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# Writing Learning Outcomes for Effective Assessment


Nancy Simpson, Jeffrey Froyd  
Texas A&M University  
17 February 2008

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# Outline

- Program Development Cycle
- Writing a Learning Outcome
- Writing Program Learning Outcomes
  - Sources
  - Criteria for Program Learning Outcomes
- ??



# Workshop Outcomes

- Program Development Cycle
  - Participants will be able to graphically depict relationships among different entities in an assessment cycle.
- Writing a Learning Outcome
  - Participants will be able to write a learning outcome with the required characteristics.
- Writing Program Learning Outcomes
  - Participants will be able to construct a set of criteria for evaluating a set of program learning outcomes.
- Selecting Assessment Approaches
  - Participants will rate themselves as better prepared to address challenges of developing an assessment plan for their program learning outcomes.



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# Program Development Cycle

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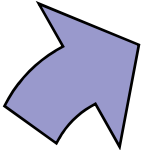
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# “Program” Development Cycle

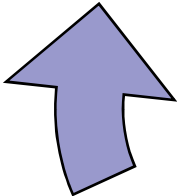
PLO Information Sources

**Program Learning Outcomes**

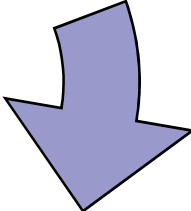
What **changes** will be incorporated in the next program cycle?



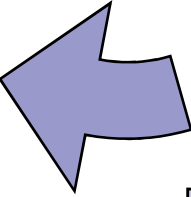
To what extent is the program successful?  
What is working or not working?



What will the students know, be able to do and how will they think when they graduate?



Collect, organize, and analyze the evidence



What evidence will be collected to support interpretation and evaluation of student performance with respect to the program learning outcomes?

- Capstone Course project or assignment
- Nationally Normed Examinations
- Local Examinations
- Student Portfolios
- Internship Performance Reviews
- Senior Survey





# Stages in the Program Development Cycle

## ■ Develop Program Learning Outcomes

- What will the students know, be able to do and how will they think when they graduate?

## ■ Select Assessment Methods

- What evidence will be collected to support interpretation and evaluation of student performance with respect to the program learning outcomes?

## ■ Program Evaluation

- To what extent is the program successful? What is working or not working?

## ■ Program Revision

- What **changes** will be incorporated in the next program cycle?



## Questions: Program Development Cycle

- Think – Pair – Share
- What questions do you have about elements in the program development cycle or their relationships?
- How do you know your collected evidence is relevant?
- What is the RIGHT number?
- How should be involved in collecting data?



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# Writing a Learning Outcome

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## Individual Exercise

- Think of a course or program for which you could write a learning outcome
- Construct one learning outcome for that course or program



# Purpose

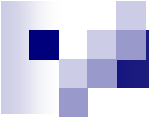
- What is the purpose of learning outcomes or objectives?
  - For students
  - For faculty

Take two minutes to write down your thoughts and then share with a colleague



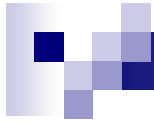
# Purpose of Learning Outcomes

- Communicate expectations for a course
- Provide a context for what will be learned



# Purpose of Learning Outcomes: Students

- Outcomes help students
  - Clarify their personal goals
  - Provide framework for measuring their success
  - Reduce their anxiety
  - Improve their studying effectiveness
  - Helps retention
  - Guidance for self-assessment



- Stay focused
- Gives framework for effective teaching
- Am I leaving something out
- Aligns teaching resources
- Explicit outcomes provide helpful documentation
  - Multiple sections
- Helps structure learning exercises



# Purpose of Learning Outcomes: Faculty

- Outcomes help instructors
  - Guide preparation of material
  - Make assignments
  - Aid in assessment instrument design



# Cardinal Rules of Learning Outcomes

- Outcome must:
  - Contain a **verb** describing an observable or identifiable action
  - Focus on the student as the performer
    - What is the student expected to be able to know?
    - What is a student expected to be able to do?
    - How is a student expected to be able to think?



# Outcome Verbs

Verbs for constructing concrete outcomes:

analyze	compute	classify	compare
contrast	define	direct	derive
designate	discuss	display	evaluate
identify	infer	integrate	interpret
justify	list	organize	report
respond	solicit	state	synthesize
name	explain		

Modified from [http://www.brown.edu/Administration/Sheridan\\_Center/pubs/syllabus.html#coura](http://www.brown.edu/Administration/Sheridan_Center/pubs/syllabus.html#coura)



# Bloom's Revised Taxonomy

- Remembering
- Understanding
- Applying
- Analyzing
- Evaluating
- Creating



# Verbs from Levels in Bloom's Taxonomy

## ■ Remembering

- Define, describe, list, reproduce, enumerate

## ■ Understanding

- Classify, explain, discuss, give example, summarize

## ■ Applying

- Determine, develop, compute, chart, utilize

## ■ Analyzing

- Correlate, diagram, distinguish, outline, infer

## ■ Evaluating

- Compare & contrast, critique, justify, conclude


## ■ Creating

- Adapt, combine, compare, contrast, design, generate



## Dealing With “Understand” in Outcomes

- How do you write outcomes when you want students to “understand” a complex concept, system, or process
- Identify specific tasks that indicate “understanding”
  - Specify outcomes for each task
- Similar comments apply to “know”, “appreciate”, “value”, “learn”, “demonstrate understanding”



What do we want our students to be able to do with the [BLANK] knowledge that they acquire? We certainly expect them to be able to **predict** the responses of a [BLANK] system if it is disturbed. We expect students to be able to **explain** the responses that occur in systems that have been disturbed. Sometimes we want them to **solve** quantitative problems (calculate something). And, we expect them to be able to do this with systems and disturbances that they have not encountered in lecture or the textbook. That is, we expect them to be able to **apply** what they know about [BLANK] to novel situations. When they can do this, we say they “understand” [BLANK]. Or, in the terminology I have been using, we can say that meaningful learning has occurred.



## Individual Exercise

- Think of a course you have taught recently or will be teaching shortly
- Modify the learning outcome that you constructed at the beginning of this session or construct a new learning outcome for that course



## Questions: Writing a Learning Outcome

- Think – Pair – Share
- What questions do you have about writing a learning outcome?
- ??



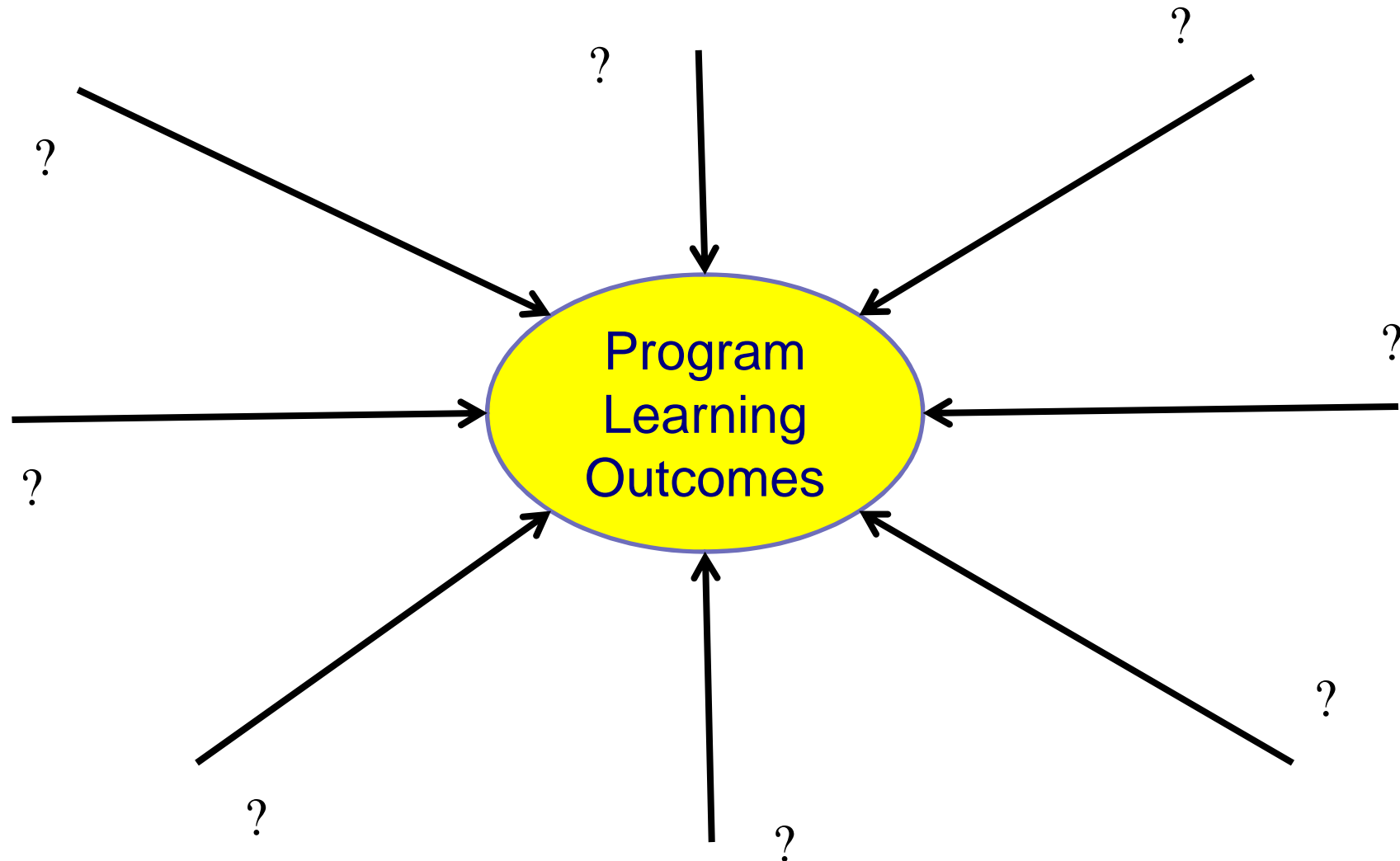
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# Writing Program Learning Outcomes

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# Sources of Information for Developing Program Learning Outcomes

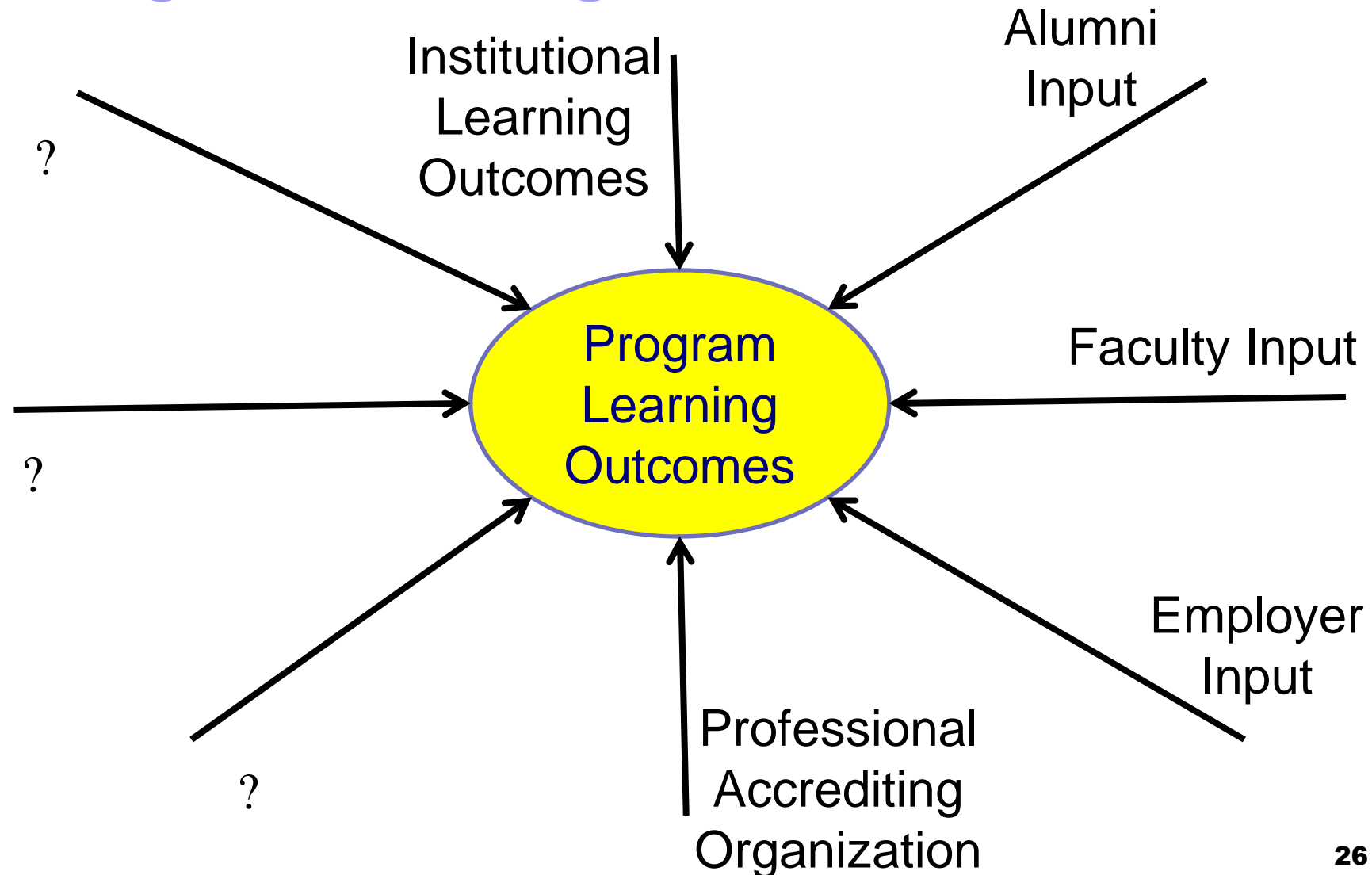




# What do you think are sources of information for developing program learning outcomes

- Think – Pair – Share
- Professional school feedback
- Faculty who teach in program
- Industry experts
- Students currently in program
- Employers
- Student papers, exams, projects – examples of what we're currently looking for, shows what we value
- Exemplary educational objectives – TX coordinating board, CCIC
- Disciplinary accrediting bodies or professional associations
- Accreditation requirements
- Alumni feedback
- Administrators
- Peer departments, programs
- University strategic plan – avoid going against it
- Advisory committees/boards
- Trustees, regents

# Sources of Information for Developing Program Learning Outcomes





## Institutional Outcomes: Texas A&M University

- a. communicate effectively in writing and speaking
- b. critically analyze
- c. possess personal integrity
- d. contribute to society
- e. master the depth of knowledge required of a discipline



## **Exercise: Developing Criteria to Critique a Set of Program Learning Outcomes**

- Read the set of program learning outcomes for a nutrition program
- For each program learning outcome list its strengths and weaknesses
- From your analysis develop a set of criteria with which you might critique/evaluate a set of program learning outcomes



# Criteria for Evaluating Program Learning Outcomes

- Measurable, identifiable, observable
- Student as performer (not program as performer), focus on results
- Identify a timeframe in which outcomes can be measured
- Encompass guidelines specified by accrediting agency
- Program-specific, but not course-specific
- Applicable to all graduates, but may not be achieved by all graduates (there was not consensus on this point)



# Criteria for Evaluating Program Learning Outcomes

- Each learning outcome follows the basic rules for a learning outcome
- Describe outcomes (what students will be able to do) rather than inputs (experiences students will have)
- Allow faculty to see where/how their courses contribute
- Point to student learning artifacts in which outcome might be seen
- Encompass university-level learning outcomes (if such outcomes exist)
- Set of outcomes should be distinctive for the discipline



# Developing Program Learning Outcomes

## ■ Top-down Approach

- Start with phrases related to expectations: communication, problem-solving, critical thinking/inquiry guided, entrepreneurship, ethics...
- Construct program learning outcomes that depict your expectations related to these ideas



# Developing Program Learning Outcomes

## ■ Bottom-up Approach

- Start with course learning outcomes
- Group related course learning outcomes together
- For each group of course learning outcomes, construct one or more program learning outcomes that depict your expectations related to this group of course learning outcomes



## Back to the basic question

- Program learning outcomes answer:
  - What will the graduate know, be able to do and how will they think when they walk across the stage?

AND

- How will you know?



# Questions: Writing Program Learning Outcomes

- Think – Pair – Share
- What questions do you have about writing a set of program learning outcomes?
- ??



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# Selecting Program Assessment Approaches

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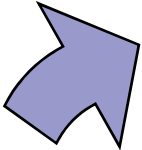
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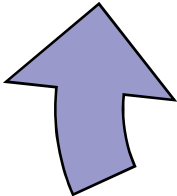
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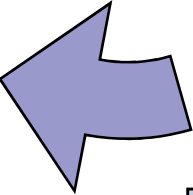
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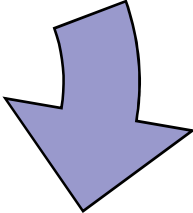
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# Where will data on achievement of program learning outcomes be collected?

Assess to determine achievement with respect to program learning outcomes

Senior	Student Teaching	Course 14	Capstone	Course 16
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Assess to determine where and how interventions to improve program learning outcomes might be accomplished

Junior	Course 9	Course 10	Internship	??????
Sophomore	Course 5	Course 6	Course 7	Course 8
Freshman	Course 1	Course 2	Course 3	Course 4



# Program Assessment – Larger Context

Assess to determine how program learning outcomes may be improved

- Former Student and Employer Surveys
- Graduate Follow-up Studies
- Graduate School Placement Statistics
- Job Placement Statistics
- Enrollment, Retention, and Transfer Statistics

Assess to determine achievement of program learning outcomes

Senior Courses

Assess to determine where and how interventions to improve program learning outcomes might be accomplished

First-year, Sophomore, Junior Courses, Co-curricular Activities



# Workload: Some Assumptions

- Assumption No. 1: Faculty members already do a great deal of grading in the courses that they teach.
- Assumption No. 2: Connections between grades on projects, papers, exams are not easily connected to program and/or course learning outcomes.
- Assumption No. 3: Program learning outcomes will describe performances that are cognitively challenging and complex.



# Workload: Some Suggestions

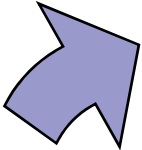
- Pick a limited number of courses in which data on performance of students with respect to your program learning outcomes will be evaluated.
- Work with faculty teaching these courses to revise assignments to address both
  - (a) multiple program learning outcomes.
  - (b) provide basis for grading these courses
  - Assumption: These assignments will generate complex work projects: reports, presentations, performances
- Develop rubrics to grade these assignments.

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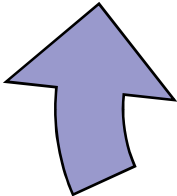
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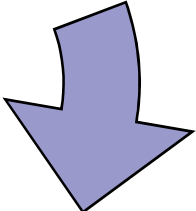
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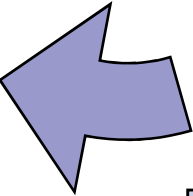
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It is all about student learning!



## Where will the Program Learning Outcomes be infused across the Curriculum?

	Communicate orally and in writing	Analyze, interpret and evaluate results	Listen to diverse populations	Demonstrate teaching effectiveness
Course #1	Introduce	Introduce Emphasize	Introduce	Introduce
Course #2	Emphasize		Emphasize	
...	Use	Assess		Emphasize Use
Course #N	Use		Emphasize/ Use	Assess
Something Else		Assess	Use	
Student Teaching	Assess		Assess	Assess