Effective Course Design:
A Guide to Crafting Integrated Course Profiles

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TEDU-CTL

Agenda

- Teacher-Centered vs. Student-Centered Teaching/Learning
  - Behaviorist vs. Constructivist Theories
  - Teacher's Role (Behaviorism vs. Constructivism)

- Components of Course Design
  - Integrated Course Design
  - Course Objectives & Learning Outcomes
  - Bloom's Taxonomy of Learning Outcomes
  - Teaching/Learning Methods
  - Assessment Methods
  - Exemplary Course Profiles

Teacher-Centered vs. Student Centered Teaching/Learning

Teacher-Centered Classroom	Student-Centered Classroom
Relies on Behaviorism	Relies on Constructivism
Does not create an environment to develop students' critical thinking and problem-solving skills	Provides a learning setting in which students construct their skills and understanding
Teachers disseminate information to students; students are recipients of knowledge	Teachers have a dialogue with students and help them construct their own knowledge
Strict adherence to a fixed curriculum is highly valued	Pursuit of student questions and interests is valued
Materials are primarily textbooks and workbooks	Materials include primary sources of information and manipulative materials
Learning is based on repetition, drill-and-practice	Learning is interactive, building on what the student already knows

Teacher-Centered vs. Student Centered Teaching/Learning

Traditional Teacher-Centered Classroom	Student-Centered Classroom
Students work primarily alone	Students work primarily in groups
Assessment is through traditional testing	Assessment includes student works, observations, and points of view, as well as tests. The process is as important as the product
The teacher's role is rooted in discipline & authority	The teacher's role is interactive, facilitative and rooted in dialogue
Knowledge is seen as fixed and established	Knowledge is seen as dynamic and ever changing with our experiences

Teacher-Centered vs. Student Centered Teaching/Learning

Behaviorism

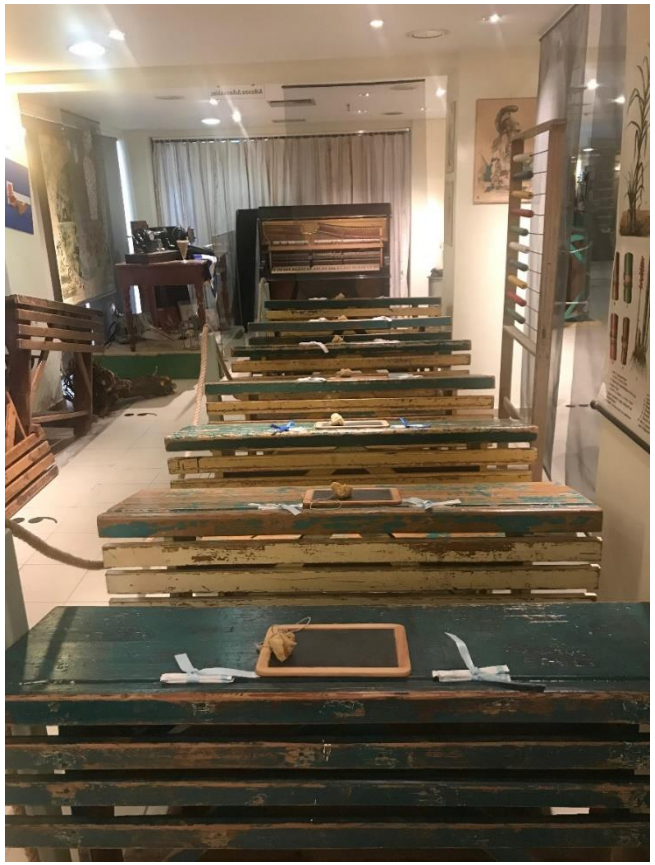
- It is the oldest theory of learning
- Suggests a learning environment in which the teacher has the primary responsibility
- While teachers are active, students are passive in teacher-centered classroom
- Explains learning in terms of observable behaviors:
  - *Learning: A relatively permanent change in observable behavior*
    - If the change is not observable, no learning has occurred
    - They tend to ignore the mental processes that are not accessible

Constructivism

- Constructivism sees learners as constructors of meaning
  - Argues that people actively build knowledge by synthesizing the knowledge they already possess and the new information
- Learners' active engagement with their environment leads them to the construction of meaning and learning
- Learning occurs as a result of interactions between existing cognitive structures and new experience

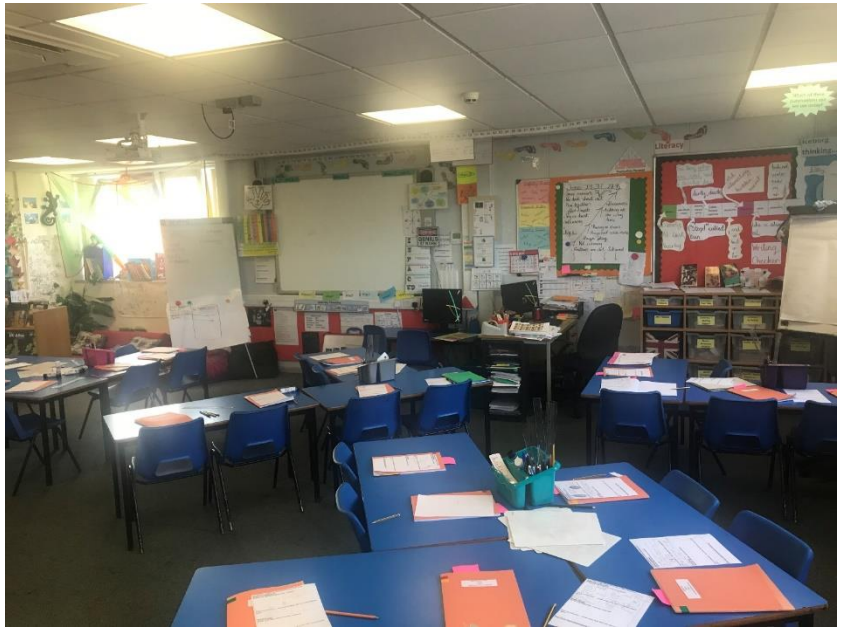
Teacher-Centered Education

Greece, 2019



Student-Centered Education

UK, 2018



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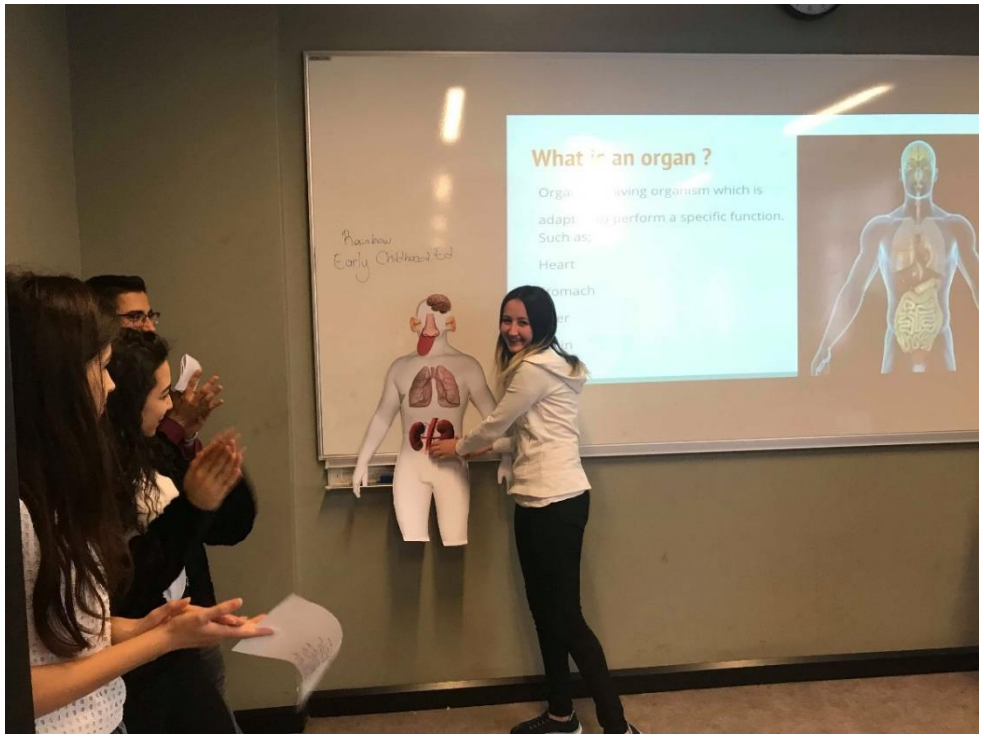
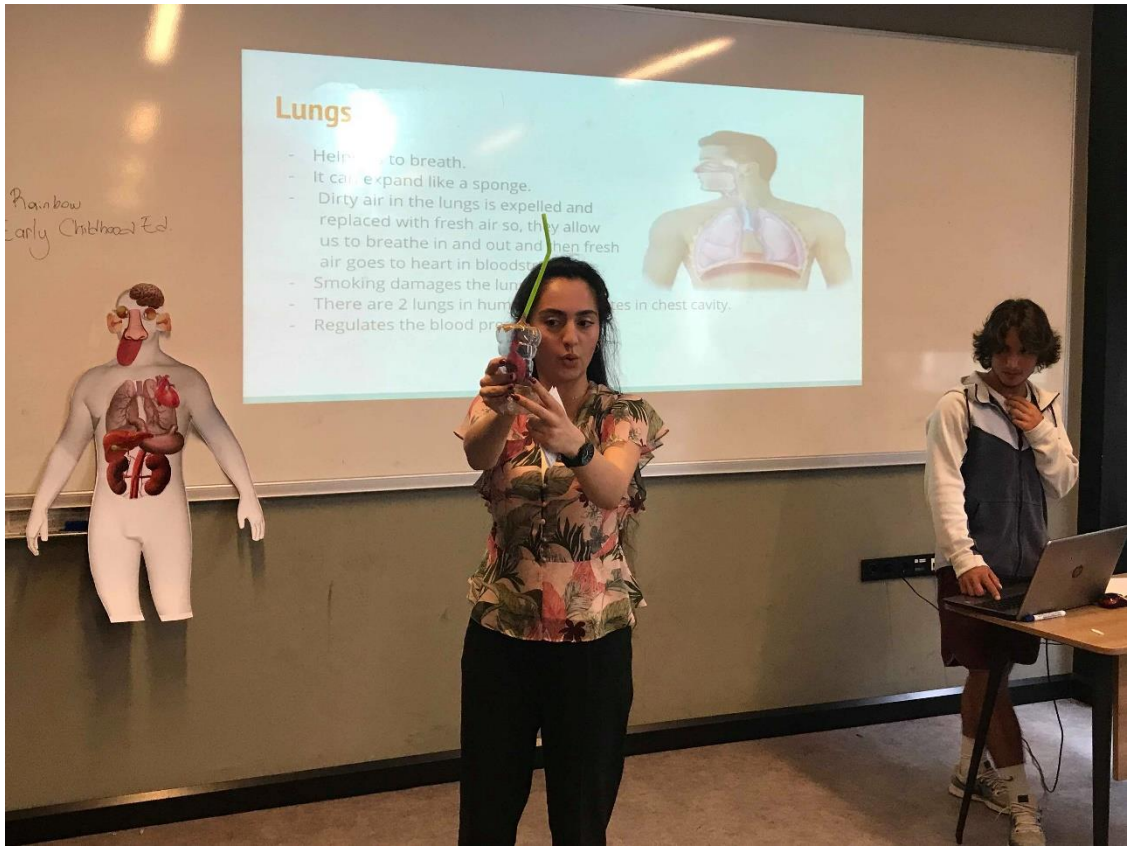


In Higher Education

TEDU, 2018



In Higher Education

TEDU, 2019

Components of Course Design

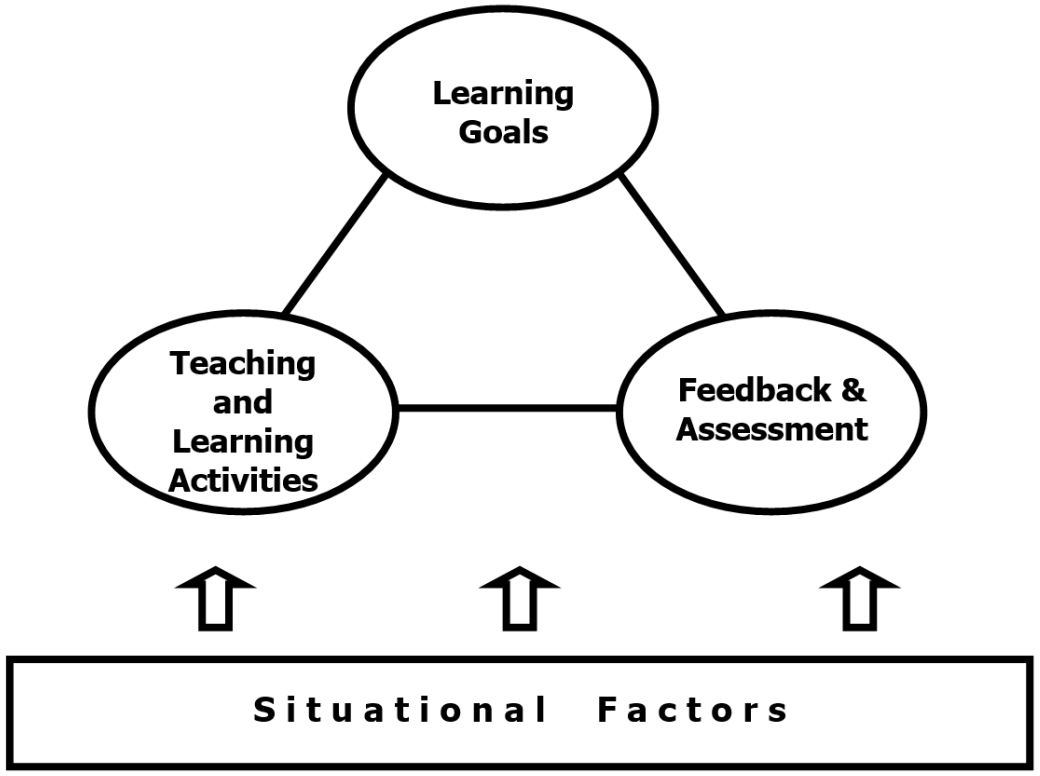
1. Educational Objectives

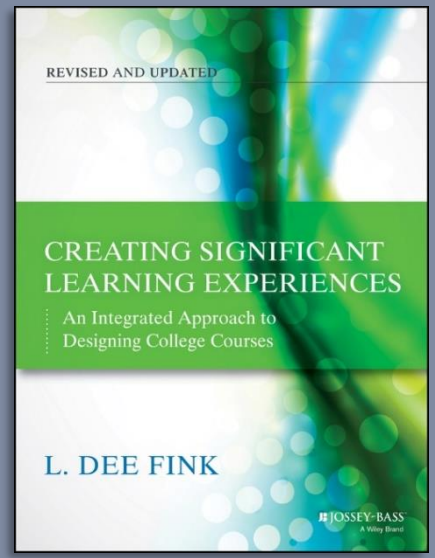
2. Content

3. Teaching/Learning Methods

4. Assessment and Evaluation

Integrated Course Design





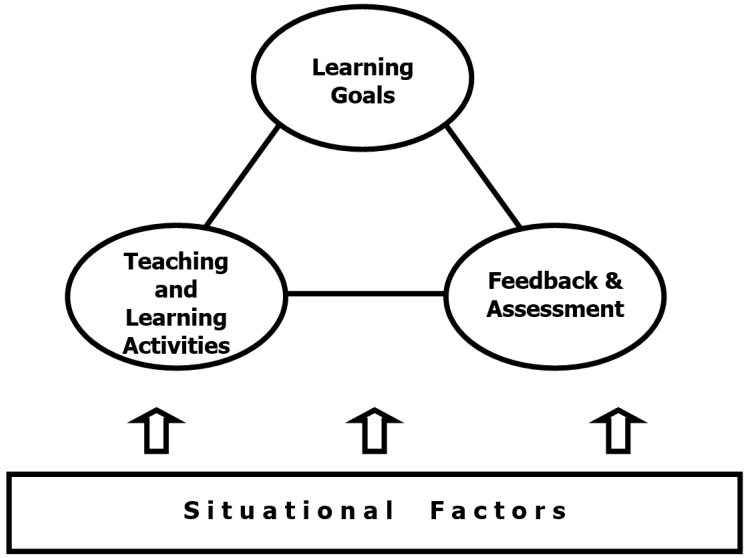
Integrated Course Design

1. Identify situational factors
2. Determine course objectives and learning outcomes
3. Select teaching/learning activities
4. Design feedback and assessment
5. Make sure all of these components are ALIGNED

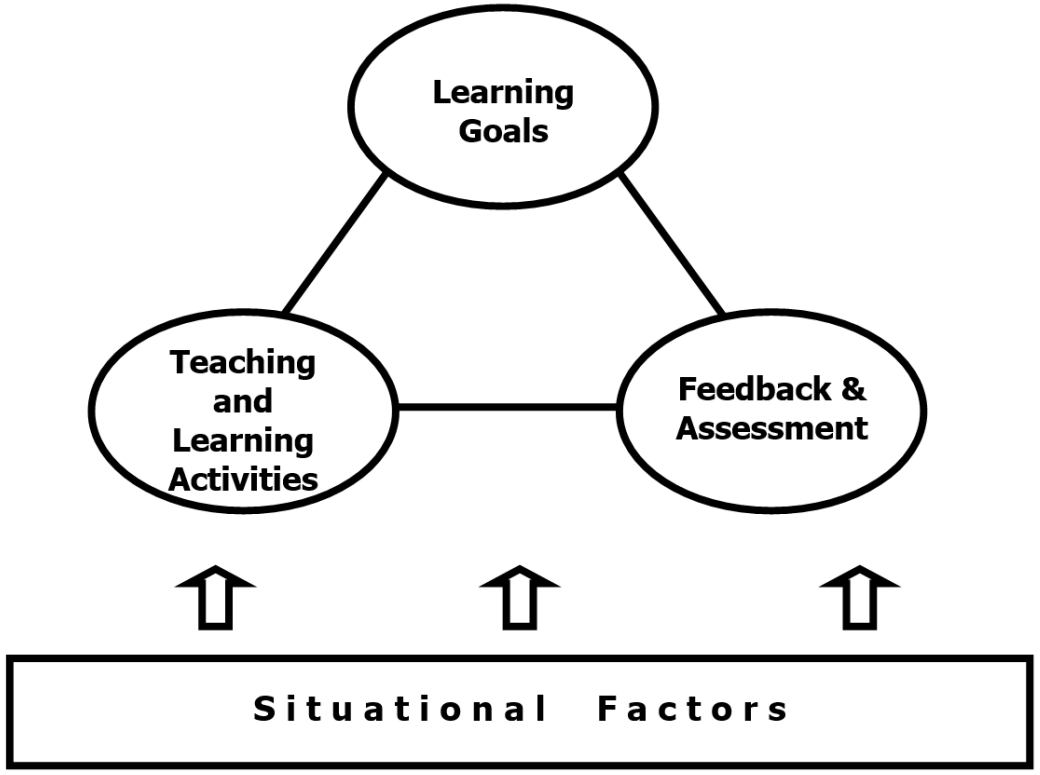
Situational Factors

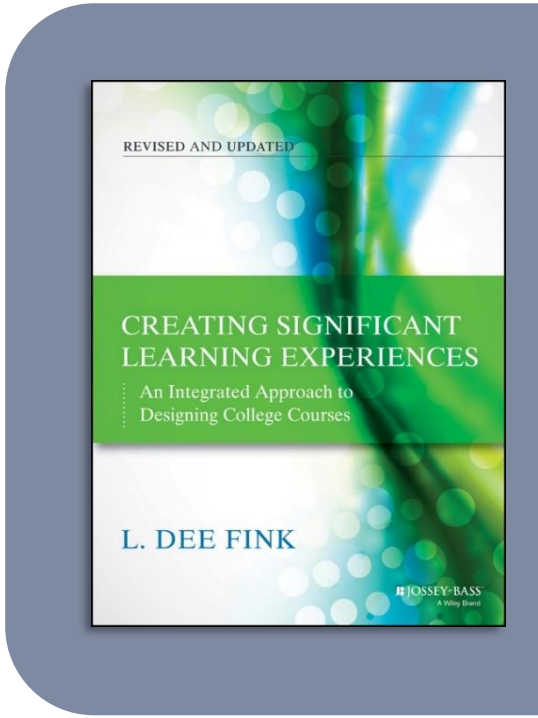
QUESTIONS TO PONDER:

- How many students are in the class?
- How will the course be delivered: live, online, in classroom or lab?
- What learning expectations are placed on this course by: the university? the department? the profession? society?
- Is this *subject* primarily cognitive, or does it include the learning of physical skills as well?
- What life or professional goals do students have that relate to this learning experience?
- What prior experiences, knowledge, skills, and attitudes do the students have regarding the *subject*?
- What prior experiences, knowledge, skills, and attitudes do I have in terms of the *subject* of this course?
- What would be the pedagogical challenges to make this course a meaningful and important learning experience?



Integrated Course Design: Objectives and Learning Outcomes





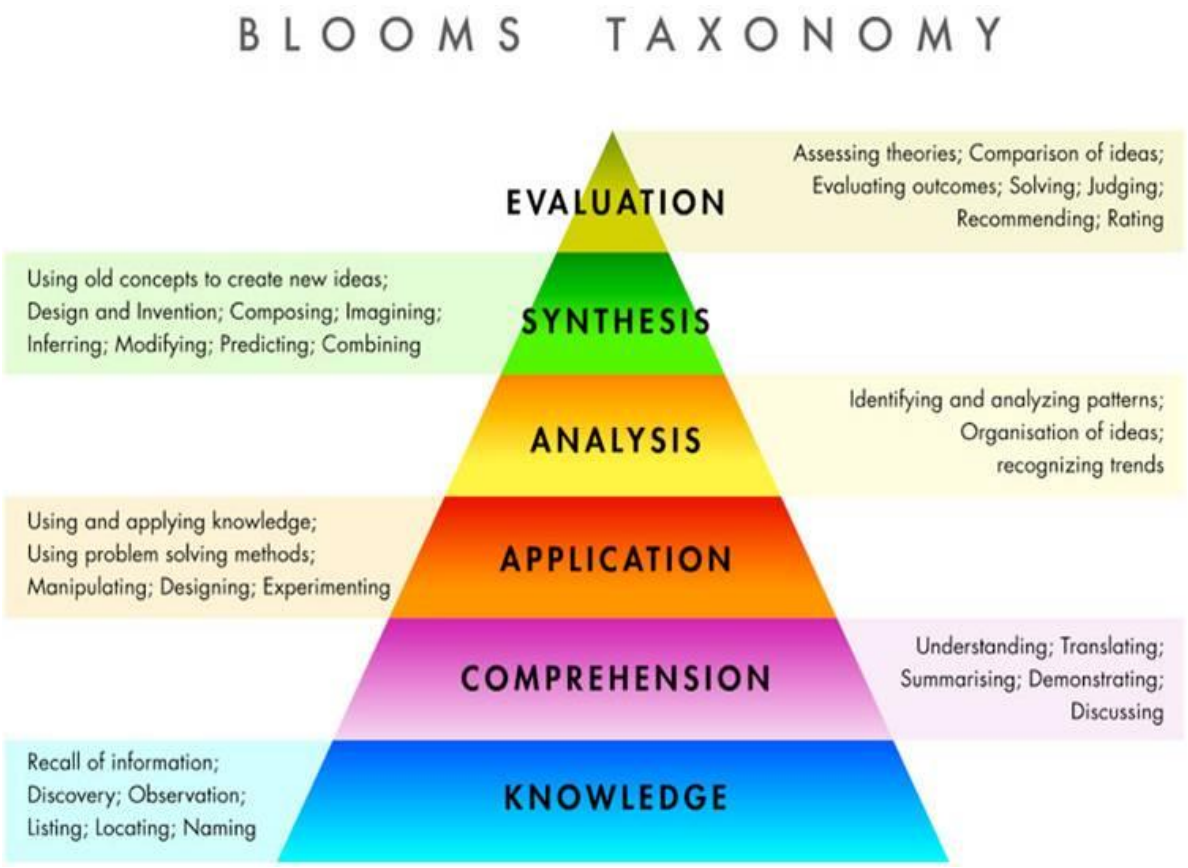
Are course objectives different from learning outcomes?

- **Course Objectives (BROAD)**
  - Objectives generally describe what a course, program, seminar etc. aims to do
  - Reflect what the course will cover or do
  - Useful in helping you formulate more specific learning outcomes
  - *E.g., This course aims to introduce students to the fundamental concepts of artificial intelligence and help them explain how to use these concepts in solving problems. (CMPE 421)*

- **Learning Outcomes (SPECIFIC)**
  - Learning outcomes describe the **specific** knowledge, skills, or expertise that students will achieve and can demonstrate upon successfully completing a course.
  - Indicate what learners are expected to know, understand/or be able to demonstrate after the completion of the learning process
  - Measurable, observable, outcome-based, student-centered
  - *E.g., Upon successful completion of this course, students will be able to:*

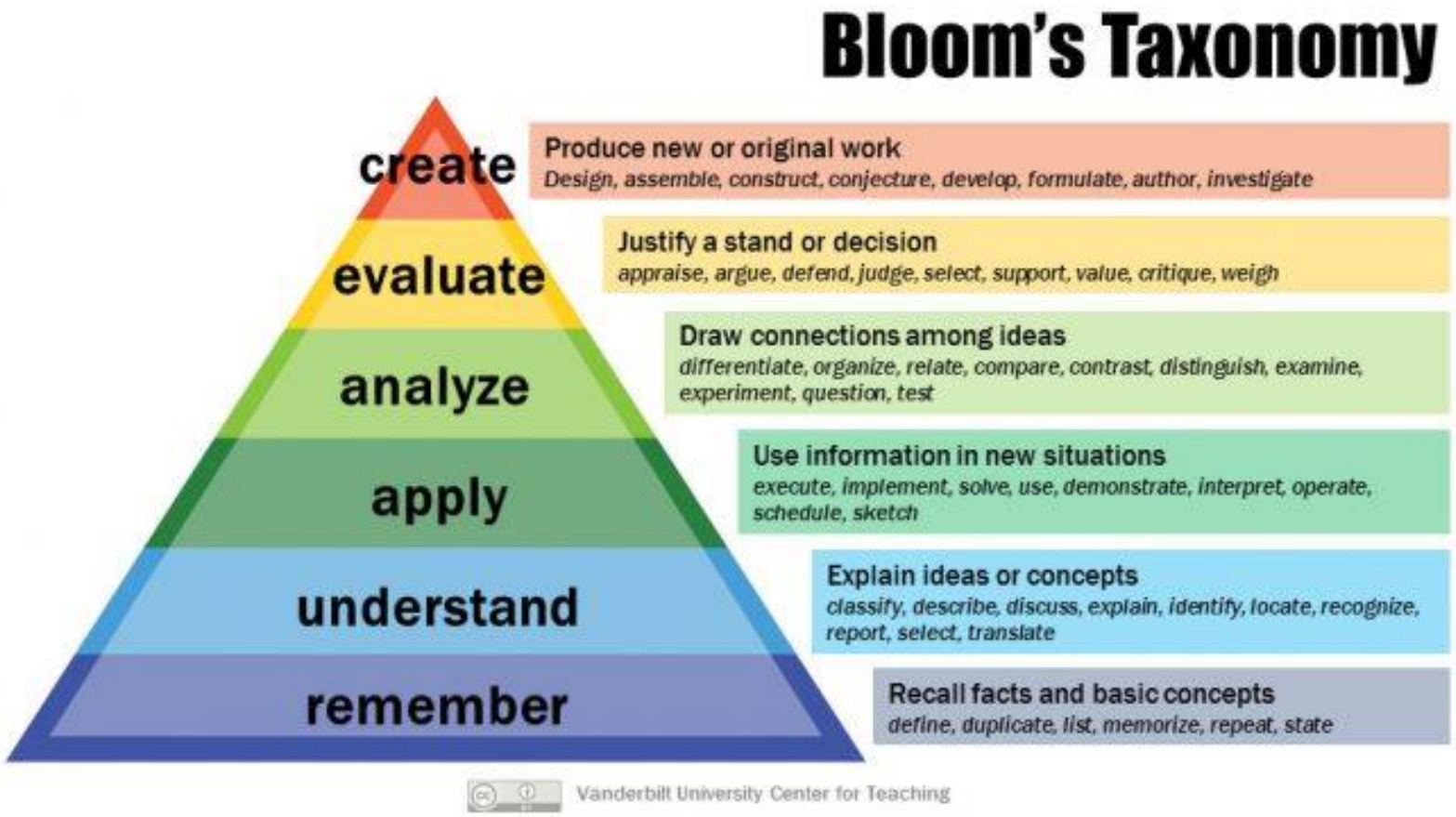
    1. Recognize AI methodologies in various domains,
    2. Apply AI methods to the development of rational agents running in task environments,
    3. Analyze algorithms used for game playing.

Components of Course Design: Bloom's Taxonomy of LOs

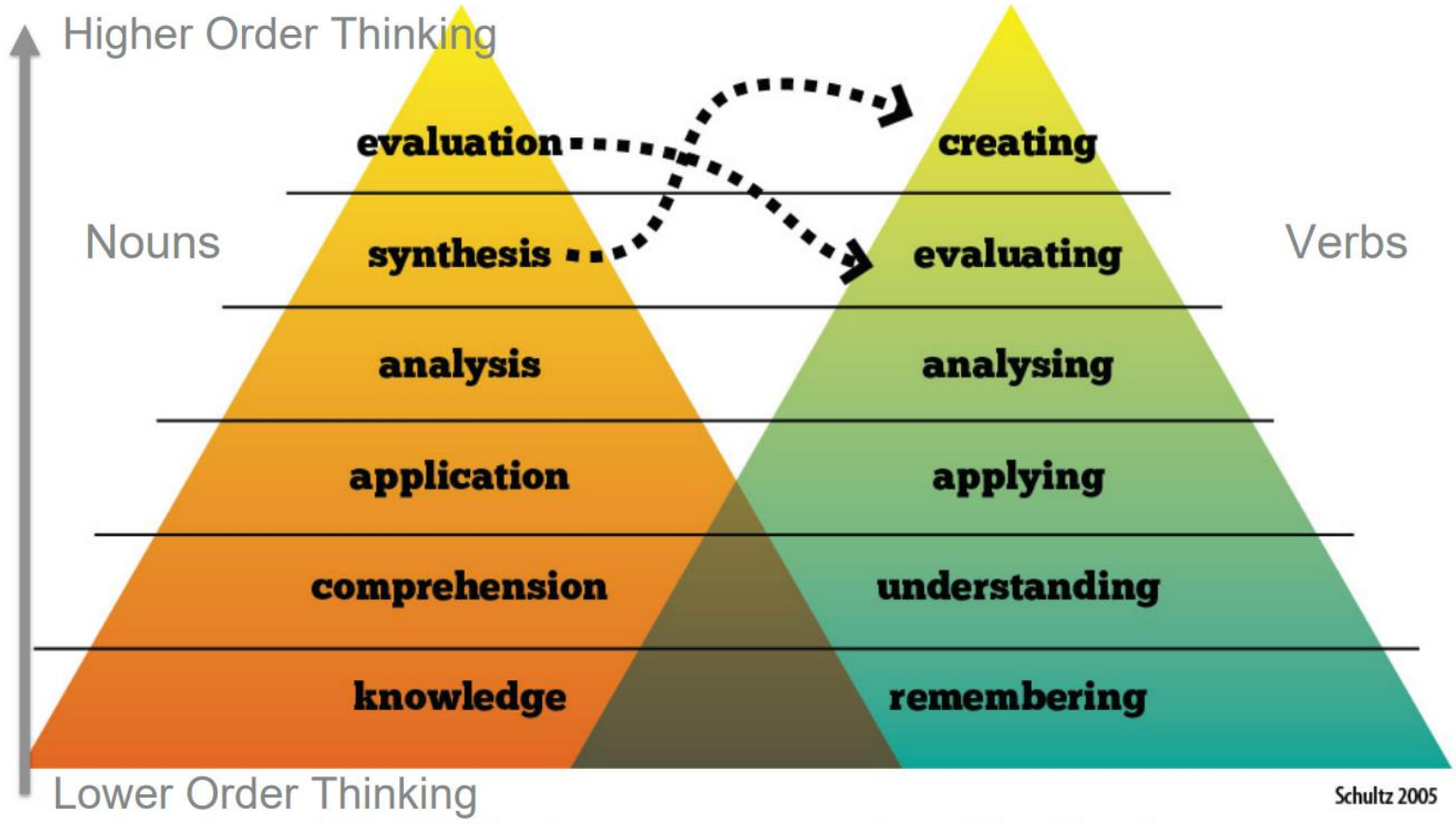


- Aims at classifying learning outcomes (LOs) according to the levels of complexity
- The taxonomy is hierarchical. So, a student functioning at the application level has also mastered the material at the knowledge and comprehension levels
- Provides measurement tool for thinking
- In Bloom's taxonomy, there are 3 domains relevant to learning outcomes: **COGNITIVE, AFFECTIVE, AND PSYCHOMOTOR**

Revised Taxonomy:



Revised Taxonomy:



Components of Course Design: Bloom's Taxonomy of LOs (Cognitive)

Levels	Behaviors
Synthesis (Creating)	e.g., generalizing, constructing, designing, developing
Evaluation (Evaluating)	e.g., defending, justifying, assessing, examining
Analysis (Analyzing)	e.g., categorizing, comparing, contrasting
Application (Applying)	e.g., practicing, applying, implementing
Comprehension (Understanding)	e.g., summarizing
Knowledge (Remembering)	e.g., defining

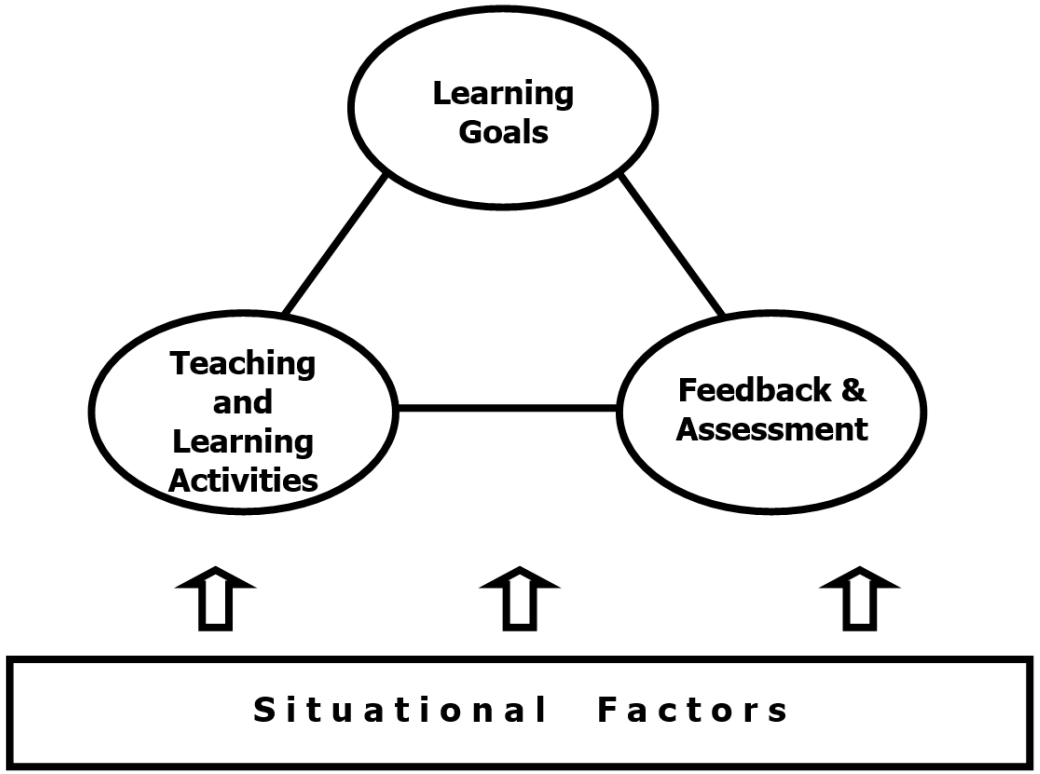
Components of Course Design: Bloom's Taxonomy of LOs (Affective)

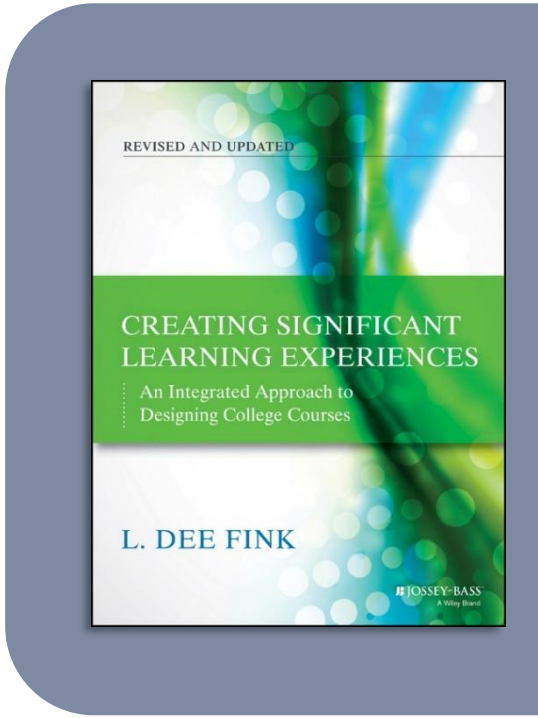
Levels	Behaviors
Characterization	e.g., transferring exemplified norms to wider contexts, internalizing, resisting
Organization	e.g., exemplifying social or professional norms
Valuing	e.g., prefering, expressing, acting responsibly, taking care
Responding	e.g., reacting, answering, applauding, volunteering
Receiving	e.g., noticing, being aware, hearing, listening

Components of Course Design: Bloom's Taxonomy of LOs (Psychomotor)

Levels	Behaviors
Naturalization	acting automatically with effortless expertise (E.g., automatically, professionally, with ease, effortlessly, naturally spontaneously)
Articulation	displaying coordination of a series of related acts by establishing the appropriate sequence
Precision	performing an action independent of either a visual model or written set of directions. (E.g., accurately, independently, with control, without error, proficiently, with balance)
Manipulation	performing a psychomotor skill from written or verbal explanations (E.g., could be same action verbs as at the imitation level)
Imitation	following instructions, observing and repeating (E.g., repeat, follow, align)

Integrated Course Design: Teaching/Learning Activities

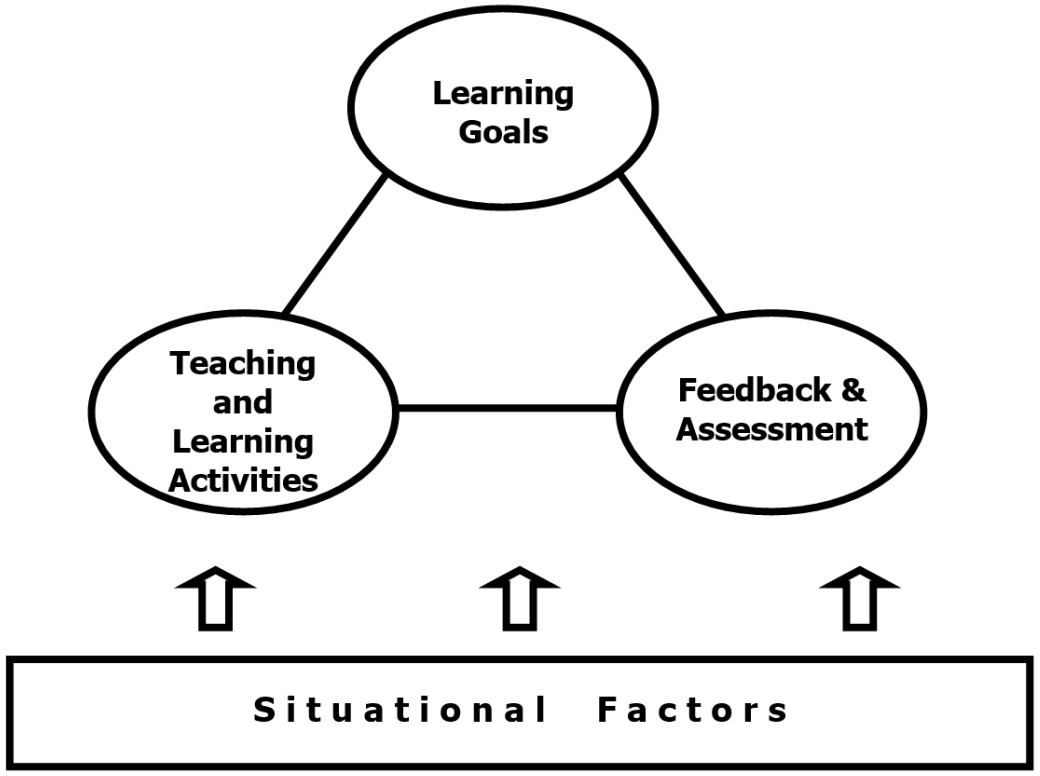


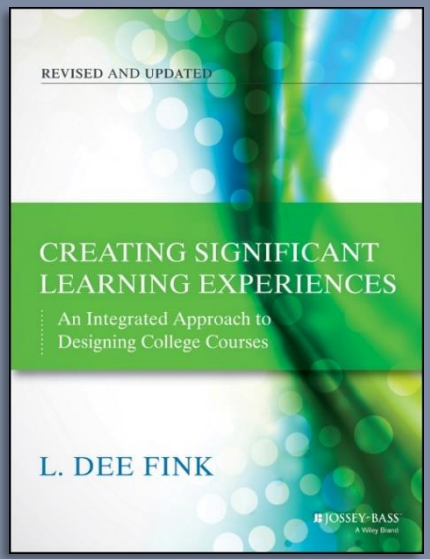


Components of Course Design: Teaching/Learning Methods

Sample Learning Activities/Teaching Methods (TEDU)	☐ Brainstorming ☐ Case Study/Scenario Analysis ☐ Collaborating ☐ Concept Mapping ☐ Demonstrating ☐ Discussions / Debates ☐ Drama / Role Playing ☐ Experiments ☐ Field Trips ☐ Guest Speakers	☐ Hands-on Activities ☐ Inquiry ☐ Micro-Teaching ☐ Oral Presentations/Reports ☐ Peer Teaching ☐ Predict-Observe-Explain ☐ Problem Solving ☐ Questioning ☐ Reading ☐ Scaffolding / Coaching ☐ Seminars	☐ Service Learning ☐ Simulations / Games ☐ Telling / Explaining ☐ Think-Pair-Share ☐ Video Presentations ☐ Web Searching ☐ Other(s):……

Integrated Course Design: Assessment





Components of Course Design: Assessment Methods

Sample Assessment Methods	☐ Lab Assignment ☐ Observation ☐ Oral Questioning ☐ Peer Evaluation ☐ Performance Project (Written, Oral) ☐ Portfolio	☐ Presentation (Oral, Poster) ☐ Project ☐ Quiz ☐ Self-evaluation ☐ Test/Exam ☐ Other(s):……

Examples from Your Course Profiles ☺

Thank you!

Any questions?

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