Assessment Basics

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HIGHER LEARNING COMMISSION

Workshop Overview

- Linking assessment to student learning
- Clarifying the language
- Comparing course to program assessment
- Simplifying the outcomes
- Writing measurable performance indicators
- Mapping the curriculum

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Workshop Overview

- Identifying assessment methods
- Reviewing scoring rubrics
- Developing efficient and effective assessment processes
- Evaluating assessment data
- Reporting results
- Sharing lessons learned


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Foundational "Truths"

✓Programs are at different places in the maturity of their assessment processes

✓Programs have different resources available to them (e.g., number of faculty, availability of assessment expertise, time)

✓Each program has faculty who are at different places in their understanding of good assessment practice


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Assessment enables learning

How do we know if the outcomes are being achieved?

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Assessment enables learning

Students

- To self-regulate their learning
- To understand what they need to do to improve
- To situate their learning to their personal goals
- To articulate what they are learning

Faculty

- To understand student progression toward achievement of learning outcomes
- To adapt instructional practice to meet the needs of diverse learners
- To share findings with faculty colleagues for decisions about curricular improvements

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What do students want to know?

What's going to be on the test?
How are you going to grade?
What grade did I get?
What do I have to do to pass?

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What do faculty want to know?

- Is it in the HLC Standards?
- What will the Peer Reviewer look for?
- What was the accreditation action?
- What is the minimum we have to do to "get by" for accreditation

Program assessment is about learning about student learning

- Process should reflect understanding of the principles of how students (of all ages) learn
  1. Learning occurs best when we build on what students already know
     - What students learn in one course, they use, practice, and develop in other courses.


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Implications for assessment

- Summative assessment indicates the cumulative effect of student learning and guides:
  - ✓When to collect summative data
  - ✓From whom to collect data
  - ✓Interpretation of the results
- Formative assessment points to areas of needed improvement before program completion


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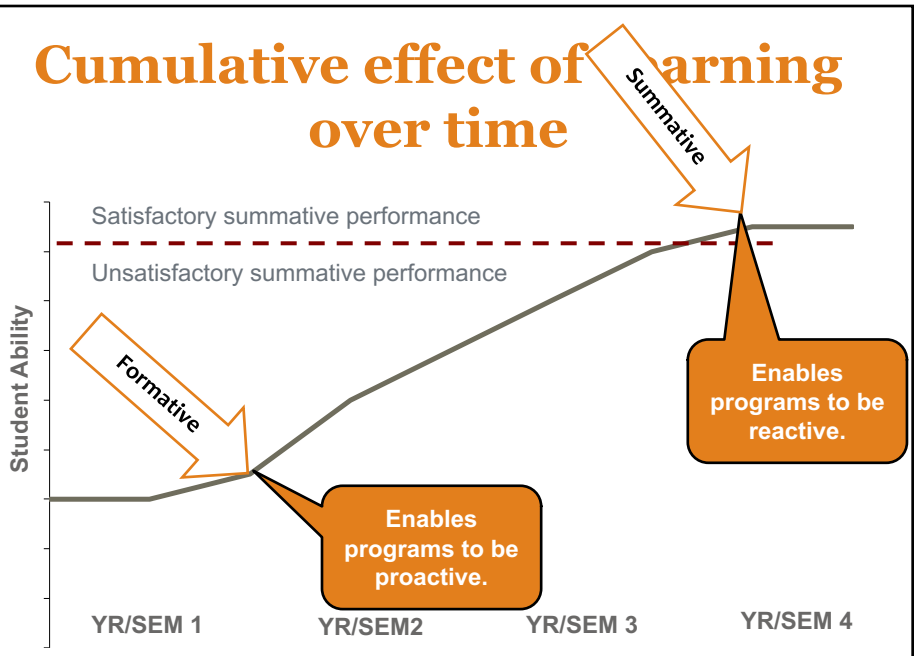
Cumulative effect of learning over time



Research results--Students learn best when:

1. Learning occurs best when we build on what students already know
2. Learning is an active process (importance of students active involvement in their own learning)
3. Learners perform best when expectations for their learning is clear.
4. Students learn best when they get feedback on their performance.
5. Students learn best when they can see the relevance for their career or personal lives.

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Importance of language

The absence of a common language impedes the ability to engage in meaningful conversations

Language conveys meaning and clarity

There is no common language in higher education around outcomes assessment

Institutions/programs should develop a common language in spite of differences among accrediting agencies/professional societies

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TERMS	DEFINITIONS
Student Outcomes	Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program.
Performance Indicators	Specific, measurable statements identifying student performance(s) required to meet the outcome; confirmable through evidence.
Assessment	Assessment is one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes. Effective assessment uses relevant direct, indirect, quantitative and qualitative measures as appropriate to the outcome being measured. Appropriate sampling methods may be used as part of an assessment process.
Evaluation	Evaluation is one or more processes for interpreting the data and evidence accumulated through assessment processes. Evaluation determines the extent to which student outcomes are being attained. Evaluation results in decisions and actions regarding program improvement.

ASSESSMENT TERMS	OTHER POSSIBLE TERMS FOR THE SAME CONCEPT
Student Outcomes	Goals, Objectives, Competencies, Standards, etc.
Performance Indicators	Criteria, Competencies, Outcomes, Standards, Rubrics, Specifications, Metrics, etc.
Assessment	Evaluation
Evaluation	Assessment

Conceptual Model for Program Improvement

How do all the pieces fit together?

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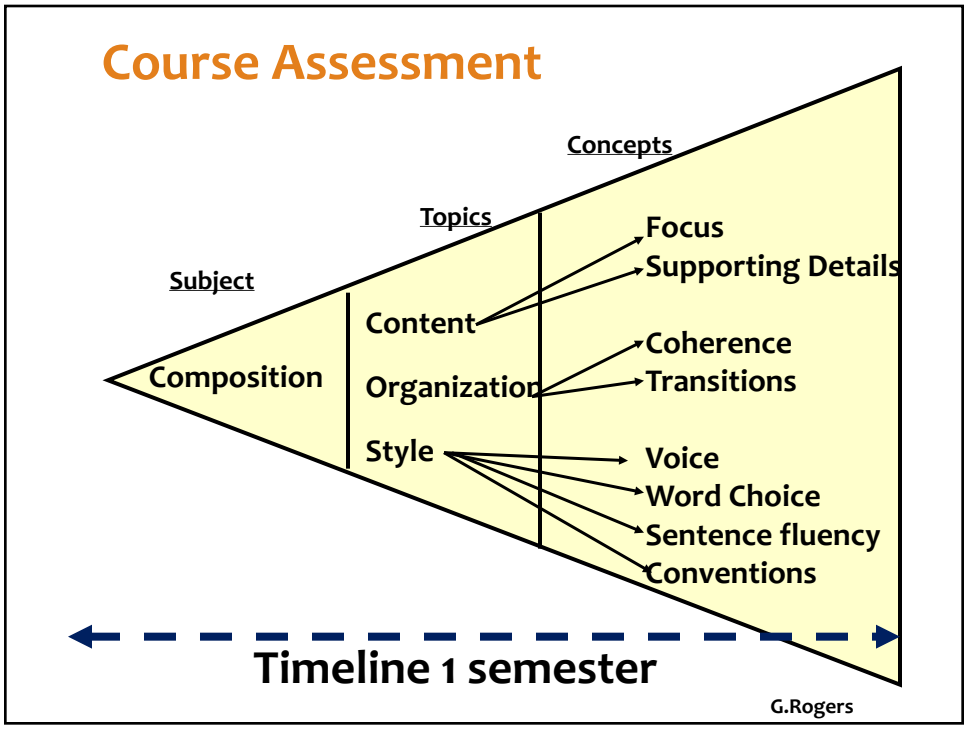
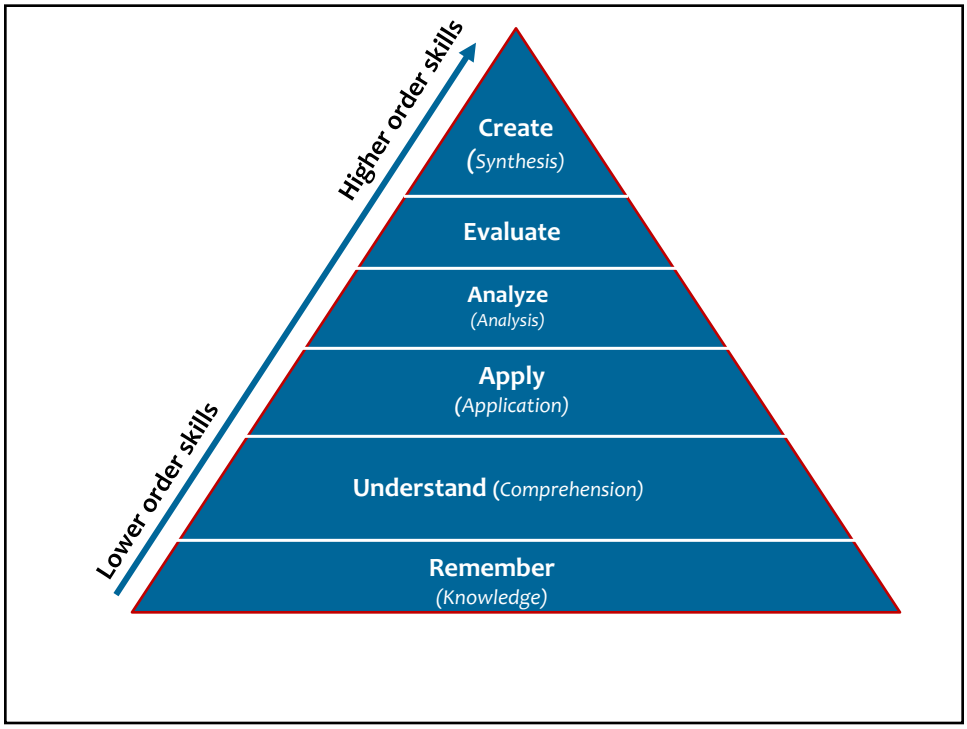
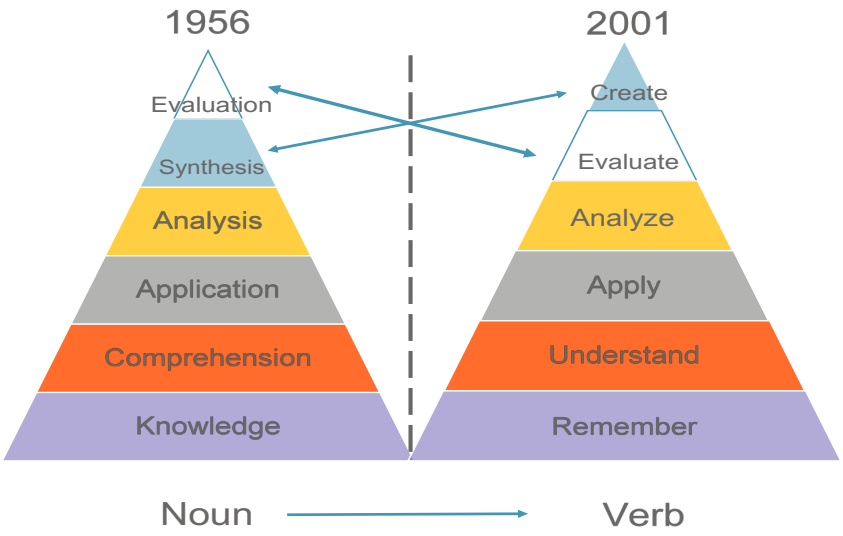

Course Assessment
Concepts
Topics
Subject
Content
Composition
Organization
Style
Focus
Supporting Details
Coherence
Transitions
Voice
Word Choice
Sentence fluency
Conventions
Timeline 1 semester
G.Rogers


Higher order skills
Lower order skills
Create
(Synthesis)
Evaluate
Analyze
(Analysis)
Apply
(Application)
Understand (Comprehension)
Remember
(Knowledge)

Changes to Bloom's Taxonomy

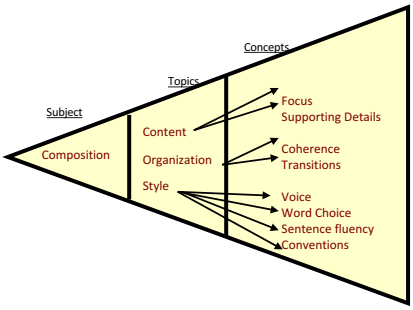


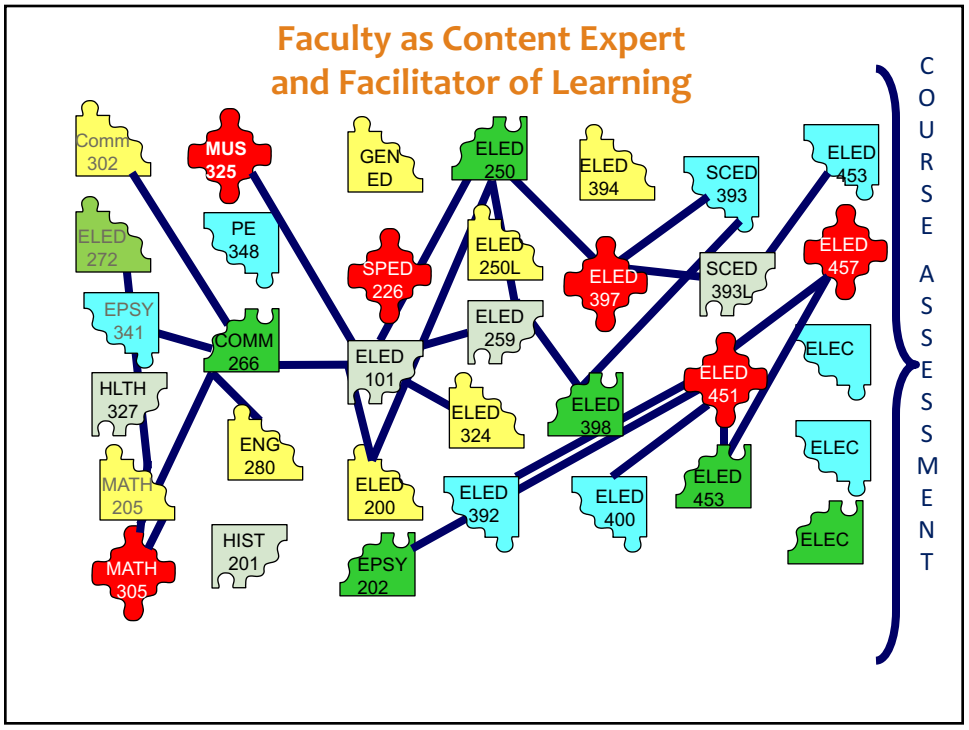
Great web reference: http://www.celt.iastate.edu/teaching/RevisedBlooms1.html
Great presentation: http://prezi.com/gb4mbz9vg7hg/blooms/

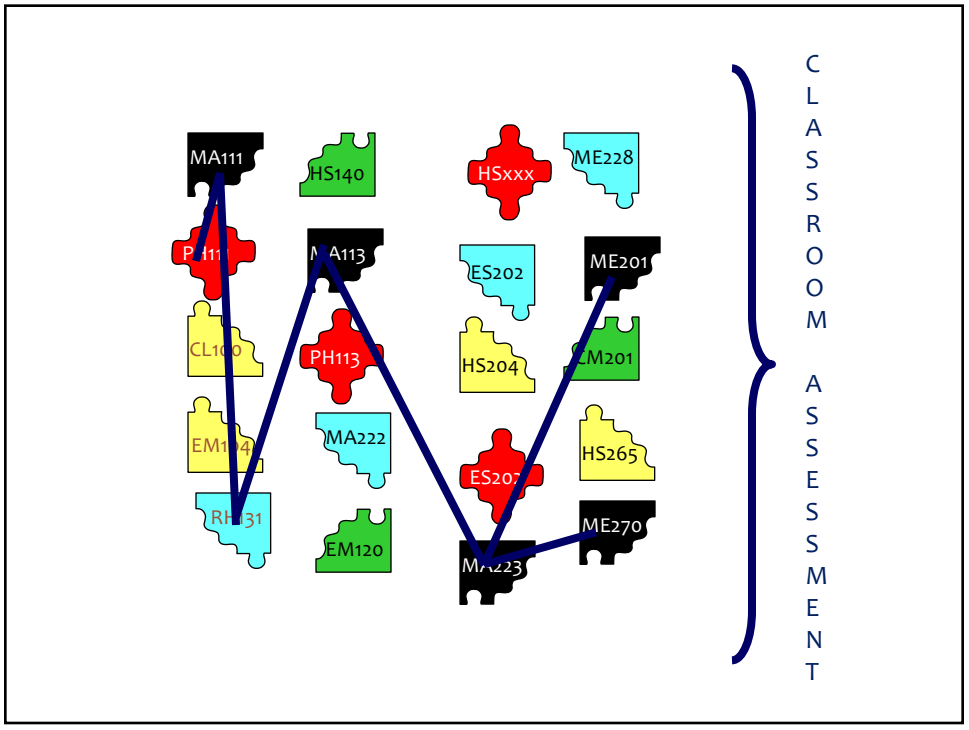
Anderson and Krathwohl, 2001

Course Assessment

- Cannot "cover" all topics related to subject matter
- Cannot "cover" all concepts related to each topic
- Decisions made based on context of course and characteristics of students
- Not all concepts are at the same performance (cognitive) level
- Assessment data taken at the concept level
- Assumptions related to performance on topics based on performance on concepts




Faculty as Content Expert
and Facilitator of Learning
Comm 302
MUS 325
GEN ED
ELED 250
ELED 394
SCED 393
ELED 453
ELED 272
PE 348
SPED 226
ELED 250L
ELED 397
SCED 393L
ELED 457
EPSY 341
COMM 266
ELED 101
ELED 259
ELED 451
ELEC
HLTH 327
ELED 324
ELED 398
ELEC
ENG 280
MATH 205
ELED 200
ELED 392
ELED 400
ELED 453
ELEC
HIST 201
MATH 305
EPSY 202
COURSE ASSESSMENT


MA111
HS140
HSxxx
ME228
ES202
ME201
HS204
CM201
PH113
MA222
HS265
EM120
ME270
CLASSROOM ASSESSMENT

Content Expert

Develop clear learning objectives

- What a student should know or be able to do at the end of the unit/course

Identify the "level" at which students should demonstrate the objective learning

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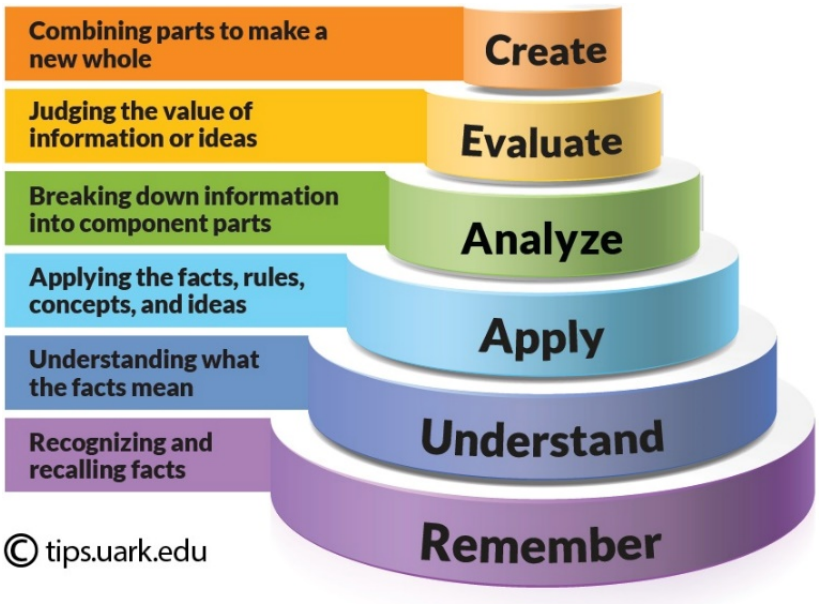
Content Expert



Faculty as Content Expert

Develop clear learning objectives

- What a student should know or be able to do at the end of the unit/course

Identify the "level" at which students should demonstrate the objective learning

Align assessments of learning with levels of performance indicators

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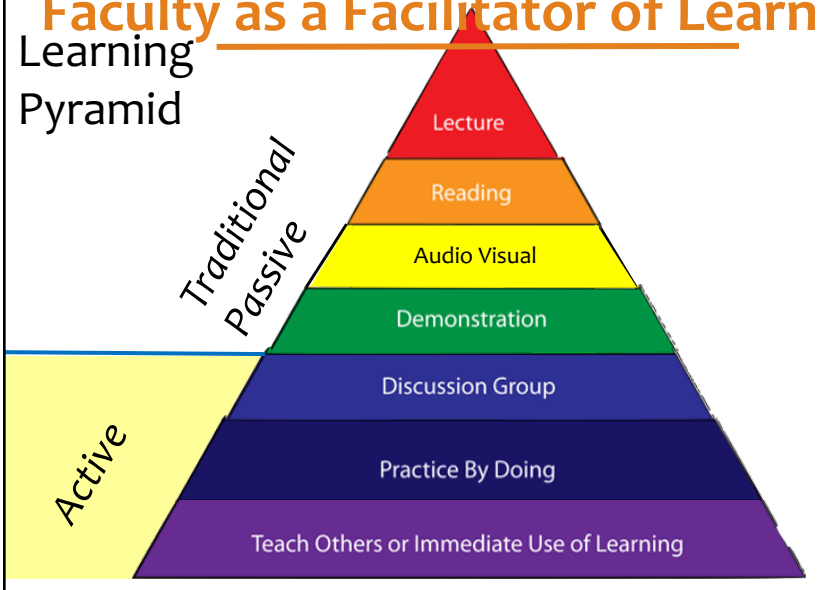
Faculty as a Facilitator of Learning

Learning Pyramid



The Learning Pyramid
National Training Laboratories, Bethel, Maine

Program Assessment

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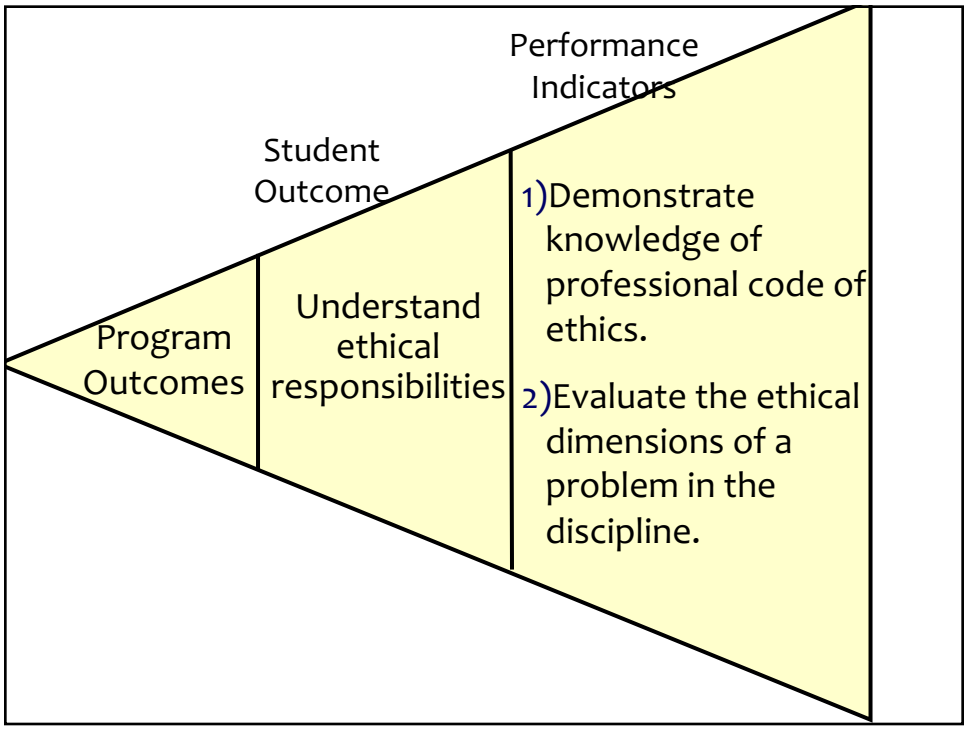
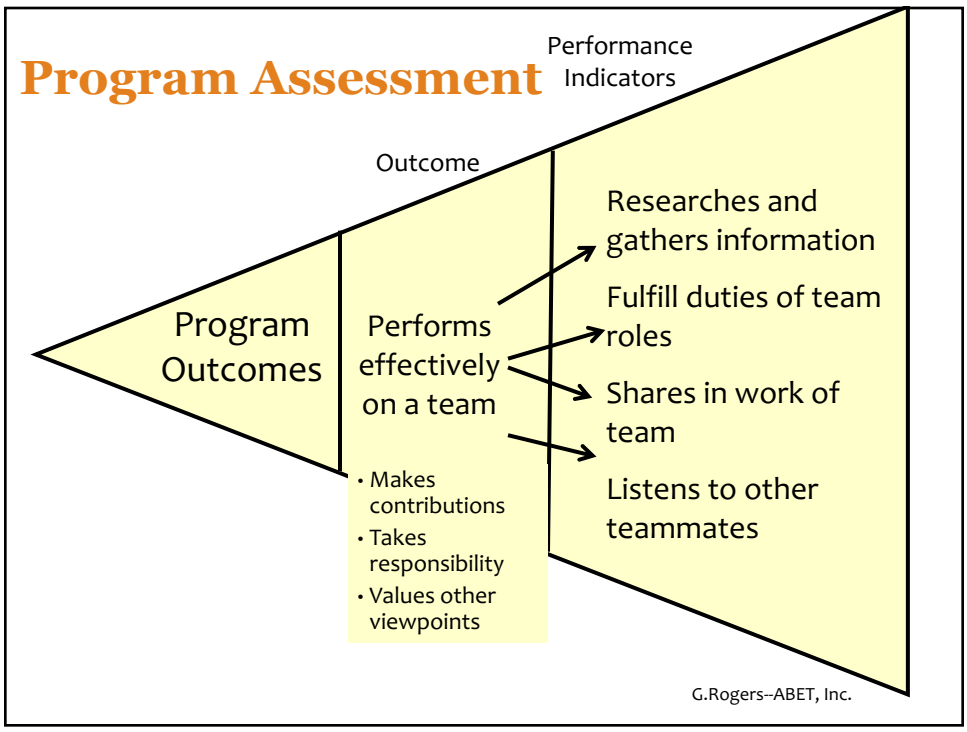
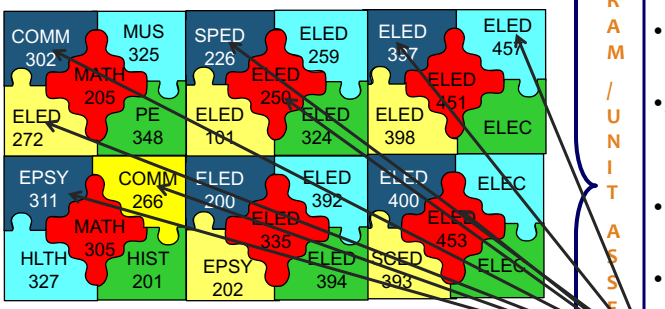




Course Assessment	Program Assessment
•Cannot "cover" all topics related to subject matter •Cannot "cover" all concepts related to each topic •Decisions made based on context of course and characteristics of students •Not all concepts are at the same performance (cognitive) level • Assessment data taken at the concept level •Assumptions related to performance on topics based on performance on concepts	Cannot "assess" all performance indicators related to each outcome Decisions made based on context of program and characteristics of students Not all performance indicators are at the same expectation (cognitive) level Assessment data taken at the performance indicator level Assumptions related to performance on outcomes based on demonstration of performance indicators

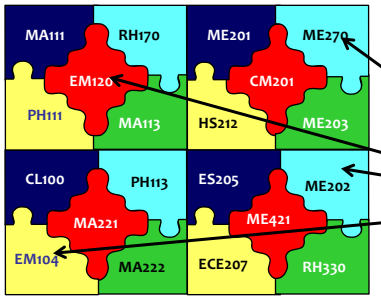
Faculty as a member of a learning community



PROGRAM / UNIT ASSESSMENT

Student Performance:

- Critical thinking
- Quantitative reasoning
- Appreciation of human expression
- Community service
- Diverse cultures
- Ethics
- Written and oral communication



PROGRAM ASSESSMENT

Learning Outcomes:

- Communication
- Information literacy
- Professionalism
- Critical reasoning
- Sustainable development
- Service learning

Differences between course and program assessment

- Degree of complexity
- Time span
- Accountability for the assessment process
- Cost
- Level of faculty buy-in
- Level of precision of the measure

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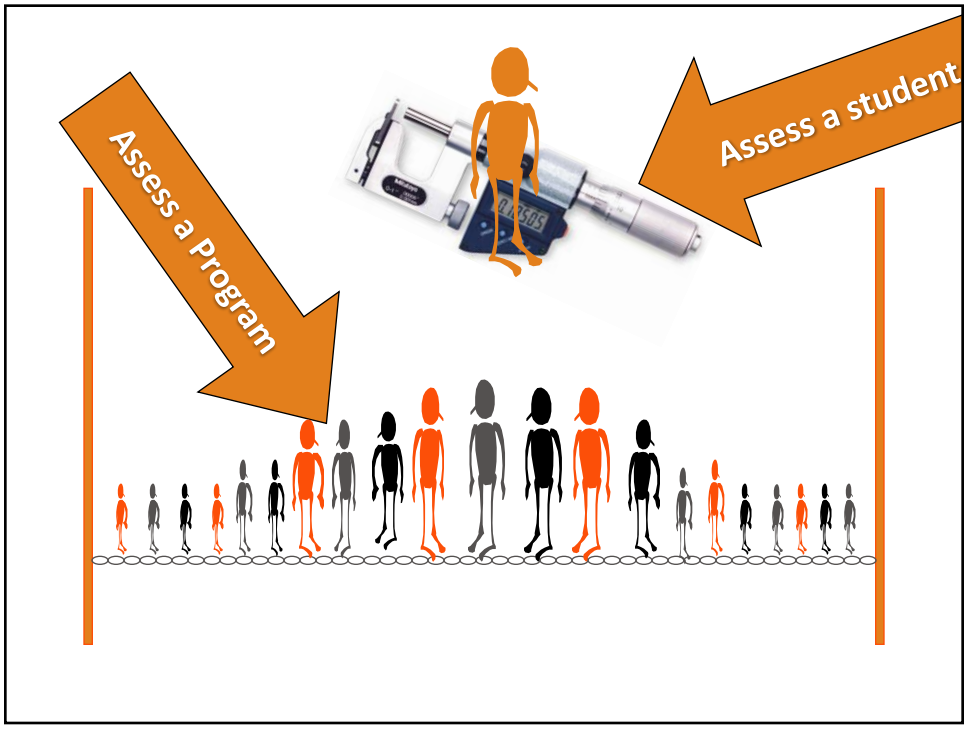

Simplifying the outcomes

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Outcomes: Be careful what you ask for

Analyze these two outcomes statements

- Understand and value the historical, economic, political and psychological forces that shape the development and consequences of the behavior of individuals, groups, and institutions
- Utilize contemporary information and communication systems; to recognize and value the interrelationships, between the ideological, sociological and technological adaptive systems and the impact of these systems on the human experience and the environment

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Developing Performance indicators

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Application:

Develop performance indicators

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Silent Brainstorming:

- Without talking to anyone at your table (silent) write as many Performance Indicators as possible for the outcome chosen by your table (5 minutes)
- ONLY ONE Per Post-it (if you write five performance indicators, you will have 5 post-its)

Performance Indicators have two essential parts:

- Subject content
  - Content that is the focus of instruction
  - Action verb which directs students to a specific performance

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Affinity Process

1. After completing the Silent Brainstorming, everyone at the table place all the post-its on the flip-chart paper
2. Because your table team was working on the same outcome, many of the performance Indicators will be similar
3. Move the post-its around and group all the ones with **similar CONTENT** together (**do not group them by VERB**)
4. After that is done, each grouping should represent **one Performance Indicator "content"**
5. Determine the appropriate level (action verb) for each grouping and label the grouping as one performance indicator
6. Use blank sheet at your table write the outcome and list the performance indicators (one per grouping) under it

Importance of well-stated Performance Indicators

Provides faculty with clear direction for implementation in the classroom

Makes expectations explicit to students (great pedagogy)

Focuses data collection

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Not all outcomes & indicators are the same

- Quantitative reasoning is not the same for programs in performing arts as it is for programs in computer science.
- Communication skills are not the same for students in Journalism as they are for students in Engineering.
- This does not mean that there are not minimum expectations for all students.
- However, superimposing gen ed indicators/rubrics on programs may not be appropriate or welcomed.

Writing Skills Rubric
http://www.kent.k12.wa.us/KSD/KR/CP/WritingSkillsRubric.doc

Gen Ed writing rubric

Objectives	Exceeds standard	Meets standard	Progressing to standard	Below standard
Focus	Maintains exceptional focus on the topic	Maintains consistent focus on the topic	Provides inconsistent focus on the topic	Demonstrates little or no focus
Supporting Details	Provides ample supporting details	Provides adequate supporting details	Includes so[illegible] may inc[illegible] or loo[illegible]erial	Includes inconsistent or few details which may interfere with the meaning of the text
Coherence	Organizational pattern is logical; conveys completeness & wholeness	Organizational pattern is logical; conveys completeness & [illegible] with few la[illegible]	[illegible] little completeness [illegible]oleness though organization attempted	Little evidence of organization or any sense of wholeness & completeness
Transitions	Provides transitions that eloquently serve to connect ideas	Provi[illegible] which s[illegible] ideas	Provides transitions which are weak or inconsistent	Uses poor transitions or fails to provide transitions
Voice	Allows the reader to se[illegible] the person behind t[illegible]	[illegible]e of the person [illegible] the words is [illegible]dent	Some sense of the person behind the words is attempted	Little or no sense of the person behind the words is evident
Word Choice	Uses effecti[illegible] makes e[illegible]priate word[illegible]dience & purpos[illegible]	Uses effective language & appropriate word choices for intended audience & purpose	Limited & predictable vocabulary, perhaps not appropriate for intended audience & purpose	Has a limited or inappropriate vocabulary for the intended audience & purpose
Sentence Fluency	Sentences/phrases appropriately varied in length & structure	Sentences/phrases somewhat varied in length & structure	Shows limited variety in sentence length & structure	Has little or no variety in sentence length & structure
Conventions	Consistently follows the rules of Standard English for conventions	Generally follows the rules for Standard English for conventions	Generally does not follow the rules of Standard English for conventions	Does not follow the rules of Standard English for conventions

Ability to write effectively

Program writing rubric

Objectives	Exceeds standard	Meets standard	Progressing to standard	Below standard
Supporting details provided to enhance the quality of the report	Provides clarity of detail that enhances the overall quality of the report	Provides details that support the premise of the report	Includes some details, but also includes extraneous or loosely [illegible]d material	Includes inconsistent or few details which interfere with the meaning of the text
Logical organizational pattern is used to enhance understanding	Organizational pattern is logical and conveys completeness & wholeness	Organizational pa[illegible] is logical with[illegible] minor lap[illegible] coher[illegible]	[illegible]e of [illegible]anization but completeness & wholeness is lacking	Little evidence of organization or any sense of wholeness & completeness
Use of language is appropriate to audience	Uses effective language; makes engaging, appropriate word choic[illegible] for audience & pur[illegible]	U[illegible] [illegible]te word [illegible]es for intended [illegible]dience & purpose	Limited & predictable vocabulary, perhaps not appropriate for intended audience & purpose	Has a limited or inappropriate vocabulary for the intended audience & purpose
Application of the rules of standard English	Consistent[illegible] rules of[illegible]glish for conve[illegible]	Basically follows the rules for Standard English for conventions with only minor lapses	Generally does not follow the rules of Standard English for conventions	Does not follow the rules of Standard English for conventions
Use of graphics that enhance audience understanding	Figures and charts are appropriate, clear and communicate well to the audience	Figures and charts are clear and, with a few exceptions, communicate clearly to the audience.	Figures and charts are used to communicate but lack consistency in format and style detracting from audience understanding.	Figures and charts are missing or have deficiencies in formatting and style which detract from understanding.

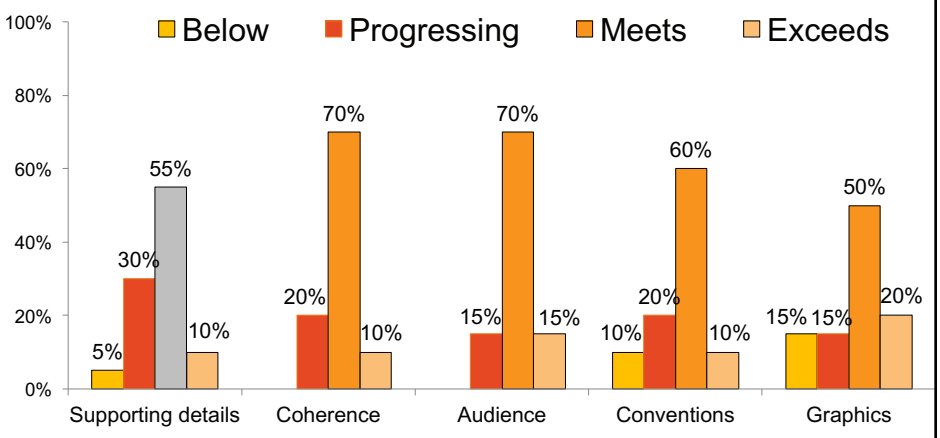
Adapted from http://www.kent.k12.wa.us/KSD/KR/CP/WritingSkillsRubric.doc

Ability to write effectively

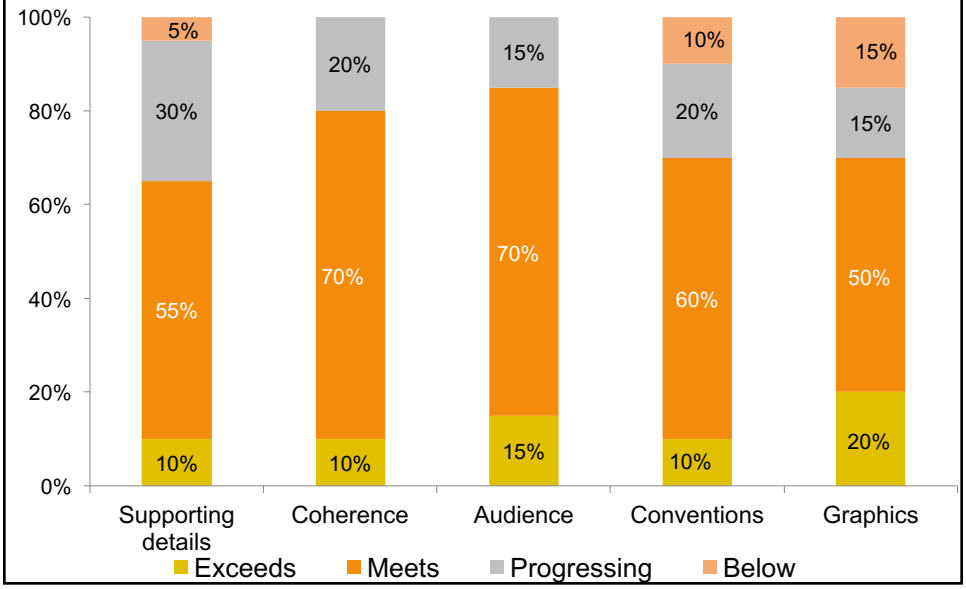
Objectives				
Supporting details provided to enhance the quality of the report	**Provides clarity of detail that enhances the overall quality of the report**	**Provides details that support the premise of the report**	**Includes some details, but also includes extraneous or loosely related material**	**Includes inconsistent or few details which interfere with the meaning of the text**
Logical organizational pattern is used to enhance understanding	**Organizational pattern is logical and conveys completeness & wholeness**	**Organizational pattern is logical with only minor lapses in coherence**	**Evidence of organization but completeness & wholeness is lacking**	**Little evidence of organization or any sense of wholeness & completeness**
Use of language is appropriate to audience	**Uses effective language; makes engaging, appropriate word choices for audience & purpose**	**Uses effective language & appropriate word choices for intended audience & purpose**	**Limited & predictable vocabulary, perhaps not appropriate for intended audience & purpose**	**Has a limited or inappropriate vocabulary for the intended audience & purpose**
Application of the rules of standard English	**Consistently follows the rules of Standard English for conventions**	**Basically follows the rules for Standard English for conventions with only minor lapses**	**Generally does not follow the rules of Standard English for conventions**	**Does not follow the rules of Standard English for conventions**
Use of graphics that enhance audience understanding	**Figures and charts are appropriate, clear and communicate well to the audience**	**Figures and charts are clear and, with a few exceptions, communicate clearly to the audience.**	**Figures and charts are used to communicate but lack consistency in format and style detracting from audience understanding.**	**Figures and charts are missing or have deficiencies in formatting and style which detract from understanding.**

Communication Skills

(60 students/2 sections)



Communication Skills
(60 students/2 sections)



Curriculum Maps

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Linking Results to Practice

Development of Curriculum Map

Linking curriculum content/pedagogy to knowledge, practice and demonstration of outcomes

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Power of the Map

- Provides faculty with understanding of how what they do intersects with other courses and supports the overall development of student learning
- Provides students with an understanding of learning expectations and that their learning is cumulative over time
- Enables meaningful evaluation and actions to improve student learning

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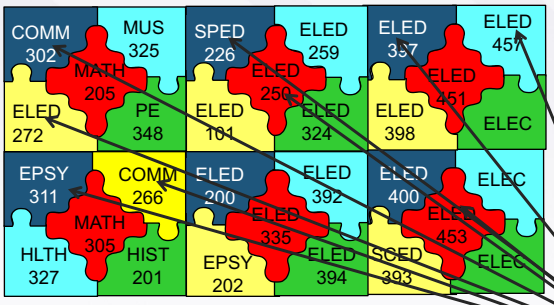
Art of asking questions

- What is the student experience related to the outcomes/performance indicators?
- Where are students getting a chance to:
  - Learn
  - Practice
  - Develop
  - Get feedback on their learning
- Where can we collect meaningful data?
- What do the data mean?

Faculty as a member of a learning community



PROGRAM/UNIT ASSESSMENT

Student Performance:

- Critical thinking
- Quantitative reasoning
- Appreciation of human expression
- Community service
- Diverse cultures
- Ethics
- Written and oral communication

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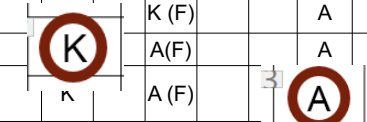
Student Outcomes:	MA 207	MA 208	CS 214	ENG 200	MATH 365	CS 201	CS 203	CS 211	CS 231	CS 241	CS 310	CS 312	CS 325	CS 412	CS 424
Written Communication				x		x			x				x		x
Problem Solving			x					x	x	x	x	x	x	x	x
Quantitative Reasoning					x		x				x	x		x	x
Oral Communication						x		x	x	x					x
Technology and Information Literacy			x			x		x						x	

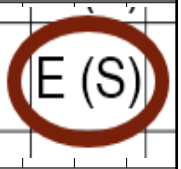
	MA 207	MA 208	CS 214	ENG 200	MATH 365	CS 201	CS 203	CS 211	CS 231	CS 241	CS 310	CS 312	CS 325	CS 412	CS 424
WRITTEN COMMUNICATION															
Identify a subject and formulate a thesis statement.															R
Organize ideas to support a position.													R		R
Write in a unified and coherent manner appropriate to the subject matter.													R		R
Use appropriate sentence structure and vocabulary.				I									R		R
Document references and citations according to an accepted style manual.													R		R
PROBLEM SOLVING															
Identify computing problems and apply creative solutions.								I	R	R	R		R	E	E
Identify and apply leadership techniques.								I					R	E	E
Translate concepts into current computing environments.								I	R	R	R		R	E	E
Analyze complex problems by identifying and evaluating the components of the problem.								I			R	R	E	E	E
QUANTITATIVE REASONING															
Apply quantitative methods to solving real-world problems.					I		R				R	R		E	E
Perform necessary computations to solve quantitative problems.					I		R				R	R		E	E
Evaluate information presented in tabular, numerical, and graphical form.															
Recognize the reasonableness of numeric answers.															

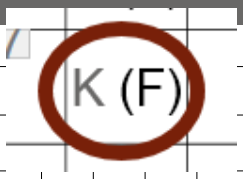
Performance indicators faculty wi directio implementation in the classroom.

I = Introduce (knowledge/comprehension)
R = Reinforce (application/analysis)
E = Emphasize (evaluation/synthesis)

	MA 207	MA 208	CS 214	ENG 200	MATH 365	CS 201	CS 203	CS 211	CS 231	CS 241	CS 310	CS 312	CS 325	CS 412	CS 424
WRITTEN COMMUNICATION															
Identify a subject and formulate a thesis statement.						K (F)			A						A (S)
Organize ideas to support a position.				K		A(F)			A				A		A (S)
Write in a unified and coherent manner appropriate to the subject matter.						A (F)			A				A		A (S)
Use appropriate sentence structure and vocabulary.				K		A (F)			A				A		A (S)
(S)Document references and citations according to an accepted style manual.						K (F)			A				A		A (S)
PROBLEM SOLVING															
Identify computing problems and apply creative solutions.								K (F)	A	A	A				
Identify and apply leadership techniques.								K (F)							
Translate concepts into current computing environments.								K (F)	A	A	A				
Analyze complex problems by identifying and evaluating the components of the problem.								K (F)			A	A			
QUANTITATIVE REASONING															
Apply quantitative methods to solving real-world problems.											A	A			(S)
Perform necessary computations to solve quantitative problems.											A	A			(S)
Evaluate information presented in tabular, numerical, and graphical form.															
Recognize the reasonableness of numeric answers.					K (F)		A								







K= Knowledge/Comprehension;
A= Application / Analysis;
E= Evaluate/Create

BUSINESS ADMINISTRATION MAP	MACRO - ECONOMICS	MICRO-ECONOMIC	MICROCOMP APP FOR BUS	WRITING FOR BUS	PRE-CAL (BUS)	INTRO TO BUS	BUS STATISTICS	PRIN MGMT	PRIN MKTG	INTERNATIONAL BUS	PRIN ACCTG I	PRIN ACCTG II	BUS LAW I	MTG FINANCE
	ECON 207	ECON 208	CS 214	ENG 200	MATH 1165	BUSI 201	BUSI 203	BUSI 211	BUSI 231	BUSI 241	BUSI 251	BUSI 252	BUSI 281	BUSI 371
WRITING COMPETENCIES														
Identify a subject and formulate a thesis statement.						I			D					
Organize ideas to support a position.				I		D			D				D	
Write in a unified and coherent manner appropriate to the subject matter.				I		D			D				D	
Use appropriate sentence structure and vocabulary.				I		D			D				D	
Document references and citations according to an accepted style manual.						I			D				D	
CRITICAL THINKING COMPETENCIES														
Identify business problems and apply creative solutions.								I	D	D	D		D	M
Identify and apply leadership techniques.								I					D	M
Translate concepts into current business environments.								I	D	D	D		D	M
Analyze complex problems by identifying and evaluating the components of the problem.								I			D	D	M	M
QUANTITATIVE REASONING COMPETENCIES														
Apply quantitative methods to solving real-world problems.					I		D				D	D		M
Perform necessary arithmetic computations to solve quantitative problems.					I									
					I									

'Assessing for Learning' by Peggy L Maki, Stylus Publishing, 2004
Source: New Jersey City University Business Administration Program

I= Introduced;
D= Developed/Reinforced;
M= Mastery

Compile the Results of the Mapping:
Written communication skills (all performance indicators)

	FIRST YEAR	SOPHOMORE	JUNIOR	SENIOR
FALL	Intro to Eng	Statics	Materials	Design I - A
	Chem I	Physics II	Diff Eq	Biomech
	Composition I	Cacl III	Bio Instrum I	Biomaterials II - A
	Calc I	Comp Prog	Eng Elective	Phys Sys
	Biology I	Elective	Gen Ed	Tissue Eng
	Gen Ed			Seminar - A
SPRING	Intro Design - A	Dynamics	Thermo	Design II - A
	Chem II	Org Chem	Bio Instrum II	Fluids
	Physics I	Calc IV	Biomaterials I - A	Eng Elective
	Calc II	Sys Modeling	Biosystems	Elective
	Composition II	Eng Elective	Tech Writing	Gen Ed
	Gen Ed			

Role of curriculum map in evaluation and decision making

What do the data show related to the curriculum map?

- Where were data taken?
- Were there both formative and summative data? If not, do we need to also be collecting some formative data?
- To what extent is the learning introduced, reinforced and developed?
- Where are students getting feedback on their performance?
- Are there gaps in the offerings?

Assessment Methods

- Written surveys and questionnaires
- Exit and other interviews
- Standardized exams
- Locally developed exams
- Archival records
- Focus groups
- Portfolios
- Simulations
- Performance appraisal
- External examiner
- Oral exams
- Behavioral observations

HIGHER LEARNING COMMISSION

Direct Measures

Direct measures provide for the direct examination or observation of student knowledge or skills against measurable performance indicators.

HIGHER LEARNING COMMISSION

Indirect Measures

Indirect measures of student learning that ascertain the opinion or self-report of the extent or value of learning experiences

HIGHER LEARNING COMMISSION

Direct	Indirect
Exit and other interviews	Written surveys and questionnaires
Standardized exams	Exit and other interviews
Locally developed exams	Archival records
Portfolios	Focus groups
Simulations	
Performance appraisal	
External examiner	
Oral exams	
Behavioral observations	

Whether or not a particular assessment method is direct or indirect depends on the nature of what is being measured and how the method is being used.

What method is best for YOU?

✓relevance - the assessment option measures the student outcome as *directly* as possible

✓accuracy - the option measures the student outcome as *well* as possible

✓utility - the option provides formative and summative results with *clear implications* for program evaluation and improvement

HIGHER LEARNING COMMISSION

Assessment Method "Truisms"

✓There will always be more than one way to measure any student outcome

✓No single method is good for measuring a wide variety of different student abilities

✓There is generally an inverse relationship between the quality of measurement methods and their expediency

✓It is important to pilot test to see if a method is appropriate for your program

HIGHER LEARNING COMMISSION

Choosing assessment methods

HIGHER LEARNING COMMISSION

Types of Assessment

FORMATIVE VS. SUMMATIVE	Formative – those undertaken as students progress through the course/curriculum; the purpose is to identify areas of learning that need to be improved before the end of the course/program.	Summative – obtained at the end of a course or program; the purpose of which is to document student learning; designed to capture students' achievement at the end of their program of study
DIRECT VS. INDIRECT	Direct – Provides for the direct examination or observation of student knowledge or skills against measurable student outcomes.	Indirect – Ascertains the opinion or self-report of the extent or value of learning.
OBJECTIVE VS. SUBJECTIVE	Objective – one that needs no professional judgment to score correctly; examples: multiple-choice, true-false, exams where there is a finite number of "right" answers	Subjective – yield many possible answers of varying quality and require professional judgment to score
EMBEDDED VS. ADD-ON	Embedded – program assessments that are taken as a part of the course work	Add-on – assessments that are in addition to course requirements
QUANTITATIVE VS. QUALITATIVE	Quantitative –predetermined response options that can be summarized into meaningful numbers and analyzed statistically	Qualitative – use flexible, naturalistic methods and are usually analyzed by looking for recurring patterns and themes

Knowledge (Remembering previous learned information)	-Complete multiple choice -Fill in the blank -Provide oral response	Complete true/false -Develop a list
Comprehension (Grasping the meaning of Information previously presented)	-Give an analogy -Create an outline -Summarize in own words	-Create a concept map -Graph the answer -Match term with a definition
Application (Using principle/formula /processes previously learned)	-Compute an answer -Solve a problem similar to previous problems -Solve a problem in a new setting	-Create a model -Use theory or principle to explain an event or phenomena
Analysis (Breaking down objects or ideas into simpler parts and seeing how the parts relate and are organized)	-Deconstruct a model -Group like items together -Identify cause and effect	--Discuss an event/ perspective from multiple perspectives -Present the potential impact resulting from a decision or choice
Evaluation (Making judgments based on internal evidence or external criteria)	-Choose best among options and defend your choice -Develop criteria for judgment and apply to a solution	-Rank best to worse using set criteria -Recommend and defend choice for action -Determine the degree of success or failure of an action or event
Create (Making or producing something based on	-Create an end-of program capstone project	-Design an original approach to a situation or problem

Grades ≠ Assessment

- Grades have limited use for program assessment as they do not have diagnostic value.
- Grades can be a 'flag,' but do not point to specific strengths and weaknesses of what students know or can do.
- A student's grade in a course or on a project or exam represents the student's performance on an set of aggregated knowledge/skills.

HIGHER LEARNING COMMISSION

Types of Rubrics

Holistic rubrics provide general information about student learning

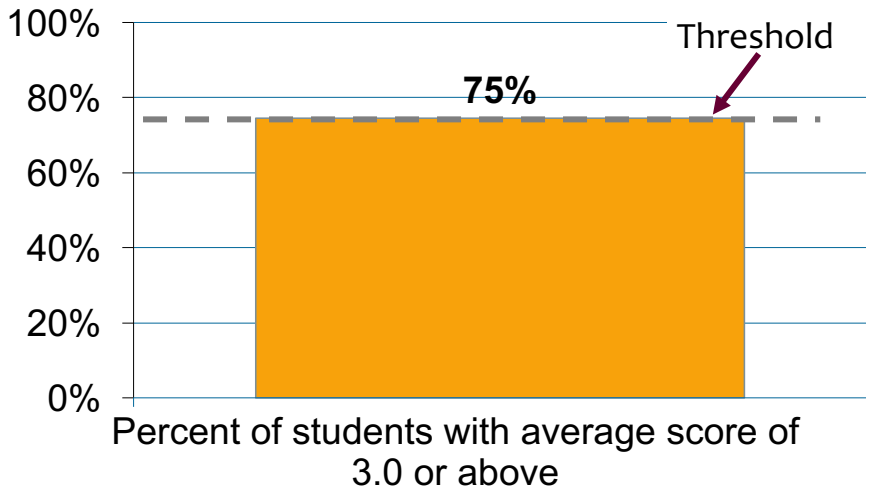
- Raters make judgments by forming an overall impression of a performance and matching it to the best fit from among the descriptors on the scale
- Each category on the scale describes performance on several Performance Indicators

HIGHER LEARNING COMMISSION

Work Effectively in Teams
(Holistic Rubric)

Unsatisfactory	Developing	Satisfactory	Exemplary
• Does not collect any information that relates to the topic. • Does not perform any duties of assigned team role. • Always relies on others to do the work. • Is always talking--never allows anyone else to speak.	• Collects some information relate to the topic but incomplete. • Inconsistently performs duties that are assigned • Rarely does the assigned work--often needs reminding. • Usually doing most of the talking--rarely allows others to speak.	• Collects basic information related the topic. • Performs duties that are assigned • Usually does the assigned work--rarely needs reminding. • Listens most of the time	• Collects a great deal of information which goes beyond the basics. • Performs all duties assigned and actively assists others. • Always does the assigned work without having to be reminded. • Consistently listens and responds to others appropriately.

Work effectively in teams (N=67)



Types of Rubrics

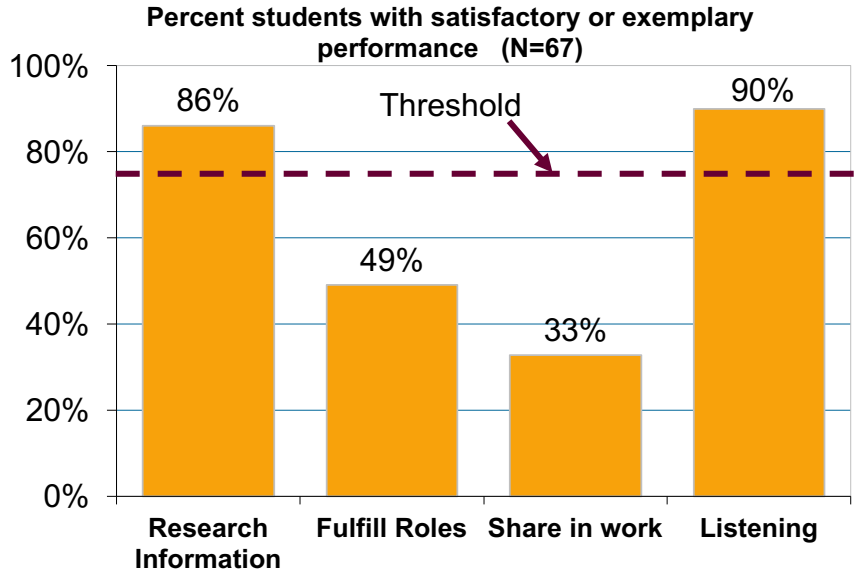
Analytic rubrics focus on specific dimensions of student performance related to Performance Indicators.

- Dimensions are presented in separate categories and rated individually.
- Each Performance Indicator is rated separately.

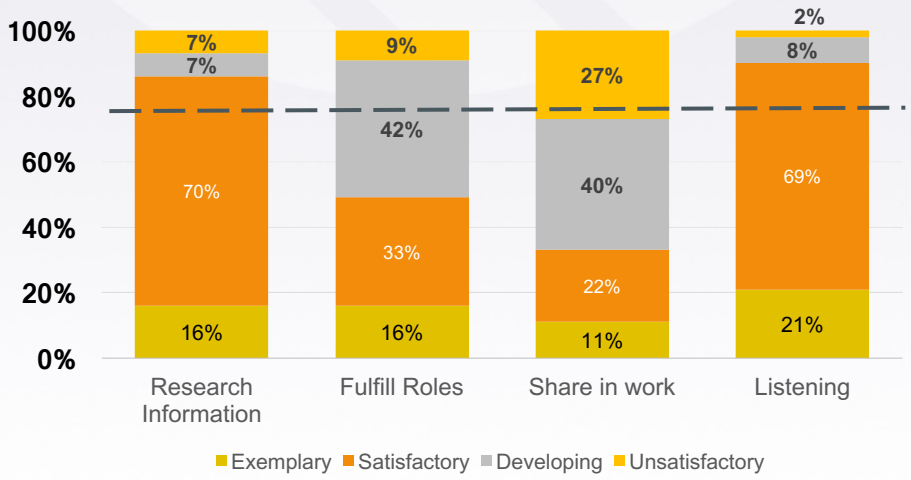
Work Effectively in Teams
(Analytic Rubric)

	Unsatisfactory	Developing	Satisfactory	Exemplary
Research & Gather Information	Does not collect any information that relates to the topic.	Collects very little information--some relates to the topic.	Collects some basic information--most relates to the topic.	Collects a great deal of information--all relates to the topic.
Fulfill Team Role's Duties	Does not perform any duties of assigned team role.	Performs very little duties.	Performs nearly all duties.	Performs all duties of assigned team role.
Share in work of team	Always relies on others to do the work.	Rarely does the assigned work--often needs reminding.	Usually does the assigned work--rarely needs reminding.	Always does the assigned work without having to be reminded.
Listen to Other Teammates	Is always talking--never allows anyone else to speak.	Usually doing most of the talking--rarely allows others to speak.	Listens, but sometimes talks too much.	Listens and speaks a fair amount.

Work effectively in Teams



Work effectively in Teams



HIGHER LEARNING COMMISSION

Strengths of Analytic Rubrics

- Provides information about relative strengths and weaknesses related to an outcome
- Provides detailed feedback which can be used to promote curricular enhancements
- Useful for assessment of more abstract or complex skills or performance
- Provides students an opportunity to self-assess their understanding or performance

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Please rate each member of the team on the following scale:

Unsatisfactory 1 | Developing 2 | Satisfactory 3 | Exemplary 4

Name	Performance Indicator	1	2	3	4
	Produces research information for team				
	Demonstrates understanding of team roles when assigned				
	Shares in the work of the team				
	Demonstrates good listening skills				
	Produces research information for team				
	Demonstrates understanding of team roles when assigned				
	Shares in the work of the team				
	Demonstrates good listening skills				
	Produces research information for team				
	Demonstrates understanding of team roles when assigned				
	Shares in the work of the team				
	Demonstrates good listening skills				
	Produces research information for team				
	Demonstrates understanding of team roles when assigned				
	Shares in the work of the team				
	Demonstrates good listening skills				

Work Effectively in Teams

	Unsatisfactory	Developing	Satisfactory	Exemplary
Research & Gather Information	Does not collect any information that relates to the topic.	Collects some information relate to the topic but incomplete.	Collects basic information related the topic.	Collects a great deal of information which goes beyond the basics.
Fulfill Team Role's Duties	Does not perform any duties of assigned team role.	Inconsistently performs duties that are assigned	Performs duties that are assigned	Performs all duties assigned and actively assists others.
Share in work of team	Always relies on others to do the work.	Rarely does the assigned work--often needs reminding.	Usually does the assigned work--rarely needs reminding.	Always does the assigned work without having to be reminded.
Listen to Other Teammates	Is always talking--never allows anyone else to speak.	Usually doing most of the talking--rarely allows others to speak.	Listens most of the time	Consistently listens and responds to others appropriately.

Student	Research & Gather Information	Fulfill Team Role's Duties	Share in work of team	Listen to Other Teammates
Marcus Wellman	Satisfactory	Satisfactory	Satisfactory	Satisfactory
David Willison	Satisfactory	Developing	Satisfactory	Exemplary
Dottie Whitely	Developing	Developing	Developing	Satisfactory
...n...	...	...	...	...

Difference between data and information

HIGHER LEARNING COMMISSION

Writing Skills Rubric (Revised)
http://www.kent.k12.wa.us/KSD/KR/CP/WritingSkillsRubric.doc

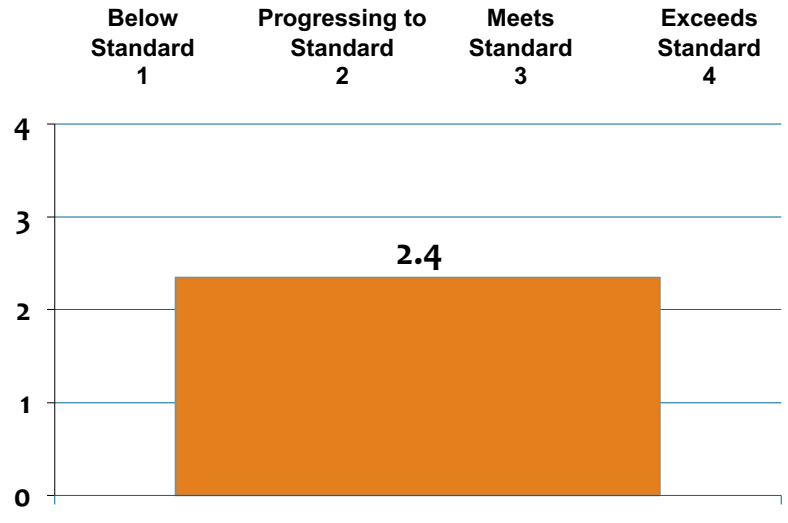
		Exceeds standard	Meets standard	Progressing to standard	Below standard
Content	Supporting Details	**Provides ample supporting details**	**Provides adequate supporting details**	**Includes some details, but may include extraneous or loosely related material**	**Includes inconsistent or few details which may interfere with the meaning of the text**
Organization	Coherence	**Organizational pattern is logical &; conveys completeness & wholeness**	**Organizational pattern is logical &; conveys completeness & wholeness with few lapses**	**Achieves little completeness & wholeness though organization attempted**	**Little evidence of organization or any sense of wholeness & completeness**
Style	Audience	**Uses effective language; makes engaging, appropriate word choices for audience & purpose**	**Uses effective language & appropriate word choices for intended audience & purpose**	**Limited & predictable vocabulary, perhaps not appropriate for intended audience & purpose**	**Has a limited or inappropriate vocabulary for the intended audience & purpose**
	Conventions	**Consistently follows the rules of Standard English for conventions**	**Generally follows the rules for Standard English for conventions**	**Generally does not follow the rules of Standard English for conventions**	**Does not follow the rules of Standard English for conventions**
	Graphics	**Figures and charts are appropriate, clear and communicate well to the audience**	**Figures and charts are clear and, with few exceptions, communicate clearly to the audience.**	**Figures and charts are used to communicate but lack consistency in format and style detracting from audience understanding.**	**Figures and charts are missing or have deficiencies in formatting and style which detract from understanding.**

Student scores

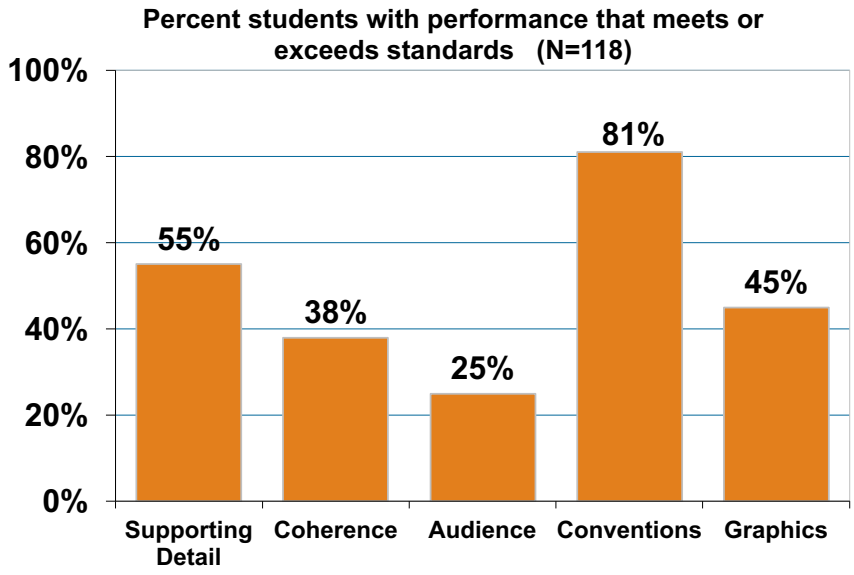
Student	Supporting Details	Coherence	Audience	Conventions	Graphics	Total
1	3	2	2	3	2	10
2	2	2	3	3	3	10
3	3	3	3	3	3	12
4	3	3	2	3	2	11
5	3	3	3	4	3	13
6	3	3	2	3	2	11
7	4	3	3	3	3	13
8	3	3	3	4	3	13
9	3	2	4	3	4	12
10	4	3	2	2	2	11
11	3	3	3	3	3	12
12	2	3	3	3	3	11
13	3	3	3	2	3	11
14	2	2	3	2	3	9
15	3	3	4	3	4	13
16	4	2	4	2	4	12
17	4	3	3	2	3	12
18	3	3	3	3	[illegible]	12
19	3	3	4	3	4	13
n…60	2	3	3	2	3	10
Average	**2.4**	**2.1**	**2.3**	**2.1**	**2.85**	**2.35**

Writing Skills

Average Scores (N=118)



Writing Skills



Assessment summary

Assessment enables:

Students

- To self-regulate their learning
- To understand what they need to do to improve
- To situate their learning to their personal goals
- To articulate what they are learning

Faculty

- To understand student progression toward achievement of learning outcomes
- To adapt instructional practice to meet the needs of diverse learners
- To share findings with faculty colleagues for curricular improvements

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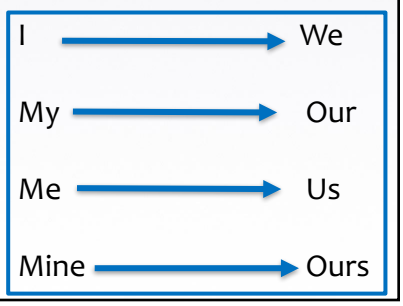
Faculty role as a member of a learning community

- Faculty:
  - From what I DO
  - To engaging in conversations with colleagues about what students are learning and how to improve the learning environment
- Students:
  - From listing courses that they have taken
  - To describing the knowledge/skills that they have achieved

HIGHER LEARNING COMMISSION

Faculty as a member of learning community

- Transfer what we learn from our assessment in the course to the program
- Expanding the conversation
  - From "my" course
  - To "our" curriculum



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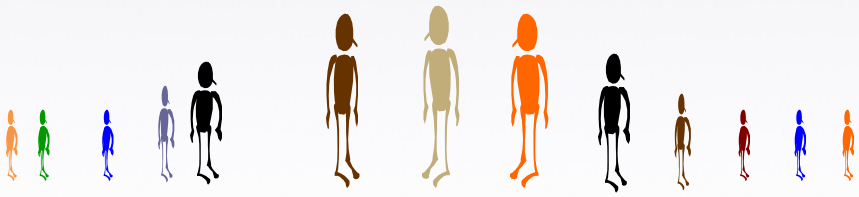
Sampling

For program assessment, sampling is acceptable and even desirable for programs of sufficient size.

- Sample is representative of all students



HIGHER LEARNING COMMISSION

Data Collection Process

Why?

- Know your question

What?

- Focus on few indicators for each outcome

Who? Students (cohorts); faculty (some)

When?

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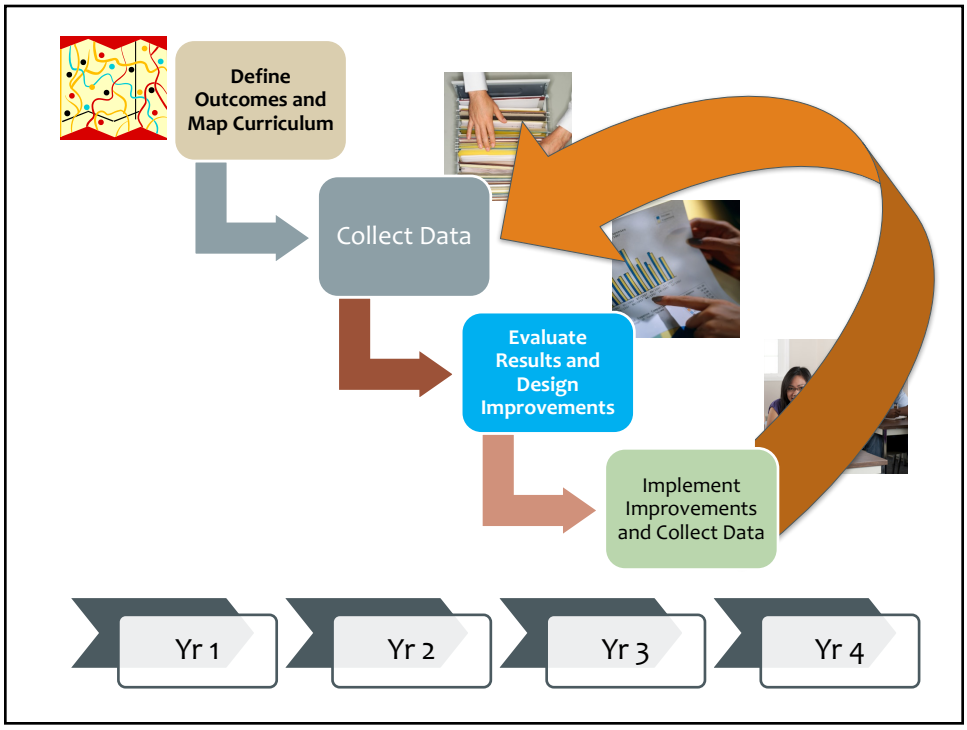
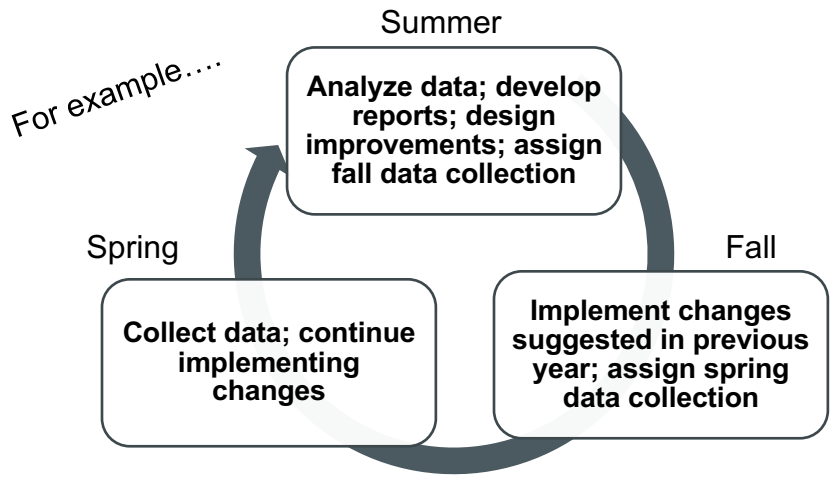


STUDENT OUTCOMES	15-16	16-17	17-18	18-19	19-20	20-21
A recognition of ethical and professional responsibilities	A	E	C	A	E	C
An understanding of how contemporary issues shape and are shaped by mathematics, science, & engineering		A	E	C	A	E
An ability to recognize the role of professionals in the global society			A	E	C	A
An understanding of diverse cultural and humanistic traditions	A	E	C	A	E	C
An ability to work effectively in teams		A	E	C	A	E
An ability to communicate effectively in o written, graphical, and visual forms						

A= Assess; E= Evaluate; C= Change (if necessary)

STUDENT OUTCOMES	15-16	16-17	17-18	18-19	19-20	20-21
A recognition of ethical and professional responsibilities	A	E	C	A	E	C
An understanding of how contemporary issues shape and are shaped by mathematics, science, & engineering		A	E C	A	E C	A
An ability to recognize the role of professionals in the global society			A	E	C	A
An understanding of diverse cultural and humanistic traditions	A	E C	A	E C	A	E C
An ability to work effectively in teams		A	E	C	A	E
An ability to communicate effectively in oral, written, graphical, and visual forms			A	E	C	A

Establish an Annual Cycle



Evaluation

- Assessment is not a controlled experiment
- This is a *data-informed*, not data-driven process
- Evaluation
  - One or more processes for interpreting the data and evidence accumulated through assessment processes
  - Determines the extent to which student outcomes are being attained
  - Results in decisions and actions regarding program improvement

Evaluation

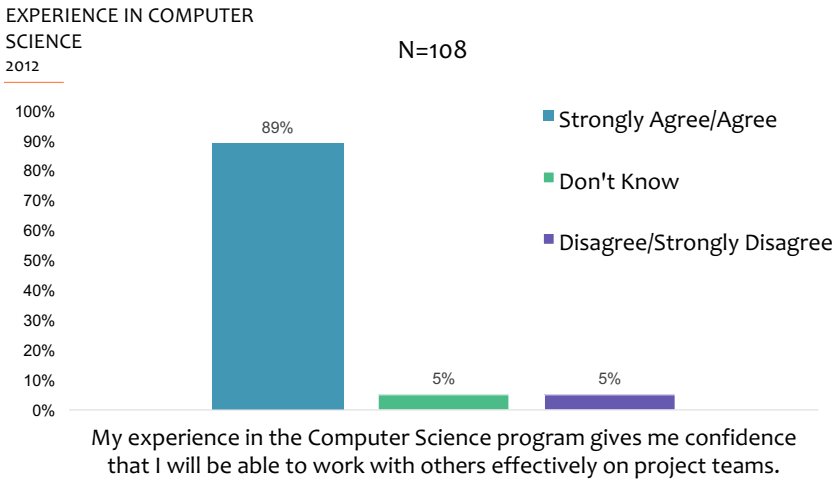
- Evaluation = data + wisdom
  - Data are necessary but not sufficient
- Take advantage of faculty wisdom and insight
  - NOT just anecdotal, but includes the human element as well
  - ~~Data~~ Information tells you WHAT
  - Wisdom tells you WHY
    - Why are students not at the level of learning that we anticipated?
- Action taken should be consistent with principles of student learning
    - What can we do to take them to the next level?

Evaluation

- Evaluation application (20 minutes)
  - Thinking about all the things we have discussed to this point, read your assigned scenario and discuss the questions at the end. Be sure to have someone to take notes on your suggestions/observations.
  - Report out

HIGHER LEARNING COMMISSION

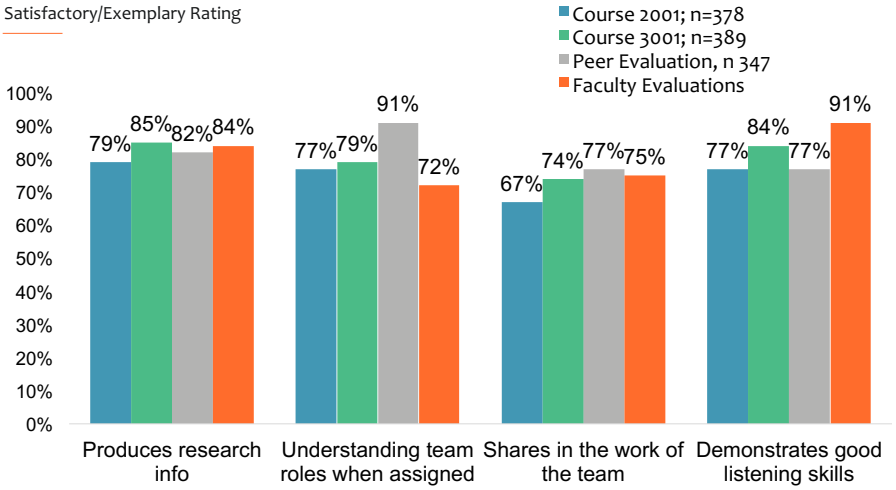
Senior Survey item



Comparative Data

ASSESSMENTS

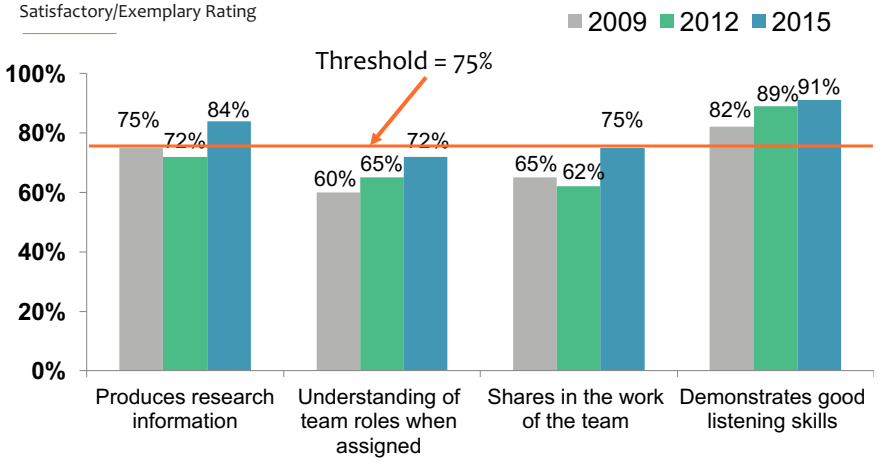
Satisfactory/Exemplary Rating



Trend data (faculty evals)

EFFECTIVE TEAMING SKILLS

Satisfactory/Exemplary Rating



Qualitative data

- Focus groups
- Open ended items on senior/course surveys
- Observations of Advisory Board members
- Other ???

HIGHER LEARNING COMMISSION

Preparing an Effective Report of your Continuous improvement Processes

HIGHER LEARNING COMMISSION

100

* Process
* Results
* Actions
* Effect

HIGHER LEARNING COMMISSION

Process

Outcome: Students will be able to solve complex problems.

Performance Indicators Students will:	Educational Strategies (Courses)	Method(s) of Assessment	Where summative data are collected	Where formative data are collected	Length of summative cycle (yrs)	Yr/Sem of summative data collection	Threshold for Performance
1. Identify the problem and problem-solving strategy	1010, 1011, 1012, 2015, 2040, 3013, 3030, 4090, 4092	Exam (rubric scoring)	4090	1010	3 years	2014, 2017	90% above acceptable
		Senior Survey-self-assessment	On-line survey (questions on problem solving)				Response ≥ 4/5 (Likert)
2. Apply appropriate solution methodology	1010, 1011, 1012, 2015, 2040, 3013, 3030, 4090, 4092	Exam (rubric scoring)	4090	1010	3 years	2014, 2017	90% above acceptable
		Senior Survey-self-assessment	On-line survey (two questions on problem solving)				Response ≥ 4/5 (Likert)
3. Generate a problem solution	1010, 1011, 1012, 2015, 2040, 3013, 3030, 4090, 4092	Exam (rubric scoring)	4090	1015	3 years	2014, 2017	75% above acceptable
		Senior Survey-self-assessment	On-line survey (questions on problem solving)				Response ≥ 4/5 (Likert)
4. Evaluate alternative solutions	1010, 1011, 1012, 2015, 2040, 3013, 3030, 4090, 4092	Exam (rubric scoring)	4090	1015	3 years	2014, 2017	80% above acceptable
		Senior Survey-self-assessment	On-line survey (questions on problem solving)				Response ≥ 4/5 (Likert)

Results - 2014

Outcome: Students will be able to solve complex problems.

Performance Indicator	Formative Assessment (% of students meeting or exceeding expectations)	Summative Assessment (% of students meeting or exceeding expectations)	Senior Exit Survey (Threshold 4 on 5-pt scale) N=40	Alumni Survey (Threshold 4 on 5-pt scale) N=102
1. Identify the problem and problem-solving strategy	54% of 64 students	80% of 47 students **(Threshold 90%)**	15% of 40 responses below 4 (Ques #5 on problem solving skills)	No responses below 4
2. Apply appropriate solution methodology	45% of 64 students	70% of 47 students **(Threshold 90%)**		
3. Generate a problem solution	34% of 64 students	50% of 47 students **(Threshold 75%)**		
4. Evaluate alternative solutions	55% of 64 students	75% of 47 students **(Threshold 80%)**		

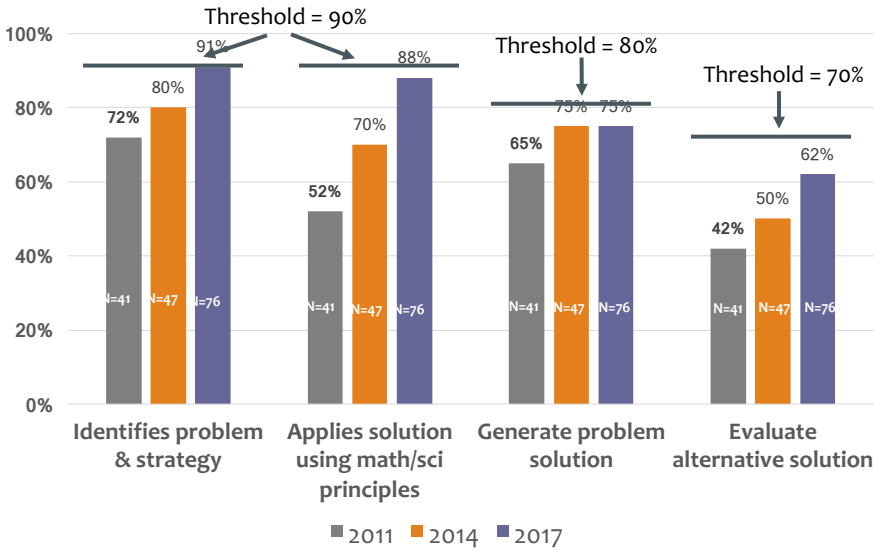
Actions and Next Cycle Results

Outcome: Students will be able to solve complex problems

Faculty who analyzed findings: all faculty who map courses to the outcome
Data reviewed: formative results, summative rubric scores, exit surveys alumni surveys, curriculum map, and faculty input

Performance Indicator	Recommendations 2015	Results 2017
1. Identify the problem and problem-solving strategy	OVERALL: Share scoring rubrics with students at the beginning of courses. Use problem-solving and problem-solving active learning in all classes. Add group problem solving work to classroom, both independent and pair work with presentation of results to entire class. Discuss problem-solving strategies.	**Summative (Direct):** **PI 1:** 91% of 76 students met or exceeded expectations;**+11%** **PI 2:** 88% of 76 students met or exceeded expectations; **+18%** **PI 3:** 75% of 76 students met or exceeded expectations; **no change** **PI 4:** 62% of 76 students; **+12%** **Summative (Indirect):** Sr. Survey: 15% of 55 responses below 4/5: same Alumni Survey: No responses below 4/5 (N=87); no change
2. Apply appropriate solution methodology	Offer peer tutoring for students. Provide timely feedback on homework problems.	
3. Generate a problem solution	Add group problem solving work using independent and small group with presentation of results to entire class. Class discussion on problem-solving strategies used.	
4. Evaluate alternative solutions	Review alternative solutions presented by students. Classroom discussions of pros/cons of each approach.	

Trend Data – Students will be able to solve complex problems.



Setting "targets" for student performance

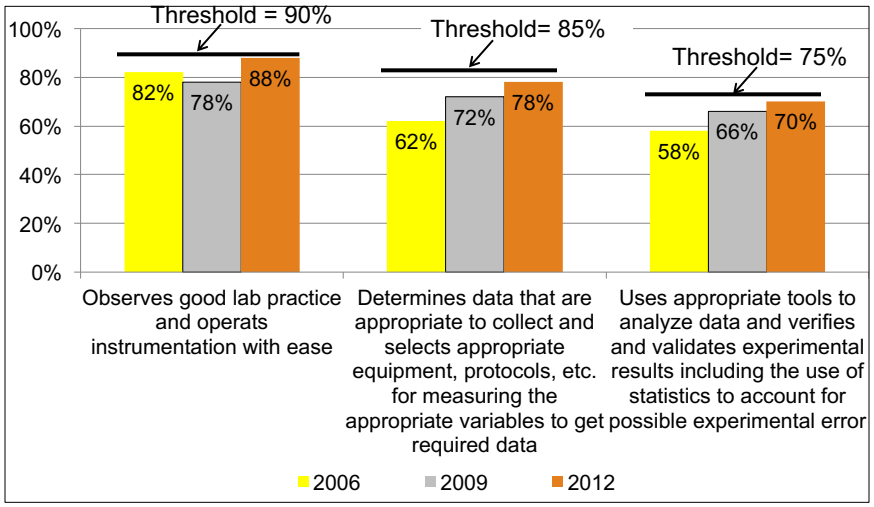
- Best practice for continuous improvement processes require continual improvement regardless of the level of performance
- View "targets" as "thresholds" for performance
- In a "continuous improvement" cycle, if a desired performance level has been met, does that mean we do nothing?
- Are we willing to say that it is okay if 25% of our students DON'T demonstrate performance on the outcomes?"

HIGHER LEARNING COMMISSION

An ability to design and conduct experiments, as well as to analyze and interpret data.

Performance Indicators	Educational Strategies	Method(s) of Assessment	Where data are collected (summative)	Length of assessment cycle (yrs)	Year(s)/semester of data collection	Target for Performance
1. Observes good lab practice and operates instrumentation with ease	1010, 1015,1011, 2020, 2040, 2060,3010, 3013, 3050, 4090, 4092	Observations (rubrics)	3050	3 years	2009, 2012	90%
		Senior Surveys	On-line survey			
2. Determines data that are appropriate to collect and selects appropriate equipment, protocols, etc. for measuring the appropriate variables to get required data	1010, 1015,1011, 2020, 2040, 2060,3010, 3013, 3050, 4090, 4092	Lab report (rubrics)	3050	3 years	2009, 2012	85%
		Senior Surveys	On-line survey			
3. Uses appropriate tools to analyze data and verifies and validates experimental results including the use of statistics to account for possible experimental error	1010, 1015,1011, 2020, 2040, 2060,3010, 3013, 3050, 4090, 4092	Lab report (rubrics)	3050	3 years	2009, 2012	75%
		Senior Surveys	On-line Survey			

Trend line for Student Outcome: an ability to design and conduct experiments, as well as to analyze and interpret data.



Setting "thresholds"

What to consider when setting a threshold:

Cognitive level: One would anticipate that the higher the cognitive level, the higher degree of difficulty

Complexity of application: The more complex the application of the skill, the more difficulty

Curriculum support: The more courses that support student performance for each indicator, the more likely it is that students will achieve the anticipated performance.

HIGHER LEARNING COMMISSION

Lessons Learned

- Capitalize on what you are already doing
- You don't have to measure everything all the time
- More data are not always better
- Don't wait for perfection
- Go for the early win
- Decouple from faculty evaluation

HIGHER LEARNING COMMISSION

Continuous Improvement of
Program-Level Assessment of Student Learning [1]
A Self-Assessment

0 - not in place
1 - beginning stage of development
2 - beginning stage of implementation
3 - in place and implemented
4 - implemented and evaluated for effectiveness
5 - implemented, evaluated and at least one cycle of improvement

Stakeholder/Constituent Involvement (Those who have a vested interest in the outcome of the program)	RATING	Program Educational Objectives (Graduates performance after completing program)	RATING	Student Outcomes (Desired knowledge, skills, attitudes, behaviors, by the time students complete program)	RATING	Student Outcomes aligned with educational practices	RATING	Assessment Processes	RATING	Evaluation	RATING
Stakeholders are identified		Objectives are determined		Outcomes are identified		Desired performance is mapped to curricular practices and/or strategies (e.g., courses/ teaching methodology)		Assessment is on-going and systematic at the program level		Assessment data are systematically reviewed	
Primary stakeholders are involved in identifying/ affirming program educational objectives		Objectives are publicly documented		Number of outcomes are manageable		Practices/strategies are systematically evaluated using outcomes assessment data		Multiple methods are used to measure each outcome		Evaluation of results are done by those who can effect change	
Primary stakeholders are involved in periodic evaluation of educational objectives		Number of objectives are manageable		Outcomes are publicly documented		Where necessary, educational practices are modified based on evaluation of assessment data		Both direct and indirect measures of student learning are used to measure outcomes		Evaluation of assessment data is linked to curricular practices/strategies	
Sustained partnerships with stakeholders are developed		Objectives are aligned with mission statement		Outcomes are linked to educational objectives				Assessment processes are reviewed for effectiveness and efficiency		Evaluation leads to decision making/ action	
		Objectives are periodically evaluated for continued relevancy		Outcomes are defined by a manageable number of measurable performance indicators				When needed, assessment methods are modified based on evaluation processes			

[1] This tool is intended for self-assessment only to assist in understanding areas for improvement in the assessment process development. Assessment Planning Flowchart © 2004 Revised January 2014. (gloriarogers1@gmail.com)