiences designing a course. Or your ideas for course redesign. What course or part of a course would you want to design or redesign? Very briefly describe your thoughts.

- Explain what you think is meant by:
  - Content
  - Assessment
  - Pedagogy

- As best as you can, describe how you think these elements relate to each other.

Group response to Think-Pair-Share (TPS)

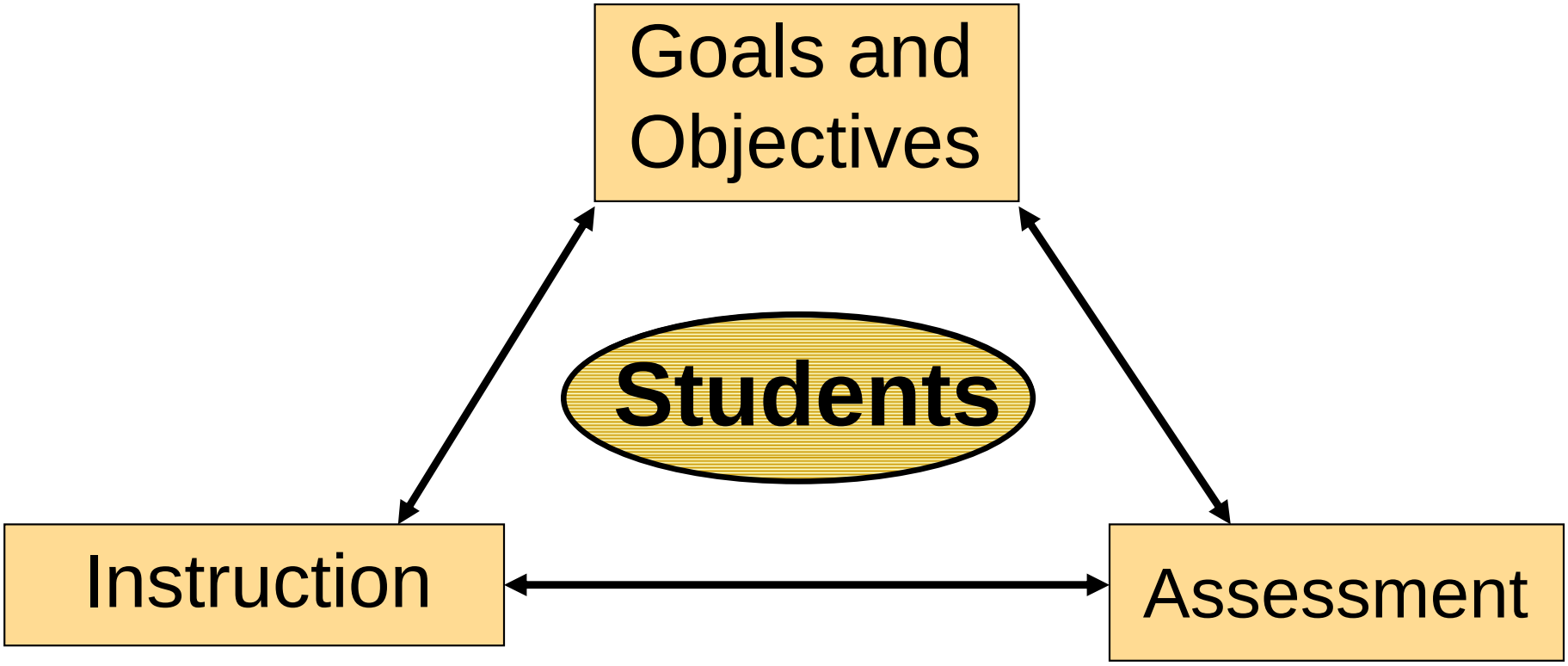
- Partimos de los contenidos, la pedagogía es la forma de hacerlo y la evaluación es la forma de saber si el aprendizaje se da en el alumno.
- El contenido es el objetivo, la pedagogía es como lo voy a enseñar y la evaluación es una retroalimentación para el alumno y el maestro
- El contenido es lo que queremos lo que aprendan los alumnos, la evaluación es una medición del proceso y la pedagogía es la forma en que se enseña y evalúa
- El contenido es la finalidad que debe tener una aplicación, la pedagogía depende del tipo de curso, y la evaluación implica que los estudintes investiguen artículos científicos

Group response to Think-Pair-Share (TPS)

- Que el contenido sea relevante y genuino
- La evaluación identifica carencias lo que modifica el contenido y de esta forma puedan ser tomadas en cuenta en la pedagogía
- La meta (el objetivo) es lo primero, en base a ella se diseña todo lo demás
- La evaluación 5-5, redactar cinco renglones en cinco minutos, al final de la clase

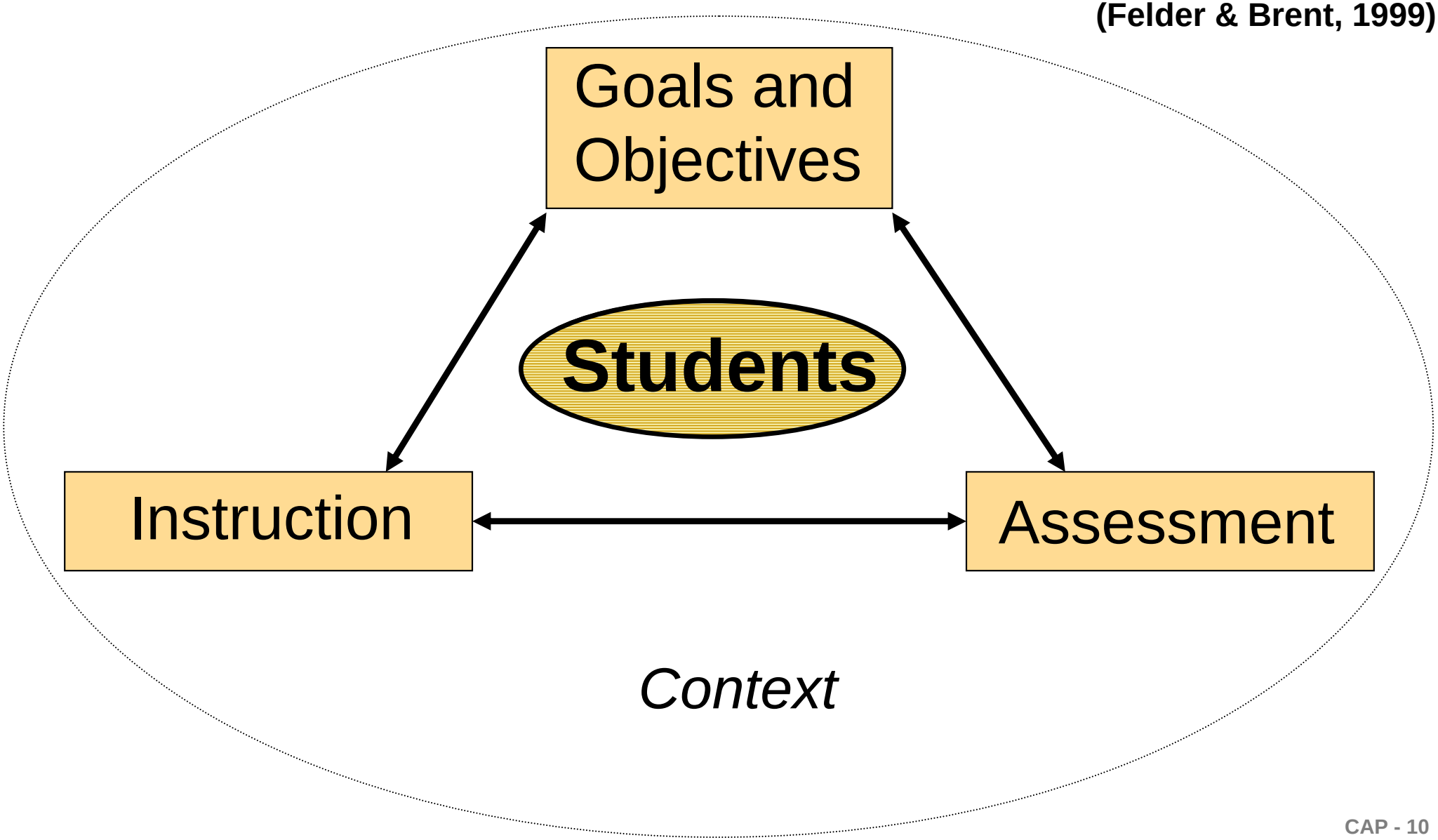
Effective Course Design

(Felder & Brent, 1999)



Effective Course Design

(Felder & Brent, 1999)



Effective Course Design

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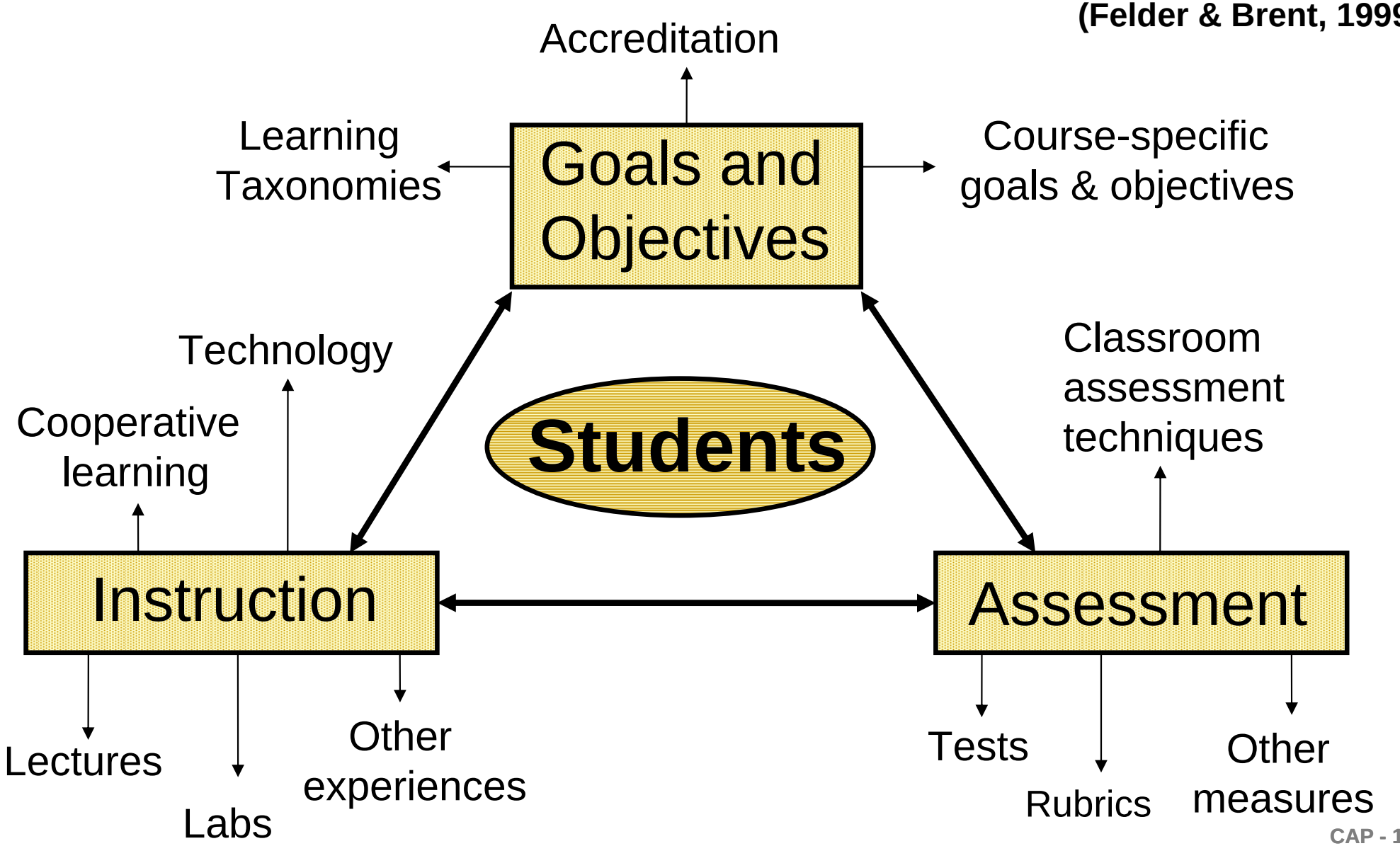
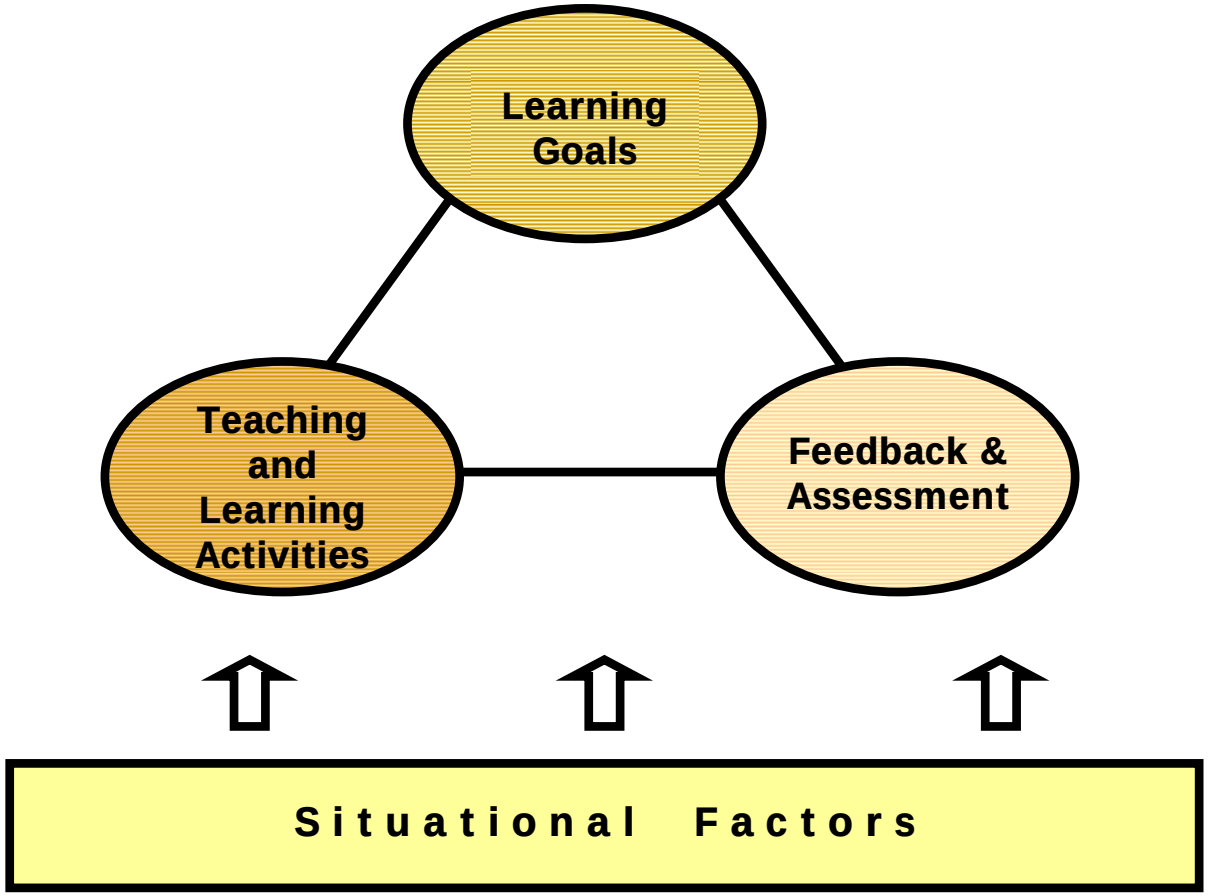


The Key Components of INTEGRATED COURSE DESIGN

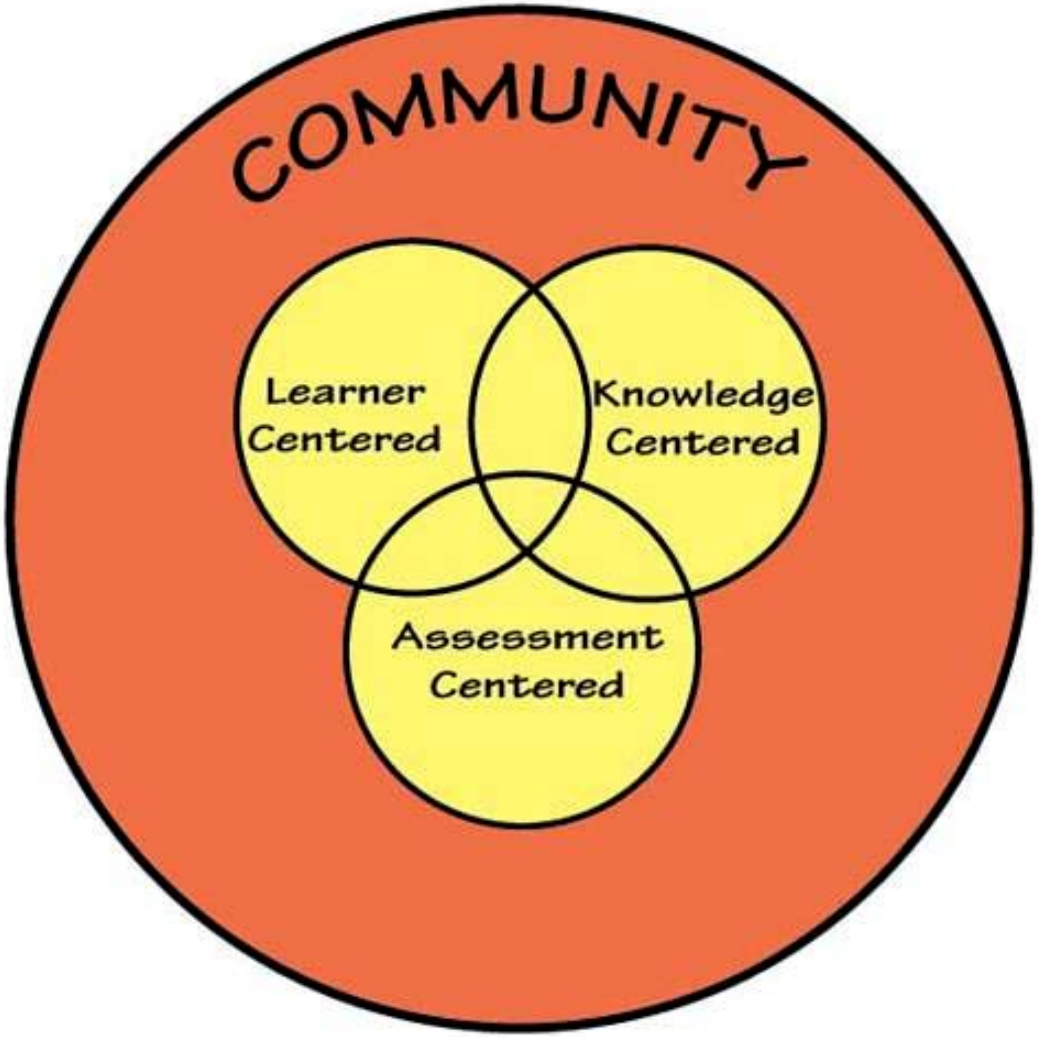


A Self-Directed Guide to Designing Courses for Significant Learning
L. Dee Fink. 2003. *Creating significant learning experiences*. Jossey-Bass.

CAP Workshop Model Resources

- Backward Design Approach – Course, Class Session, and Learning Module Design: From Objectives and Evidence to Instruction (Wiggins & McTighe; Fink)
- Curriculum-Instruction-Assessment Triad (Pellegrino)
- Content-Assessment-Pedagogy: Argument, Claim/Evidence, Method

Designing Learning Environments Based on HPL (How People Learn)



Design Approach*

- How do you think you would go about designing a course, learning experience, class session, learning module, etc.?
- How do curriculum (content), assessment, and pedagogy relate to each other in a course? What is decided first?
- Are any of these aspects more important than the other?

*__The engineering method is design under constraints__
– Wm. Wulf, Former President, US National Academy of Engineering

Backward Design Approach
Wiggins & McTighe

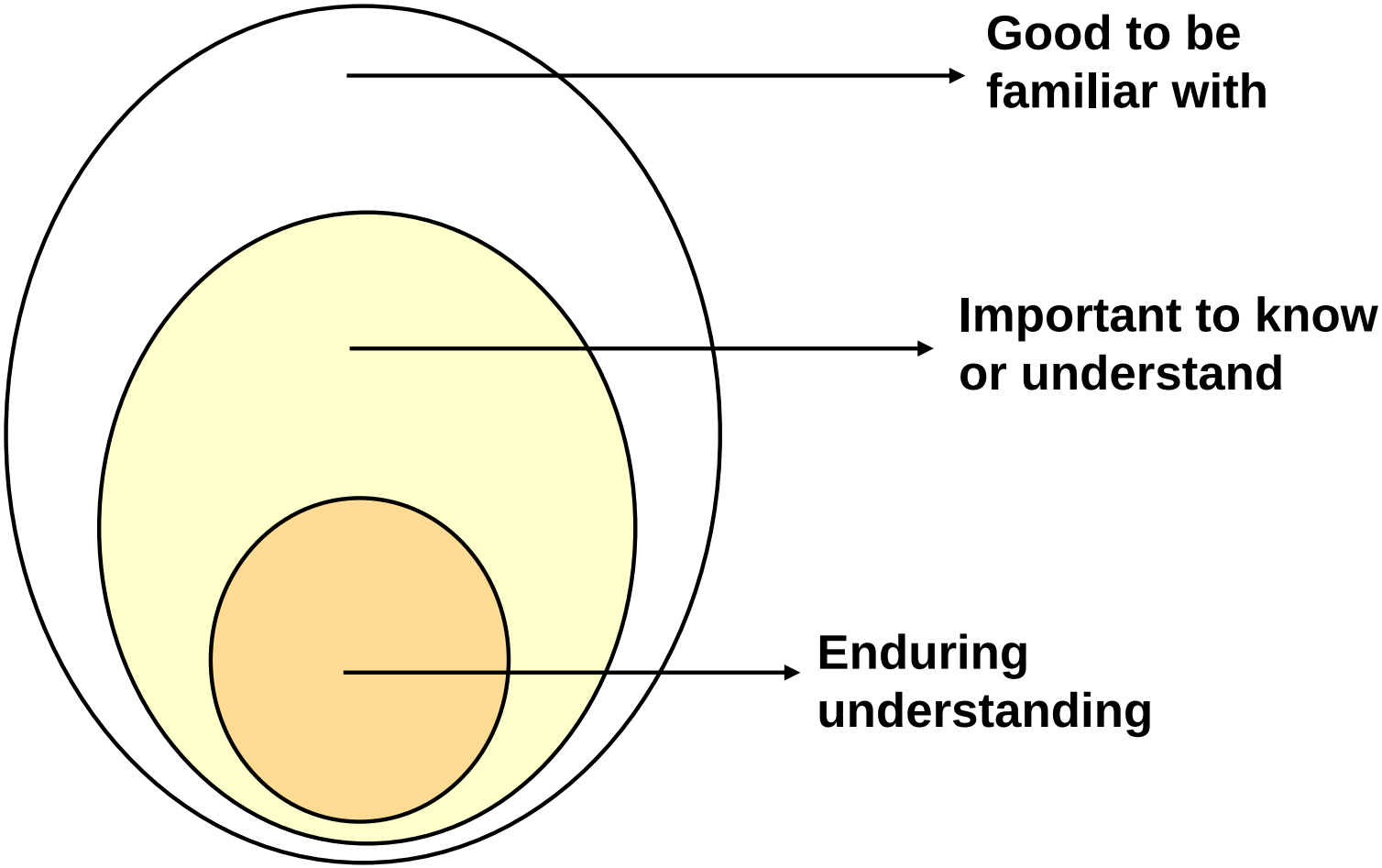
Stage 1. Identify Desired Results

Stage 2. Determine Acceptable Evidence

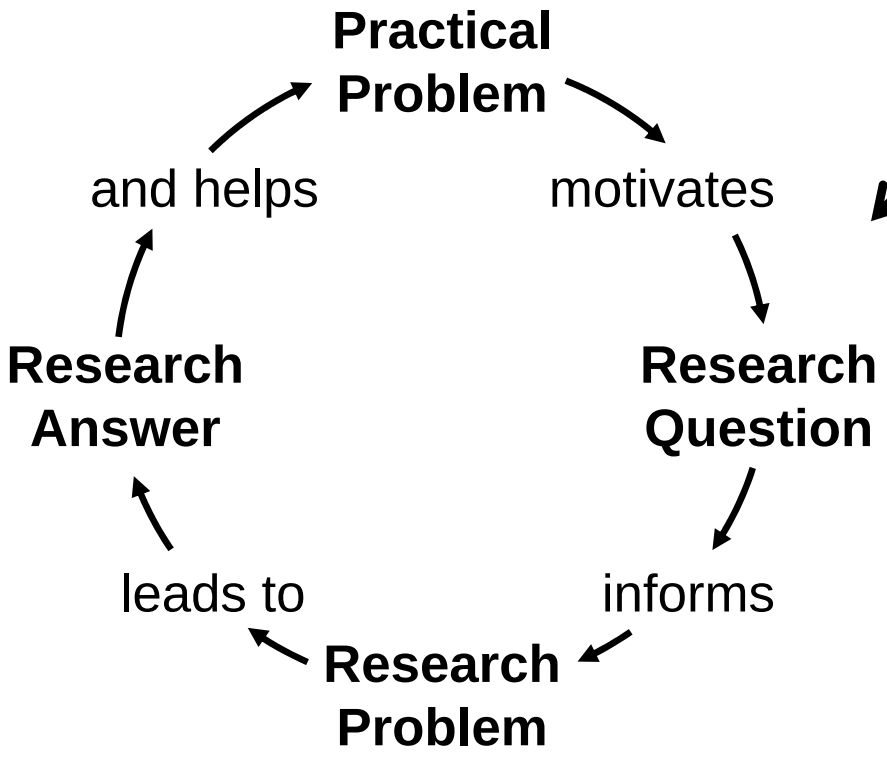
Stage 3. Plan Learning Experiences and Instruction

Wiggins, Grant and McTighe, Jay. 1998. *Understanding by Design*. Alexandria, VA: ASCD

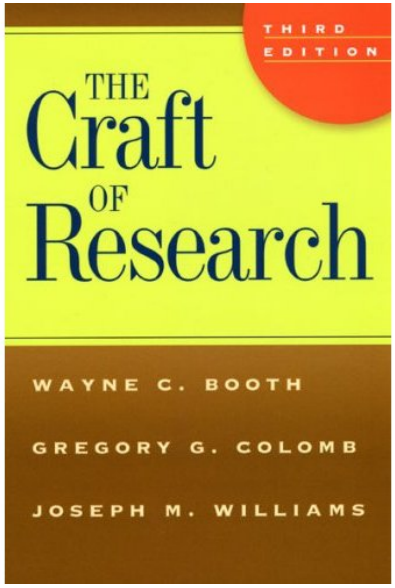
Backward design

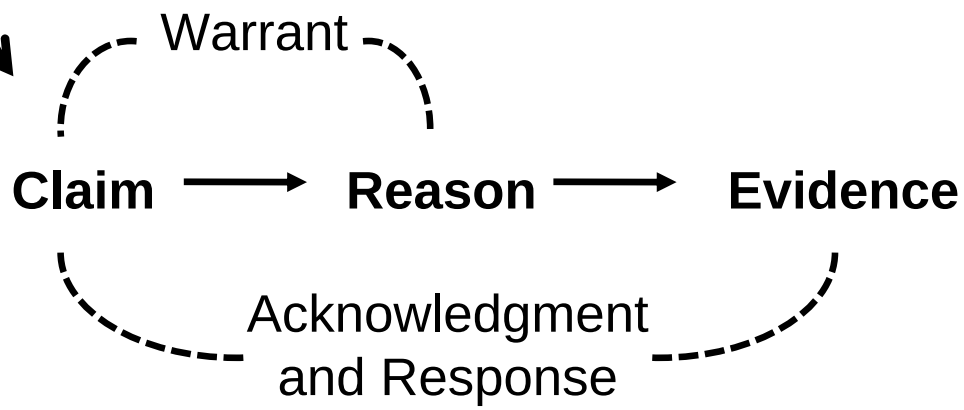


The research process and reasoning



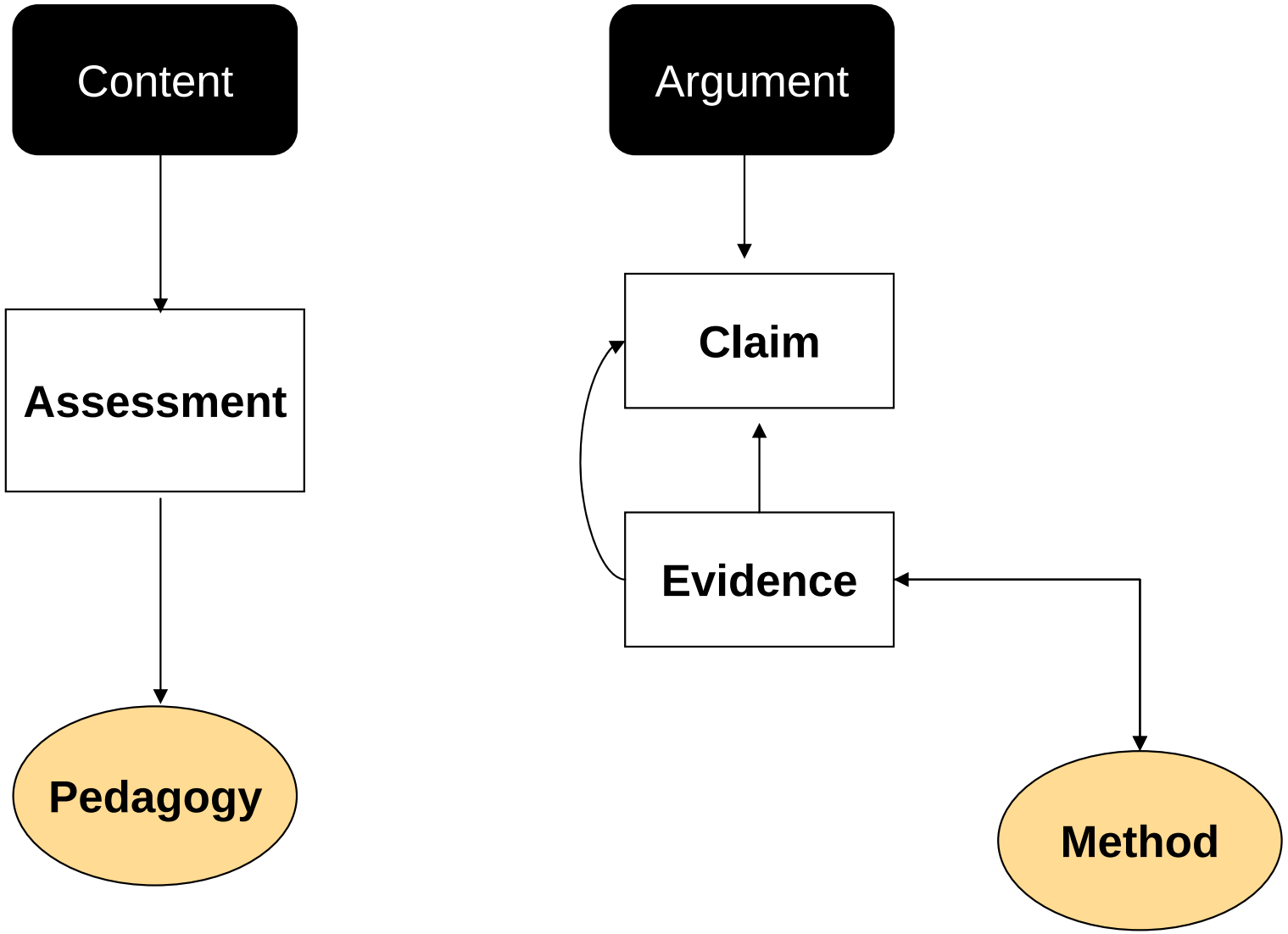
Research Process



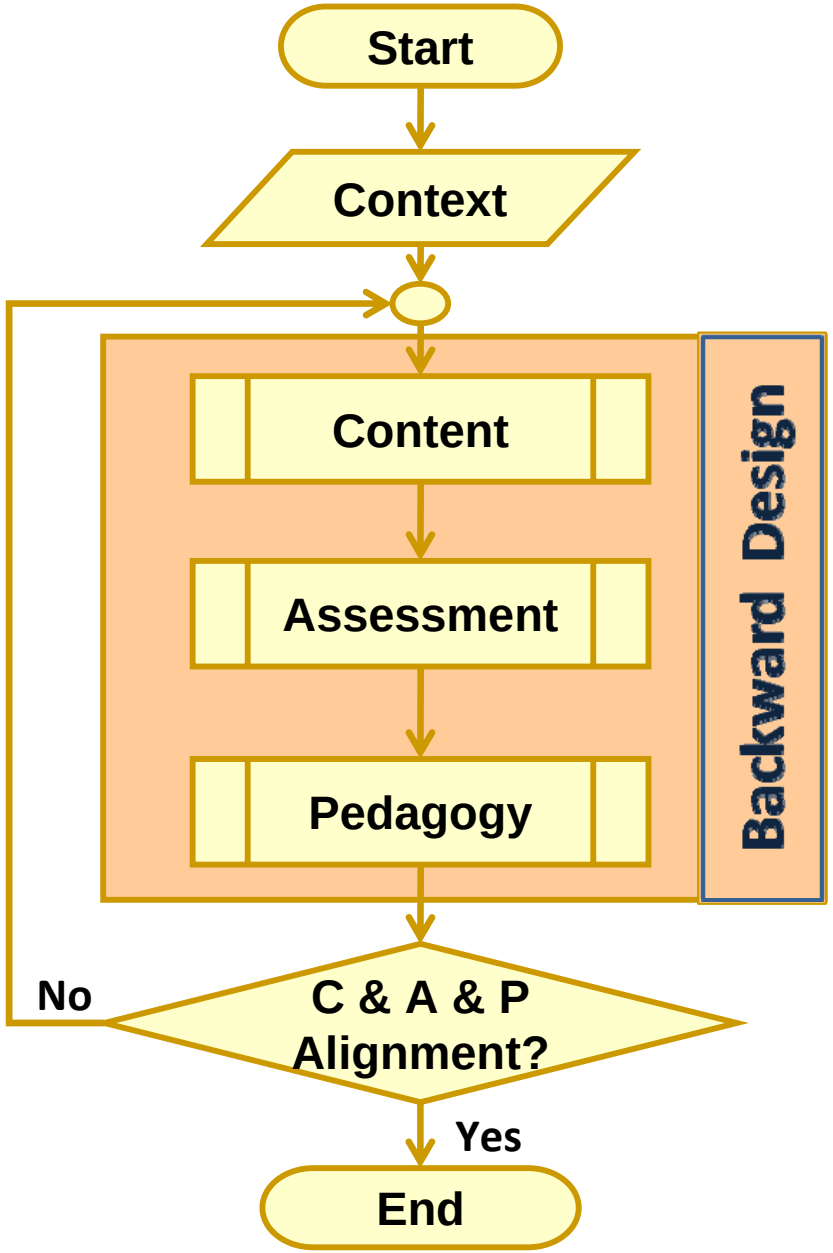


Research Reasoning

Inquiry Model from *The Craft of Research*



CAP Design Process Flowchart



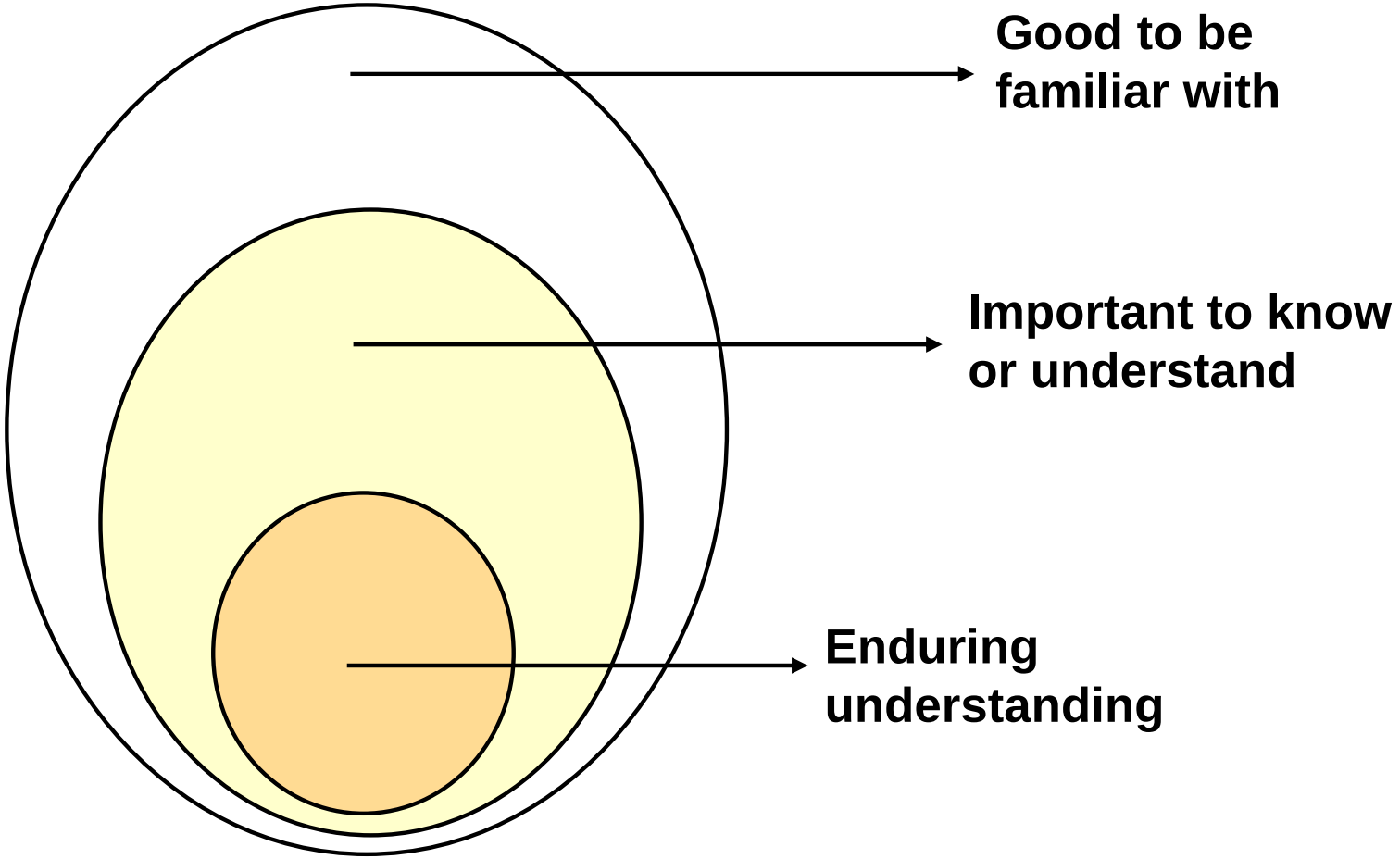
Integrated Course Design (Fink, 2003)

Initial Design Phase

1. Situational Factors
2. Learning Goals
3. Feedback and Assessment
4. Teaching/Learning Activities
5. Integration

Exercise

- Determine for your design site

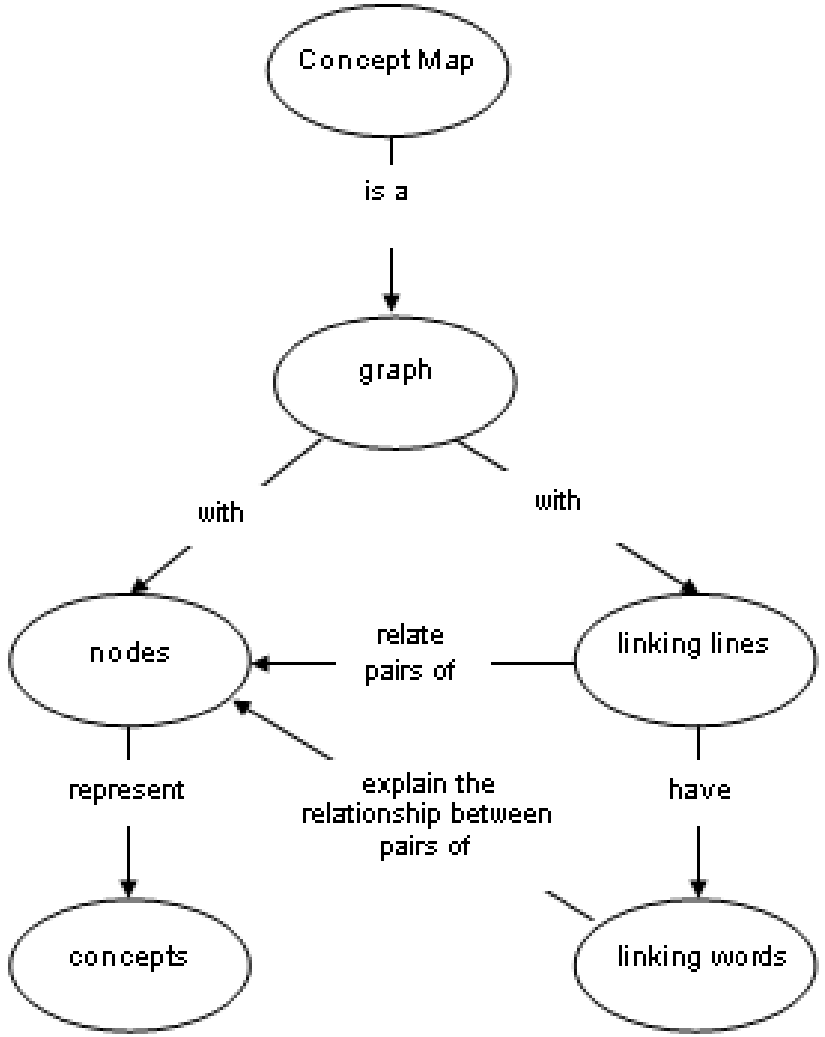


Course Concept Mapping

- Construct a concept map that represents the key concepts and relationships between ideas for the course you are re-designing

How to construct a concept map

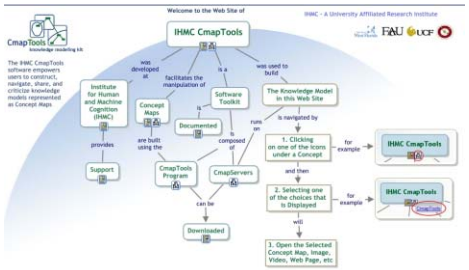
- Central Node
  - BIG idea at the heart of the discipline
  - Most important outcome for the course
- Surrounding Nodes
  - Related ideas, topics, etc.
- Nature of the connection (relationship) between the nodes



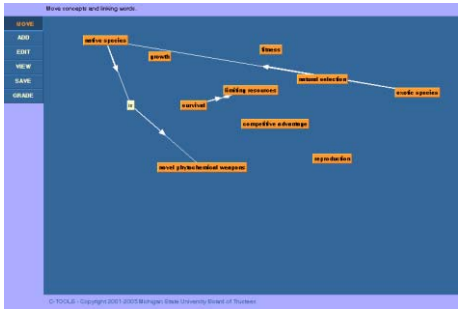
Ruíz-Primo, M. (2000). On the use of concept maps as an assessment tool in science: What we have learned so far. *Revista Electrónica de Investigación Educativa*, *2* (1).

Concept Maps Software Tools

- Cmap Tools (http:// cmap.ihmc.us)
  - Institute for Human &Machine Cognition
  - Free downloadable program



- C-Tools (http://ctools.msu.edu)
  - Michigan State University (NSF)
  - Free web-based Java applet



- SMART Ideas (http://www2.smarttech.com)
  - SMART Tech
  - Free trial version (30 days)

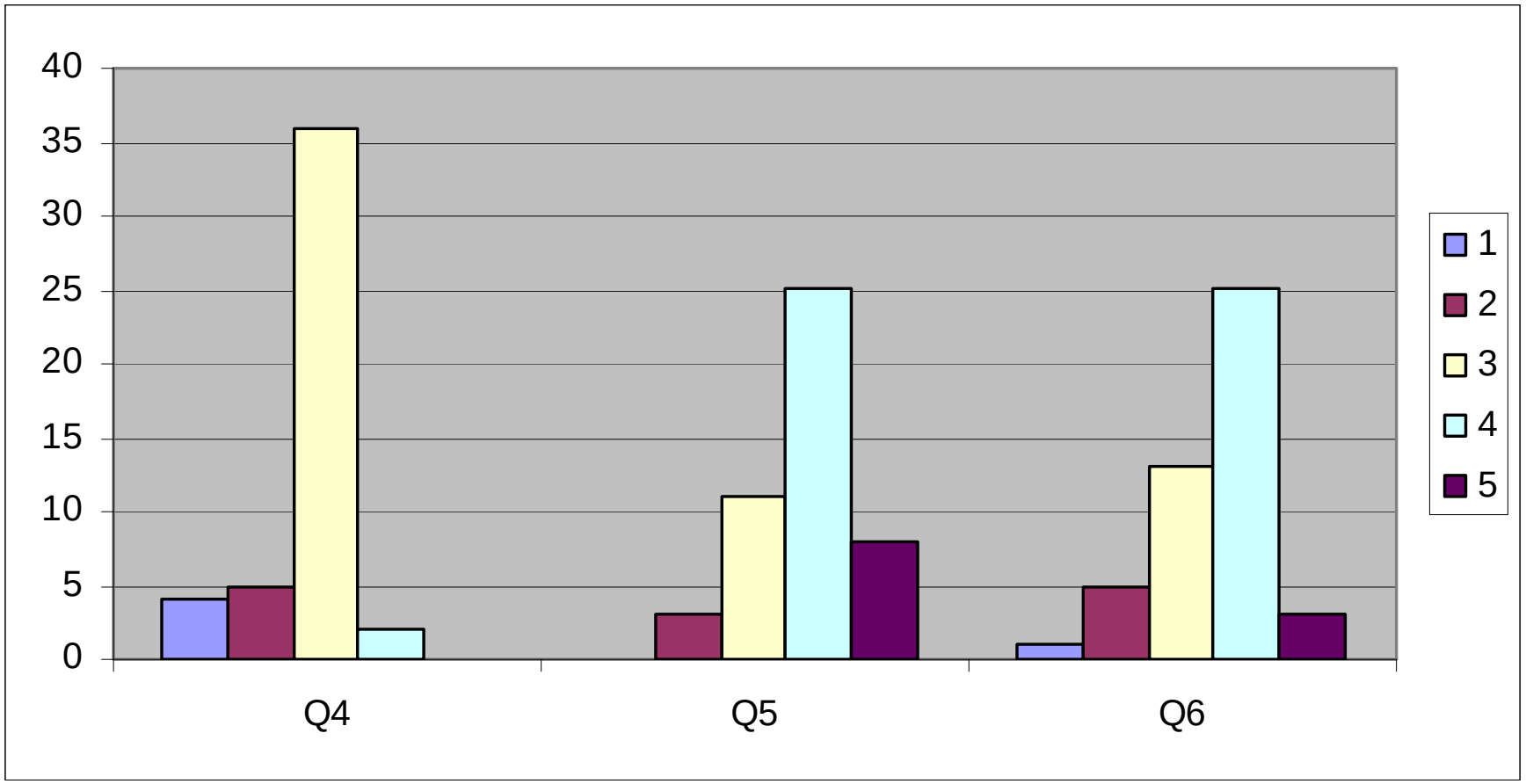
Discuss your Concept Maps

Session Summary
(Minute Paper)

Reflect on the session:

1. Pace: Too slow 1 . . . . 5 Too fast
2. Relevance: Little 1 . . . 5 Lots
3. Interest: Low 1 . . . 5 High

Puebla-Tlaxcala June 2009 – CAP Session 1



Q1 – Pace: Too slow 1 . . . . 5 Too fast (2.8)
Q2 – Relevance: Little 1 . . . 5 Lots (3.8)
Q3 – Format: Ugh 1 . . . 5 Ah (3.5)

Assignments & Next Steps

- Start to identify Desired Results (Outcomes, Objectives, Learning Goals)
  - Select most important student learning outcomes
    - BIG ideas at the heart of the discipline
    - Important to develop enduring understanding
- Begin filling out worksheet
  - Evidence (Assessment)
    - Learning Taxonomies
  - Plan Instruction
    - State-of-the-art, research-based instruction

Worksheet for Designing a Course/Class Session/Learning Module

	Ways of Assessing	Actual Teaching-Learning	Helpful Resources:
Learning Goals for Course/Session/Learning Module:	**This Kind of Learning:**	**Activities:**	(e.g., people, things)
1.			
2.			
3.			
4.			
5.			
6.			