

# CT Seminar

## Development:

### Outcomes, Assessments, and Rubrics

Linda B. Nilson, Ph.D.

Director, Office of Teaching Effectiveness and Innovation  
Clemson University, 448 Brackett Hall \* 656.4542

[nilson@clemson.edu](mailto:nilson@clemson.edu) \* [www.clemson.edu/OTEI](http://www.clemson.edu/OTEI)

[www.linkedin.com/in/lindabnilson](http://www.linkedin.com/in/lindabnilson)

# Outcomes for You

- To design a course that is focused on critical thinking (CT) and built solidly on student learning outcomes appropriate to your discipline and on a logical, cohesive learning process.
- Assess your students' competency in these skills by designing sound assignments and rubrics.
- Assess your students' competency in the cross-disciplinary CT skills reflected in the rubric that the University has chosen to assess student progress across all CT courses.

# Where CT doesn't apply

- Lower-level thinking/learning: knowledge, remembering, recognizing, reproducing, simple (non-interpretive) comprehension /understanding
- “Cookbook” or “plug-&-chug” procedures and solutions

# Where CT *Does* Apply

When a “conclusion” may or may not be valid, complete, or the best possible.

“Conclusion” = belief, value, problem definition, interpretation, generalization, analysis, viewpoint, hypothesis, solution, inference, decision, or conclusion—*not* a fact.

# Why a “Conclusion” May Be Questionable

- Evidence is uncertain or ambiguous.
- Problem/task is “fuzzy” and ill-defined.
- Multiple respectable “conclusions” exist (issues of disagreement, debate, controversy).
- Source is suspect.
- Evaluation process is non-routine or non-standardized.

# Many Different CT Frameworks

- Brookfield (focus on assumptions)
- Higher-level cognitive operations in Bloom's Taxonomy
- Perry's Stages of UG Cognitive Development
- Halpern (cognitive psychology)
- Wolcott (& Lynch) – Steps to More Complex/ Critical Thinking
- Paul & Elder, Foundation for Critical Thinking
- Facione and Delphi Report (basis of CCTST)

# Points of Overlap

- **CT** = evaluation/judgment
- **CT** is difficult and unnatural; it takes time to learn.
- **CT** is not only cognition but also character (motivation, ability).

*For example: Paul & Elder's*  
**“Intellectual Traits” of Character**

- Intellectual humility
- Intellectual autonomy
- Intellectual integrity
- Intellectual courage
- Intellectual perseverance
- Confidence in reason
- Intellectual curiosity
- Fairmindedness

- CT requires *background knowledge* of subject matter (e.g., to identify the type of problem) + *metacognitive strategies* (e.g., to apply rules of thumb like “consider multiple sides of an issue”).

# To Design a CT Course, First Write Solid CT Outcomes

- Outcomes = statements of what students should *be able to do* by end of the day, week, unit, or course.
- “Performances” you can *observe* so you can assess and *set standards* for them — *not* internal states of mind like “know,” “learn,” “feel,” “understand,” “appreciate”

Active verbs list, p. 1

In a CT course, some of  
your outcomes must be  
CT skills.

# General CT Skills Tested by CCTS

<http://www.insightassessment.com/Products/Critical-Thinking-Skills-Tests/California-Critical-Thinking-Skills-Test-CCTST>

(Definitions in handout, p. 2)

- Interpretation
- Explanation
- Analysis
- Inference
- Evaluation
- Deduction
- Induction

# Discipline-Relevant CT Skills/ Outcomes

(See handout pp. 3-5)

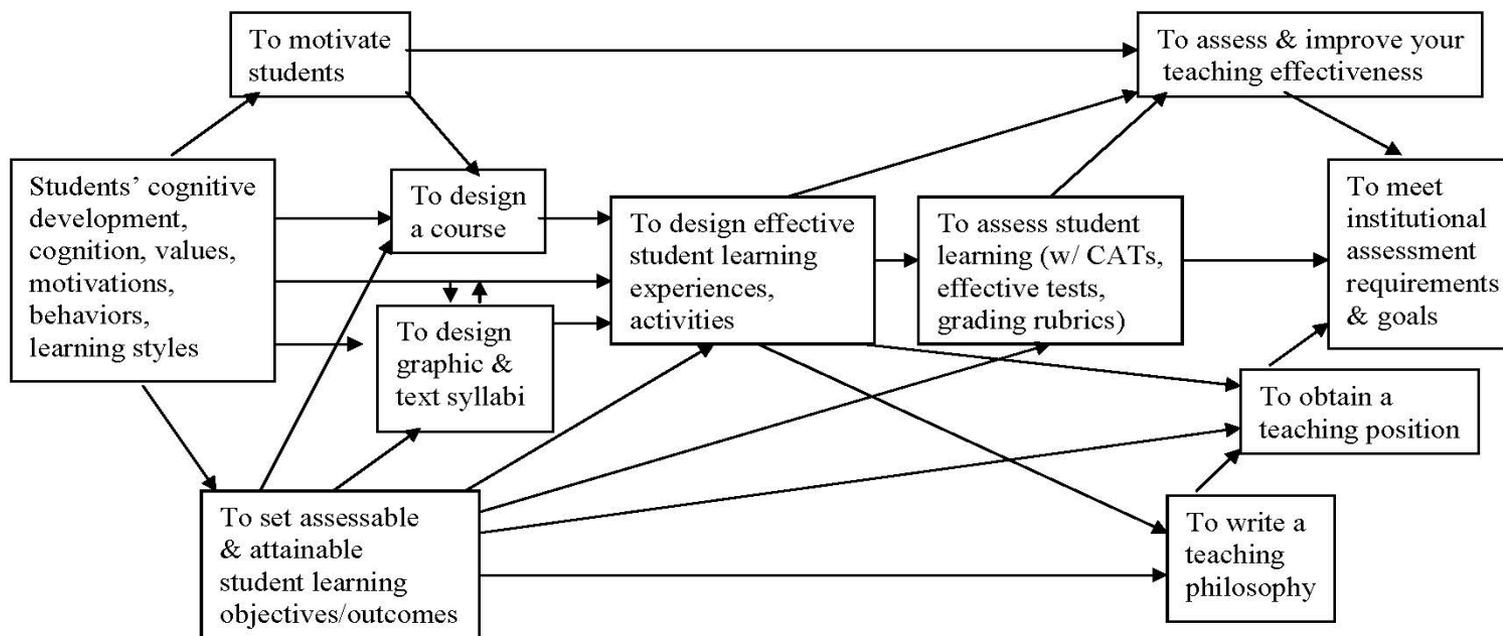
- Check those relevant to your course.
- Add more if necessary.
- Start writing your CT course outcomes.
- Start sequencing them: In what order will they achieve them?

# To Sequence Outcomes into a Learning Process

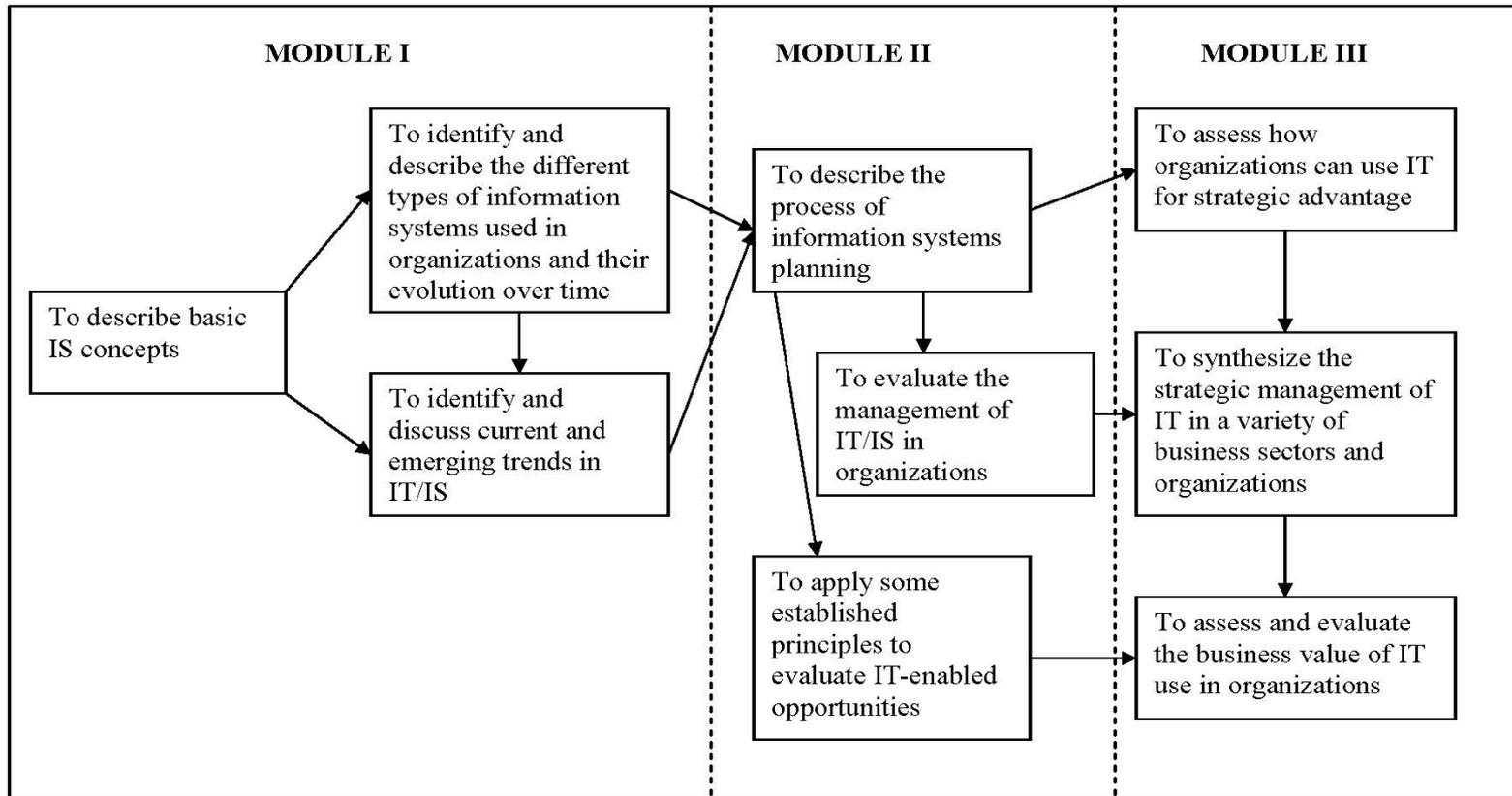
- Think flowchart.
- Start w/ foundational outcomes that will enable students to achieve more advanced outcomes (mediating and ultimate)
- Each outcome → an assessment (assignment or activity)

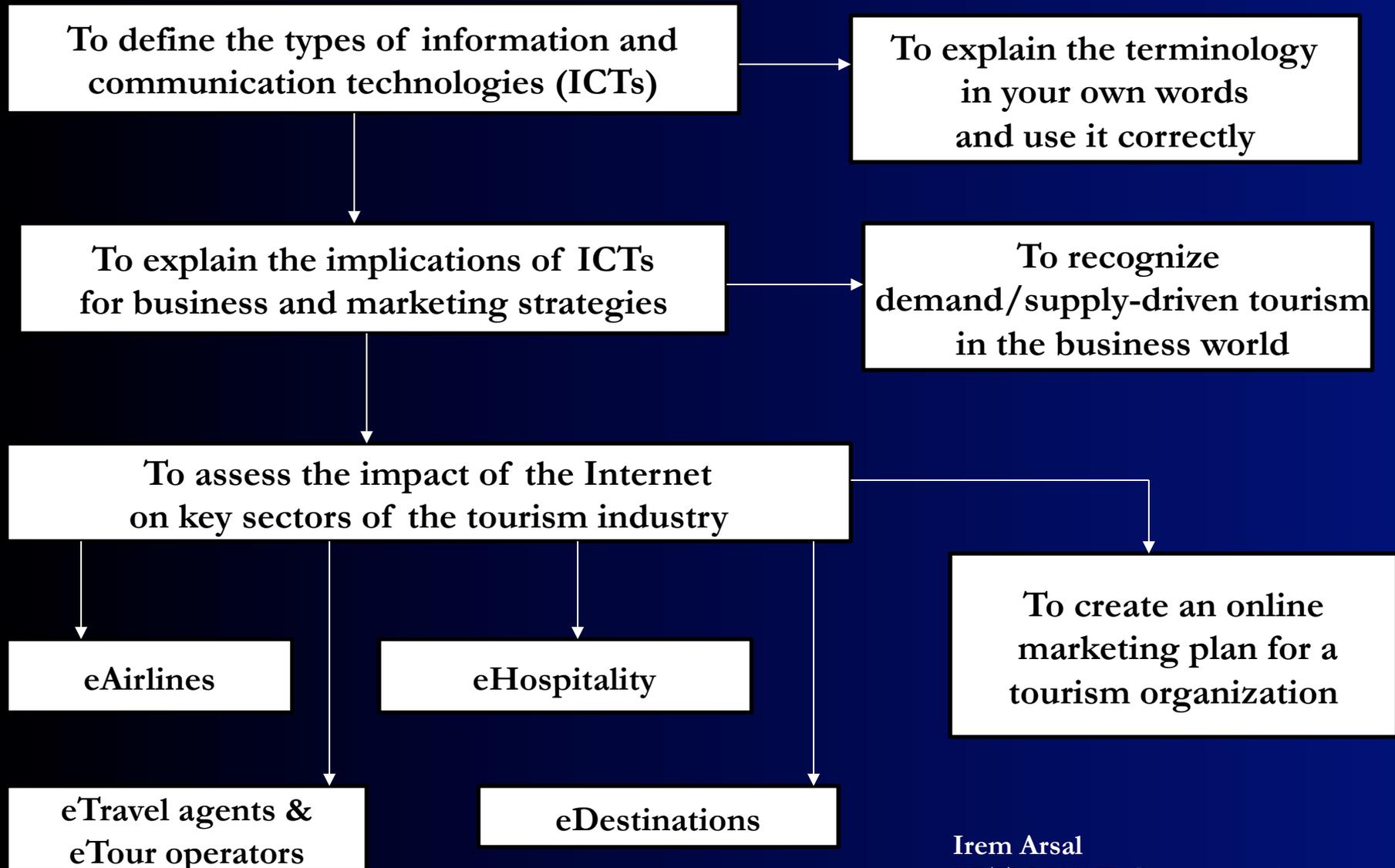
## OUTCOMES MAP for COLLEGE TEACHING, Dr. Linda B. Nilson

*Foundational Learning Outcomes*      *Mediating Learning Outcomes*      *Ultimate Learning Outcomes*



## MGT 490: Strategic Management of Information Technology Outcomes Map





# Aligned Course Design

**Appropriate Assessments of Students'  
Achievement of the Outcomes**

*(the measurement of students' progress toward the ends)*



**Teaching Methods/Learning Experiences to Help  
Students Achieve the Outcomes**

*(the means to the ends; the “tools for the job”)*



**Student Learning Outcomes**

*(the foundation, the ends of instruction)*

# Basic Teaching Principles

- Address misconceptions about CT & subject matter early. **What are these?**
- In & out of class, ask CT questions & assign CT tasks that match your outcomes & content.

Give students *informal* (ungraded or low-stakes) opportunities to *practice* outcomes & get *feedback* from you or each another  
(Examples in handout pp. 6-11.)

# Opportunities for Practice and Feedback

- Class discussions
- Cases to debrief
- Debate or structured controversy
- Worksheets and problems
- Journaling and other writing exercises
- Drafts of papers, reports, projects, portfolio, etc.; have students paraphrase your and peer feedback back.

# Assessments Should *Mirror* Outcomes.

Outcome



Assessment

# Assessing CT Skills

- Students must generate a product:
  - e.g., answer to question, paper, report, project, portfolio, oral or multimedia presentation, artistic work or performance, or demonstration (e.g., of technical problem solving).
- Students should reflect and report on how s/he did it (metacognition, self-regulated learning).

# A Well-Constructed Task

- = Question or task assessing one or more of your CT outcomes
- Multiple, non-standardized respectable answers/products
- Professional judgment needed for assessment

- Well-defined and focused; OK to recommend types of thinking and content to use.
- Optional plus: Place question/task in a problem/situation that students may face in the future.

(Examples in handout p. 12.)

# Turn One of These into a Good CT Task/Question.

*Raise cognitive level, increase focus, and situate in a problem.*

- In view of our current knowledge about Type 2 diabetes, should long-term treatment plans aim to keep diabetics off of insulin?

- Given what you have learned about international politics, should a nation ever negotiate with terrorists?
- What will happen to the biosphere if a large amount of sulfur dioxide is released into the atmosphere?
- Propose a hypothesis about how a certain program will affect the quality of undergraduate education.

# Draft a Good CT Task or Question for Your Course

- assesses one or more CT outcomes
- has non-standardized answers
- well-defined and focused
- situated in a realistic problem

# Add a Reflective Meta-Assignment (aka “assignment wrapper”)

- “How did you arrive at your response/  
product?” (See handout p. 13.)
- Develops metacognition/self-regulated  
learning: awareness, planning, monitoring,  
control, and evaluation of one’s thinking.
- Where applicable, design meta-assignments to  
sensitize students to their beliefs and  
misconceptions that get in the way.
- Grade pass/fail (all or no points).

# Draft a Rubric for Your CT Task or Question

- ***Analytical Rubric*** = an assessment/grading tool that lays out specific expectations for a piece of work and describes each level of performance quality on the selected assessment criteria/skills.

# For Rubrics, Accept That:

- You can't assess/grade student work on **every** criterion/skill you can think of.
- Students can't work on improving their performance on every criterion/skill you can think of. *They don't even know what those criteria/skills are.*
- Choose a few key CT (and possibly other) skills to assess.

# Step 1 : Choose CT Criteria.

What CT skills (outcomes) are most important for students to demonstrate *in this assignment or essay?*

What CT skills is the assignment or essay supposed to assess?

## Step 2: Define Levels and Their Values.

- Number or range of points for each level
- Grades (A, B, C, etc. or 4.0, 3.7, 3.3, etc.)
- Descriptive levels (e.g., high, average, low mastery; exemplary, competent, developing, unacceptable)
- Combination

# Step 3: Describe the Performance for Each Level on Each Criteria.

- Usually in a table in sentences, phrases, or lists; “all or most...” alternative.
- Write out descriptions of each level of performance on each assessment criterion. (See samples of rubrics.)

# Step 4: Use Rubric to Teach.

- Distribute and explain rubric to students as part of assignment or test instructions.
- Have students in groups use rubric to grade models of varying quality.
- Be sure students know meanings of task verbs on assignments. (See handout pp. 14-15.)

## Step 5: Use Rubric to Assess.

- Have students attach rubric to work.
- Mark relevant descriptors on rubric and write comments on work, as time permits.
- Demand any grade challenges in *writing with justifications* within a tight time limit.