Program Review and Assessment Committee

Thursday, December 11, 2003
1:30 to 3:00 p.m., UL 1126
Karen Johnson, Acting Chair
Susan Kahn, Recorder

AGENDA –

MINUTES –

Present: W. Agbor-Baiyee, D. Appleby, T. Banta, D. Boland, P. Boruff-Jones, C. Dobbs, K. Johnson, S. Kahn, L. Kasper, D. McSwane, S. Milosevich, K. Morrow, H. Mzumara, M. Plummer, I. Queiro-Tajalli, E. Sener, E. Udry, R. Vertner, C. Yokomoto, and N. Young.

Guests: H. Akay and M. Wince

Approval of November Minutes

The November minutes were approved as written.

Assessment Overview

T. Banta passed out a <u>PowerPoint presentation</u>, "Outcomes Assessment: An Introduction for Members of the Program Review and Assessment Committee." She explained that the presentation provides an overview of assessment and invited PRAC members to make use of it to introduce their colleagues to assessment. She briefly reviewed the presentation, stressing that outcomes assessment takes a "second look," once individual students' work has been evaluated, across entire classes, programs, or departments to analyze larger patterns. Assessors ask questions about what is being learned and what is not in order to analyze the strengths and weaknesses of a curriculum. Assessment is a form of action research, a form of the Scholarship of Teaching and Learning.

Banta also noted that PRAC members should be aware of two state-wide plans for education:

- The Indiana Commission on Higher Education (ICHE) has released a higher education plan for the state that has been a year in the making. Over 30 drafts of the plan were developed in order to incorporate the suggestions of representatives from Indiana's higher education institutions.

- The Governor's Roundtable has issued a P-16 Plan. The Roundtable was chaired by Stan Jones of ICHE and Suellen Reed of the State Department of Education. It also included community representatives and representatives from P-16 institutions.

Banta said she would send both plans to PRAC members by e-mail and asked that they read and consider the implications of the plans for IUPUI. Discussion of these implications will occur at the January PRAC meeting.

Golden Books

C. Yokomoto provided a presentation on the "Golden Books" developed by faculty in the School of Engineering and Technology. These annual volumes include all assessment documents produced by the school for a given year, including the annual PRAC report, thus allowing faculty to access the documents easily. Every time a department or committee vote on an assessment issue is taken, Yokomoto writes a memorandum recording the vote for inclusion in the current Golden Book. The books have been used for ABET accreditation as documentation of assessment processes and findings, although this was not their original purpose. An examination of the books over the past six years reveals that while earlier volumes focus on development of assessment processes, later ones include more specific information and outcomes, including research on assessment by E & T faculty members.

S. Milosevich asked about how E & T is able to get employers to respond to questions about the skills they need from graduating students. Yokomoto replied that this is always very difficult. Banta recommended inviting employers to focus breakfasts or other occasions where they meet in person for discussion since it is very difficult to get an acceptable response rate to paper surveys.

Yokomoto also noted that E & T will soon have an updated assessment web site.

Program Review—Mechanical Engineering

H. Akay, chair of the Department of Mechanical Engineering, reported on the impact of a program review conducted in 1998. The review of Mechanical Engineering was combined with a review of Electrical and Computer Engineering and took place in the same year as an ABET visit, with similar results; ABET typically looks only at

undergraduate programs, however, and the program review covered graduate offerings as well.

The program review team included two representatives from other universities, one industry representative, and two representatives of other IUPUI schools/departments. Recommendations included:

- Developing recruitment and promotion strategies to increase enrollment, especially from local high schools. The department has followed up on this.

- Creating a new advising system, which the department has since done.

- Tracking alumni activity and employment. The department now tries to communicate more frequently with its graduates.

- Giving more attention to developing students' communication skills, both written and oral.

- Systematically documenting student learning processes and outcomes, which is now underway.

- Providing more support for teaching—e.g., using teaching assistants and graders—so faculty would have more time for research. The department is still struggling with this issue.

Overall, the team found that the department was doing a good job, considering its small size. Team members were surprised by the lean operation of the department, commenting that faculty members needed more support staff and that their salaries were below national averages. They noted that the department was not large enough to sustain a major graduate program, a pre-requisite to national recognition. The department is just now beginning to work on establishing a Ph.D. program in collaboration with Purdue-West Lafayette.

Since the review, the department has strengthened its research function and developed a combined five-year B.S.-M.S. program, which should help attract more students. Akay noted that, in retrospect, the department should have done more at the time to capitalize on the recommendations of the review team by bringing them to the attention of upper administrators more frequently and persistently.

I. Queiro-Tajalli asked how the department is preparing for its next accreditation visit in 2005. Akay responded that the department's Assessment and Accreditation Committee is doing most of the work on the self-study.

Faculty and Student Responses to the National Survey of Student Engagement (NSSE)

S. Kahn, with help from M. Wince, Manager of Survey Research for the Office of Information Management and Institutional Research (IMIR), reported on the results of the 2002 administration of the NSSE at IUPUI and related items on the 2002 Faculty Survey. (To understand how well students' perceptions of their learning behaviors and experiences match faculty perceptions of what and how they are teaching, IMIR selected NSSE items and developed related questions for faculty on the 2002 Faculty Survey.) Kahn passed out a draft research brief on "Student and Faculty Perceptions of Student Engagement in Learning at IUPUI," along with comparisons of responses of IUPUI freshmen and faculty to NSSE items, comparisons of responses of seniors and faculty, and comparisons of responses of freshmen and seniors. She explained that the NSSE asks freshmen and seniors about their involvement in "engaging" educational activities—i.e., activities that research has shown are likely to lead to positive learning outcomes. Survey items ask students about their own learning behaviors, such as how much time they spend preparing for classes, as well as about the pedagogical approaches they have encountered.

Survey responses overall suggest that students perceive themselves to be working harder than faculty perceive them to be; faculty believe that students are more frequently involved in "engaging" educational experiences than students report that they are; students report spending more time memorizing than faculty believe they are asking them to do; and seniors report greater involvement in engaging educational experiences than freshmen do. Kahn offered several possible reasons for these disparities, including "attribution bias" and different interpretations of key terms and ideas by faculty and students. These ideas may not fully explain all of the differences between students and faculty, however,

D. Appleby offered several comments on the school-specific results for the School of Science. He found some of the differences between student and faculty responses troubling, and he noted that students' responses are based on what they do, while faculty responses depend on inferences about what students do based on their responses in class and on assignments. The finding that 66 percent of SOS seniors say they frequently memorize material for the purpose of repeating it on assignments in basically the same form, while only 27 percent of SOS faculty say that they ask students to memorize was especially noteworthy. He suggested that we may be evaluating how well students remember what we say more often than we think we are; for example, we may be asking students to repeat *our* critical thinking, rather than requiring them to think critically on their own. Appleby passed out a recent article he wrote, "Three Degrees of Separation from Original Knowledge That Challenge Psychology Students as They Enter and Progress Through Undergraduate Studies," which details the kinds of skills students need to acquire in order to progress beyond memorization.

Banta suggested that faculty, departments, or schools might analyze their tests to determine what levels of Bloom's Taxonomy are represented in test questions.

PRAC Grants

K. Johnson noted that we have not received any proposals for PRAC grants this year and asked members to think about how we might encourage colleagues to submit proposals.

Adjournment

The meeting adjourned at 3:30.

Next Meeting: January 22, 1:30-3:00, UL 1126

Outcomes Assessment:
An Introduction

for members of the

Program Review and

Assessment Committee

December 11, 2003

By

Trudy W. Banta

Vice Chancellor

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Outcomes Assessment

The process of providing credible evidence of the outcomes of higher education undertaken for the purpose of improving programs and services within the institution.

Banta, T. W.

ASSESSMENT . . .

"a rich conversation

about student learning

informed by data."

-- Ted Marchese --

AAHE

Assessment of Individual Student Development

- *Assessment of basic skills for use in advising*
  - Placement
  - Counseling
- *Periodic review of performance with detailed feedback*
- *End-of-program certification of competence*
  - Licensing exams
  - External examiners

Key Results of Individual Assessment

* *Faculty can assign grades*

* *Students learn their own strengths and weaknesses*

* *Students become self-assessors*
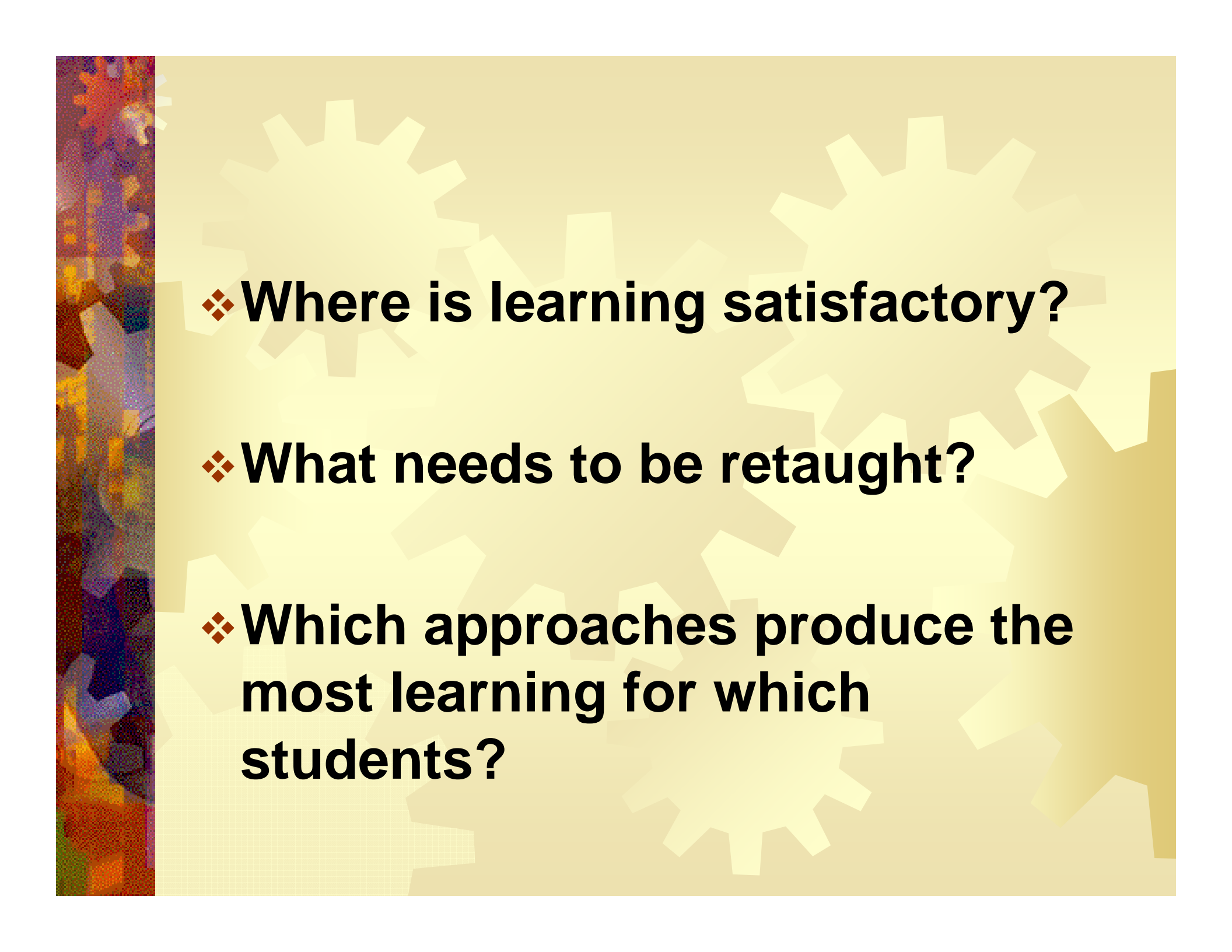
A Second Look

- *Across students*

- *Across sections*

- *Across courses*

❖ **Where is learning satisfactory?**

❖ **What needs to be retaught?**

❖ **Which approaches produce the most learning for which students?**

Group Assessment Activities

- **Classroom assignments, test, projects**

- **Questionnaires for students, graduates, employers**

- **Interviews, focus groups**

- **Program completion and placement**

- **Awards/recognition for graduates**

- **Monitoring of success in graduate school**

- **Monitoring of success on the job**
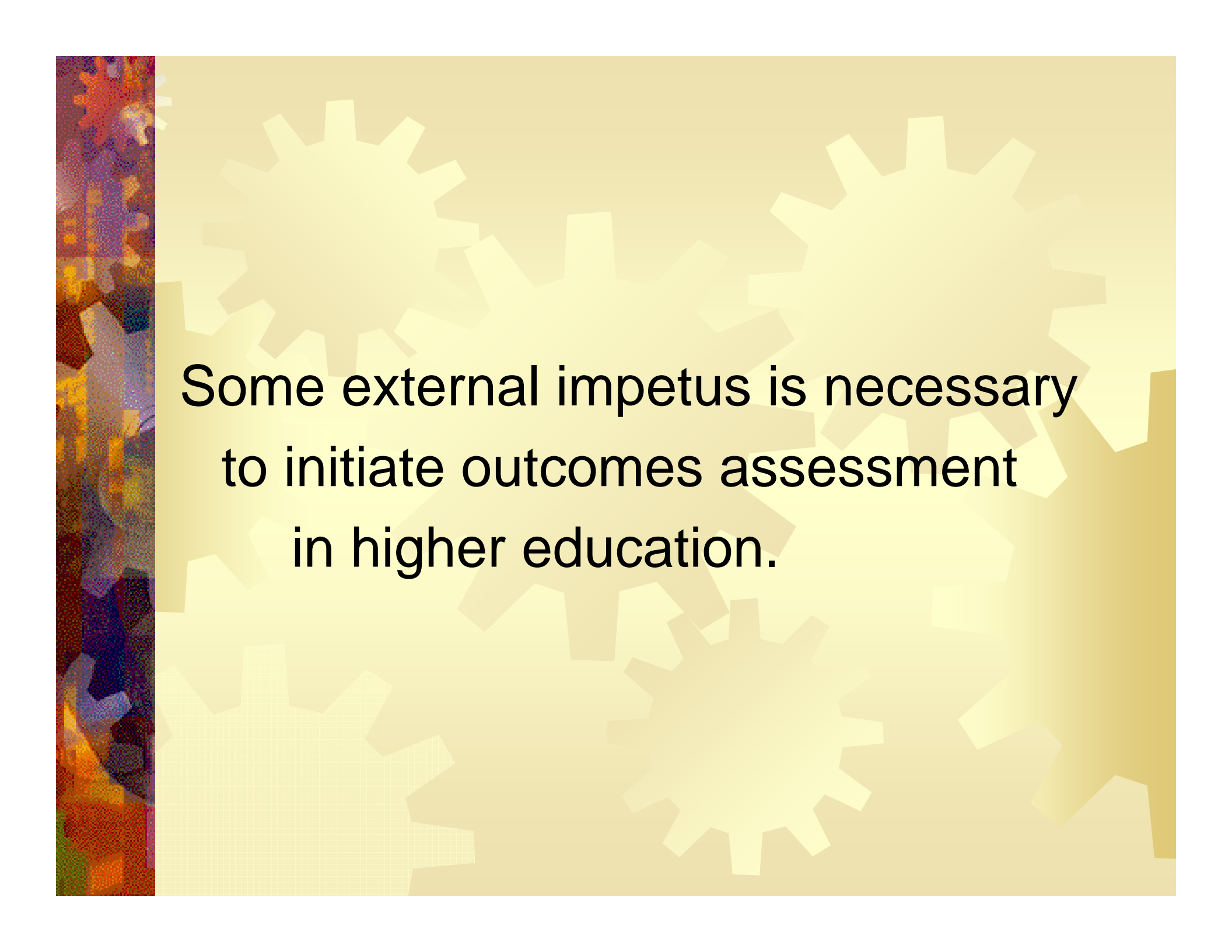
Use of Results of Group Assessment

- **Program improvement**

- **Institutional and / or state peer review**

- **Regional and / or national accreditation**

Some Purposes of Assessment

1. Students learn content
2. Students assess own strengths
3. Faculty improve instruction
4. Institutions improve programs/services
5. Institutions demonstrate accountability

Some external impetus is necessary to initiate outcomes assessment in higher education.

Outcomes Assessment Requires Collaboration

- *In setting expected program outcomes*
- *In developing sequence of learning experiences (curriculum)*
- *In choosing measures*
- *In interpreting assessment findings*
- *In making responsive improvements*

Barriers to Collaboration in the Academy

1. *Graduate schools prepare specialists*

2. *Departments hire specialists*

3. *Much of our scholarship is conducted alone*

4. *Promotion and tenure favor individual achievements -- interdisciplinary work is harder to evaluate*

Campus Interest in Assessment

WHAT WORKS in....
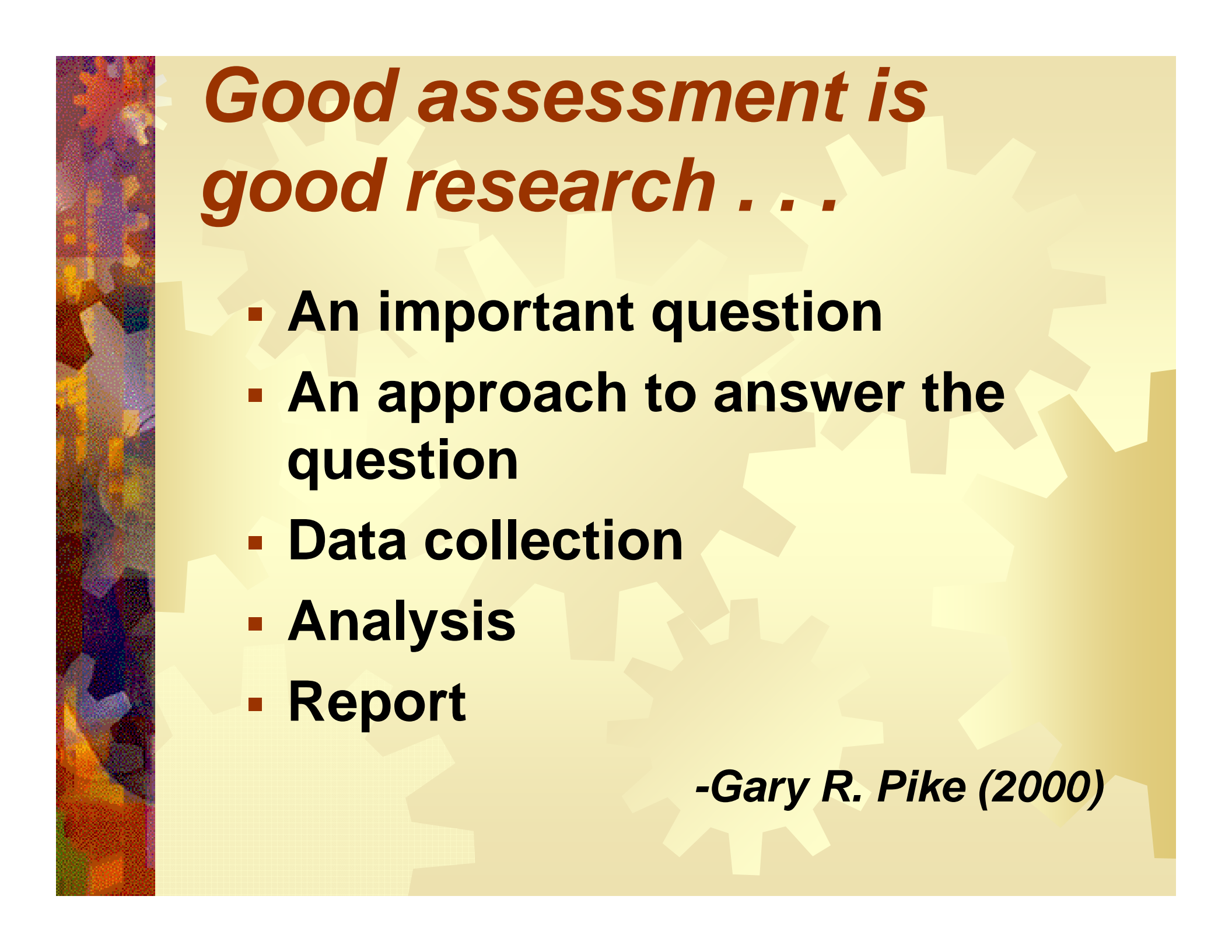
☞ *increasing student retention?*

☞ *general education?*

☞ *use of technology in instruction?*

☞ *curriculum in the major?*

Good assessment is good research . . .

- **An important question**
- **An approach to answer the question**
- **Data collection**
- **Analysis**
- **Report**

-Gary R. Pike (2000)

To Foster Collaboration

- ❖ *Name interdisciplinary committees*
- ❖ *Read and discuss current literature on learning/assessment*
- ❖ *Attend conferences together*
- ❖ *Bring experts to campus*
- ❖ *Share good practices*
- ❖ *Work together on learning communities*

Most Faculty Are Not Trained as Teachers

FACULTY DEVELOPMENT

Can Help Instructors:

- Write <u>clear objectives</u> for student learning in courses and curricula

- Individualize instruction using a <u>variety</u> of <u>methods</u> and <u>materials</u>

- Ask questions that make students <u>active learners</u>

- Develop <u>assessment tools</u> that test higher order intellectual skills

Organizing for Assessment

Goal	Course	Measure	Findings	Uses
Write		Portfolio		
Speak		Speech		
Think		Test		
Find Information		Project		

Taxonomy of Educational Objectives
(Bloom and Others, 1956)

Cognitive domain categories

Knowledge

Comprehension

Application

Analysis

Synthesis

Evaluation

Sample verbs for outcomes

Identifies, defines, describes

Explains, summarizes, classifies

Demonstrates, computes, solves

Differentiates, diagrams, estimates

Creates, formulates, revises

Criticizes, compares, concludes

Some General Education Objectives

* **Differentiate between fact and opinion**

* **Gather, analyze, and interpret data**

* **Apply ethical principles to local, national, global issues**

* **Communicate ideas in writing effectively**

Critical Assessment Questions

1. What should a major know and be able to do?

2. What curriculum experiences promote student attainment of

    This knowledge?

    These skills?

3. Are these experiences taking place?

4. How do we know students are attaining?

    The knowledge?

    The skills?

In each course

Statement Of Competence	Teaching/ Learning Strategy	Assessment Methods
Critical Thinking	Group Project	Written Paper

Planning for Learning and Assessment

1. What general outcome are you seeking?	2. How would you know it (the outcome) if you saw it? (What will the student know or be able to do?)	3. How will you help students learn it? (in class or out of class)	4. How could you measure each of the desired behaviors listed in #2?	5. What are the assess-ment findings?	6. What improve-ments might be based on assess-ment findings?

Direct Measures of Learning

Assignments, exams, projects, papers

Indirect Measures

Questionnaires, inventories, interviews

- Did the course cover these objectives?

- How much did your knowledge increase?

- Did the teaching method(s) help you learn?

- Did the assignments help you learn?

Start with Measures You Have

* **Assignments in courses**

* **Course exams**

* **Work performance**

* **Records of progress through the curriculum**

Organizational Levels for Assessment
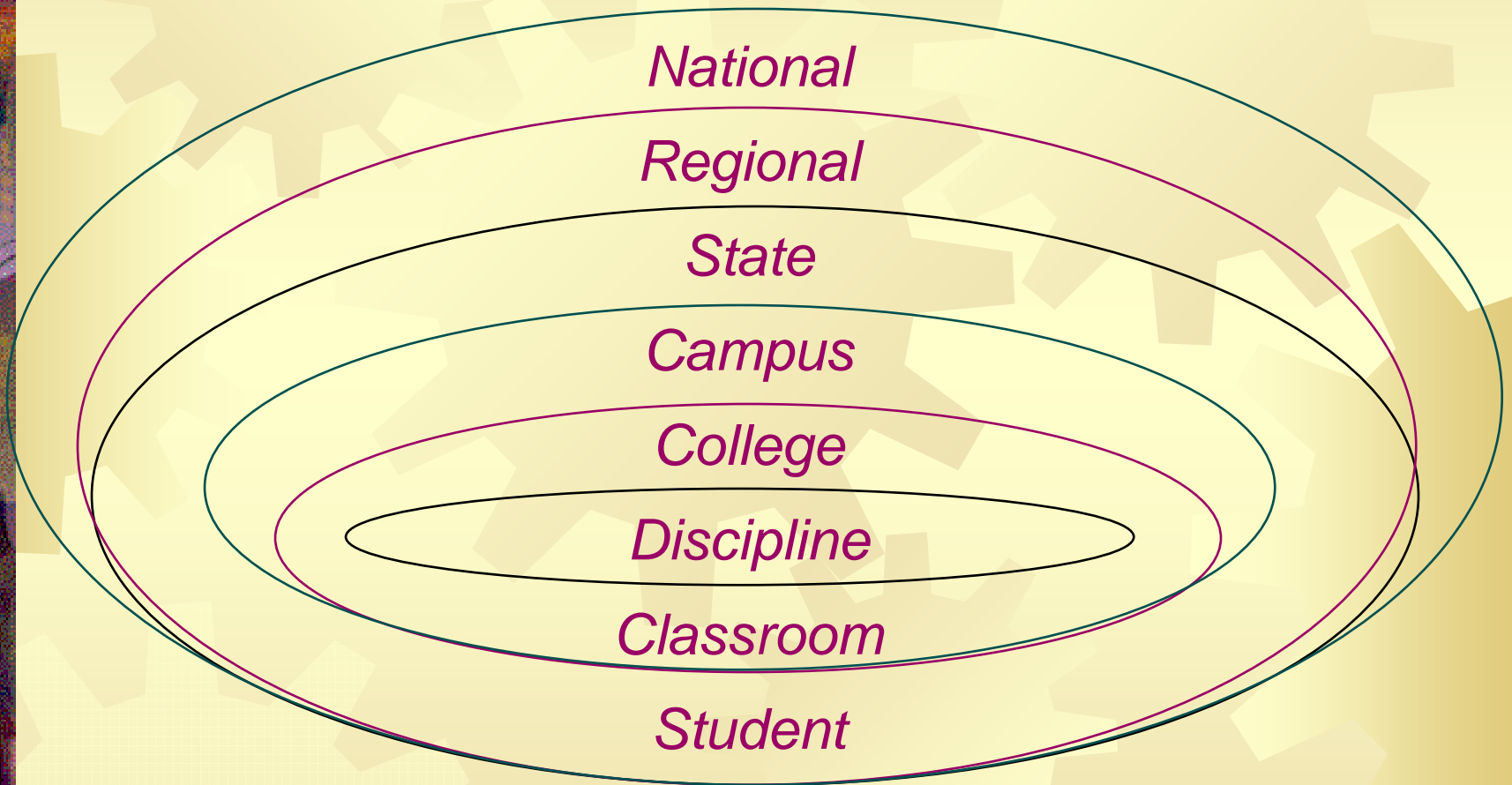
Fast Feedback
(at end of every class)

- **Most important thing learned**

- **Muddiest point**

- **Helpfulness of advance reading assignments for day's work in class**

- **Suggestions for improving class / assignments**

Bateman & Roberts

Graduate School of Business

University of Chicago

Student Suggestions for Improvement

- *Install a portable microphone*

- *Increase type size on transparencies*

- *Leave lights on when using projector*

- *Don't cover assigned reading in detail*

- *Provide more examples in class*

Student Learning Oriented Course Evaluation

1. **Learners held high expectations for one another**
2. **Learners interacted frequently with others**
3. **Learners participated in learning teams**
4. **Learners respected diverse talents and ways of learning**

-Cournoyer

Advances in Social Work – Fall 2001

Primary Trait Scoring

Assigns scores to attributes (traits) of a task

STEPS

- *Identify traits necessary for success in assignment*

- *Compose scale or rubric giving clear definition to each point*

- *Grade using the rubric*

Can Develop a Research Paper

1. Narrows and defines topic
2. Produces bibliography
3. Develops outline
4. Produces first draft
5. Produces final draft
6. Presents oral defense

Out-standing	Accept-able	Unaccept-able
✓✓✓	✓	
✓	✓✓	✓✓
✓✓✓✓		
✓✓	✓✓✓	
✓✓✓✓	✓	
	✓	✓✓✓✓

Bibliography

Outstanding – References current, appropriately cited, representative, relevant

Acceptable – References mostly current, few citation errors, coverage adequate, mostly relevant

Unacceptable – No references or containing many errors in citation format, inadequate coverage or irrelevant

Mapping Course Outcomes to Program Outcomes

Outcomes	Course 1	Course 2	Course 3
1	✔	✔	✔
2		✔	✔
3	✔		✔
4		✔	
5	✔		
6	✔	✔	
7	✔		

Sophomore Competence in Mathematics (Multiple choice responses & supporting work)

Score	Criterion
3	Clear conceptual understanding, consistent notation, logical formulation, complete solution
2	Adequate understanding, careless errors, some logic missing, incomplete solution
1	Inadequate understanding, procedural errors, logical steps missing, poor or no response
0	Problem not attempted or conceptual understanding totally lacking

Ball State University

Assessment in Sociology and Anthropology

Focus groups of graduating students

* Given a scenario appropriate to the discipline, a faculty facilitator asks questions related to outcomes faculty have identified in 3 areas: concepts, theory, methods.

* 2 faculty observers use 0-3 scale to rate each student on each question

* GROUP scores are discussed by all faculty

  * Murphy & Goreham

    North Dakota State University

Assessment of Group Interaction

The Student Participant:

* Listened to others

* Actively contributed to discussion

* Challenged others effectively

* Was willing to alter own opinion

* Effectively explained concepts/insights

* Summarized/proposed solutions

5=Consistently excellent

3=Generally satisfactory

1=Inconsistent and/or inappropriate

Capstone Course in Business

Comprehensive case study analysis

   Graded using scoring rubric covering

- *writing skills*

- *knowledge of historic and current theories and practice*

- *ability to integrate tools and techniques from business specialties in analyzing the case*

      Olney & Menger

      St. Mary's University

Internships in Social Work

Evaluated against specific criteria by

- Students

- Faculty

- Field-based supervisors

Student Advisory Council at Montevallo

A way to provide continuous student assessment

Student Recommendations

1. *Develop a statement of expected ethical behaviors for students*
2. *Add a second research course with lab*
3. *Increase comparative psychology*
4. *Add terminals for statistics lab*
5. *Increase opportunities for research, writing, and speaking*

Assessing Student Growth
The Portfolio - Some Examples of Content

- Course assignments
- Research papers
- Materials from group projects
- Artistic productions
- Self-reflective essays (self-assessment)
- Correspondence
- Taped presentations

Student Electronic Portfolio

➢ **Students take responsibility for demonstrating core skills**

➢ **Unique individual skills and achievements can be emphasized**

➢ **Multi-media opportunities extend possibilities**

➢ **Metacognitive thinking is enhanced through reflection on contents**

- Sharon J. Hamilton

IUPUI

Northern State University

1. **Focus breakfasts with employers**
2. **Evaluations from internship sponsors**
3. **Alumni surveys**

Identified weaknesses:

- communication skills
- computer skills
- real-world experiences
- interview skills
- international experiences

Northern State University

Responsive Changes

* Early assessment and remediation of communication skills

* New intensive writing course

* More practice in courses and proficiency test in use of technology

* More credit for internships

* More preparation for interviews

* More career exploration

* More international experiences

Authentic Assessment at

Southern Illinois University - Edwardsville

* Business - Case Study Analysis with Memo
* Education - Professional Portfolio
* Psychology - Poster on Research Project
* Engineering - Senior Design Project
* Nursing - Plan of Care for Patient

Responses to Assessment at

Southern Illinois University-Edwardsville

- Business – More case studies and research

- Education – More practice in classroom management

- Psychology – Curriculum change in statistics

- Engineering – More practice in writing and speaking

- Nursing – Simulation lab with computerized patients

Select or Design Assessment Methods

1. Match with goals

2. Use multiple methods

3. Combine direct and indirect measures

4. Combine qualitative and quantitative measures

5. Consider pre - post design to assess gains

6. Use built-in points of contact with students

The Future

* Need for evidence of accountability will increase
* More faculty will recognize benefits of assessment
* More electronic assessment methods will be developed
* More sharing of assessment methods will take place
* Faculty will learn more about learning and student learning will improve

**Research Brief on Student and Faculty Perceptions
of Student Engagement in Learning at IUPUI
Draft 12/11/03**

The Surveys

In Spring 2002, the Office of Information Management and Institutional Research (IMIR) sponsored the campus's second participation in the National Survey of Student Engagement (NSSE), which queries freshmen and seniors about their involvement in "engaging" educational experiences—that is, experiences that research on learning connects to academic and intellectual growth in college. During the same semester, the biannual Faculty Survey included a new section on "the classroom" that asked faculty about their own teaching practices and their perceptions of student learning behavior. Items in this section of the Faculty Survey were designed to mirror selected items on the NSSE, so that student and faculty perspectives on student engagement in learning could be compared. Faculty who taught freshman-level or advanced-level courses were asked to respond to the items with a particular class in mind, so that their responses could be compared with either the freshman or senior sample groups.

The Issue

Do IUPUI students experience the curriculum the way faculty members intend them to do so? Peter Ewell distinguishes between the "designed" curriculum—the curriculum as planned by the faculty—and the "experienced" curriculum—the curriculum that consists of "what students actually do." The best assessment systems, according to Ewell, are "especially configured to detect discontinuities" between what faculty plan and what students experience (Ewell,1997). IMIR's pairing of the NSSE and the Faculty Survey is intended to detect exactly such discontinuities, in order to help faculty members and departments better align curriculum and teaching with what and how they wish students to learn.

The NSSE Sample

The 2002 NSSE survey was administered to a stratified random sample of 3,385 freshmen and seniors. Completed questionnaires were received from 1,314 respondents, including 458 (34.5 percent) freshmen and 856 (65.1 percent) seniors. The overall adjusted response rate for the 2002 NSSE was 39 percent.
This rate was comparable to other Doctoral Intensive institutions (38 percent) and slightly better than other urban institutions (36 percent), but lower than the NSSE national average of 41 percent. Response rates varied by school, with the Columbus campus having the highest response rate (62 percent), and Herron having the lowest response rate (33.1 percent).

Like other student surveys of this type, the 2002 NSSE over-represented females and under-represented males. Among freshmen, women constitute 75 percent of the respondents, but only 59 percent of the population. Among seniors, 69 percent of respondents were women, who make up 60 percent of the population.

Ten percent of freshmen and 11 percent of senior respondents were African-American, percentages that are fairly representative of the total population. About three-quarters of

freshman respondents were nineteen and under, in line with the percentage of these students in the freshman population. One-third of senior respondents were between 20 and 30 and another third were over 31, making the senior sample slightly younger than the senior population. Because of these discrepancies between the sample and the total population, particularly in the case of gender, caution should be exercised in generalizing these results.

Highlights of Findings

Comparison of students' responses to NSSE items with faculty responses to similar items on the Faculty Survey yields several patterns:

- For the most part, students perceive themselves to be working harder than faculty perceive them to be (see, for example, responses to "prepared two or more drafts of a paper or assignment before turning it in" and "came to class without completing readings or assignments"). Nonetheless, on a question about time spent preparing for class, both freshmen and seniors report spending much less time than faculty say they expect. The gap is even wider between faculty and seniors than between faculty and freshmen: faculty members expect seniors to spend more than twice as much time preparing for class than seniors say they do.

- Faculty believe that students are more frequently involved in "engaging" educational activities than students report that they are (see, for example, responses to "discussed ideas from your reading or classes with faculty members outside class" and "received prompt feedback from faculty on your academic performance").

- Faculty and students responded similarly to items involving the use of technology for teaching and learning.

- Faculty and students responded similarly to items that asked about "mental activities" or types of assignments, except that students report spending much more time "memorizing facts, ideas, or methods" than faculty believe they are asking students to do.

- Seniors report more involvement in engaging educational experiences than freshmen on almost every item (e.g., asking questions in class, making class presentations, working on assignments with classmates outside class, using e-mail to communicate with instructors). The one exception is in the area of advising, which seniors rate more poorly than do freshmen.

Interpretation

How can we explain the differences in faculty and student responses? Possible causes might include:

- The "self-serving bias"—a type of what social psychologists call "attribution bias," defined as the tendency most of us share "to take credit for positive behaviors or

outcomes but to blame negative ones on external causes" (Baron and Byrne, 1991).

- Different interpretations of key terms and ideas—e.g., what does it mean to "complete readings" or to "prepare two or more drafts of a paper"? Does "memorize" mean the same thing to a freshman that it does to a faculty member? Does "prompt feedback" mean the same thing?

It's difficult to say, however, whether these factors or other differences in interpretation account for all of the disparities between student and faculty perceptions. For example, how can we explain the large gap between faculty and student ratings of advising? What explains the disparities between faculty and student responses to the question on time spent preparing for class?

Suggested Follow-Up

Individual school reports can provide a starting point for discussions among faculty or between faculty and students that may be helpful to both groups. Whether a school's report varies from the campus-wide results or is largely consistent with them, a number of follow-up actions are possible:

- Individual faculty members may wish to discuss school- and campus-wide results with their own students and classes to clarify expectations and perceptions.

- Departments and schools might consider holding focus groups of students.

- Committees with assessment responsibilities at the school and department levels should examine school results carefully and attempt to implement improvements, when they appear to be warranted.

The combination of the NSSE and the Faculty Survey provides an opportunity to gain insight into differences between the "designed" and the "experienced" curriculum. We should take advantage of this opportunity and consider assessment methods that might build on this study to illuminate these differences even further.

E&T'S ASSESSMENT RESOURCE BOOK

A.K.A. E&T GOLDEN BOOK

Presentation made to the
IUPUI Program Review and Assessment Committee
Dec. 11, 2003

What Is It?

- ◆ Bound collection of documents produced during an academic year
- ◆ Appendix of useful documents not included in the main body of the golden book

Purpose of Producing the Book

◆ Assessment committee members can find documents easily in bound volumes.

◆ Documents can be carried around without having to find a connection to the Internet.

◆ Copies of the book have been used to demonstrate our assessment activities to visitors such as on accrediting visits.

◆ Copies have been given out to people outside the school.

◆ Cuts down on "My dog ate my copy of the handout."

Contents of Vol. 1--1998

◆ E&T Annual Report to PRAC

◆ Review of Outcomes Assessment

◆ E&T Process and Definitions

◆ ABET's Learning Outcomes

◆ IUPUI PULs

◆ Examples of Assessment Tools

Review of Outcomes Assessment

◆ Basics of Outcomes Assessment
◆ ABET and Outcomes Assessment
◆ Resources
◆ Assessment Web Sites
◆ The Outcomes Assessment Process
◆ Instruments and Tools
◆ Mission Statements
◆ Assessment Strategies
◆ General Advice
◆ School Accomplishments

Volume 2—1999

- E&T Annual Report
- Forms of Evidence by Department
- Samples of Assessment Tools by Department
- NCA Timelines
- Report on Continuing Students Survey data by David Bostwick
- Admissions, Graduation, and Retention report from IMIR
- Alumni and Industry Survey Instruments
- ECE Continuing Students Satisfaction Data
- Papers and Presentations by E&T Faculty

Examples of Titles from 1999

- Bostwick, W.D. and Yokomoto, C.F. "Using Institutional Data to Frame An Assessment Strategy," *5th Annual Conference for Industry and Education Collaboration.*

- Bostwick, W.D. "Assessing in the Affective Domain," *Sixth Interamerican Conference on Engineering and Technology Education.*

- Bostwick, W.D. "The Need to Establish An Affective Domain Assessment Strategy for Your Program," *Proceedings 2000 ASEE Annual Conference.*

- Buchanan, W.W. and Bostwick, W.D. "How Assessment is Done in Engineering Technology Programs," *25th Annual Conference for Industry and Education Collaboration.*

- Yokomoto, C.F., and Bostwick, W.D., "Modeling the Process of Writing Measurable Outcomes for EC 2000," *1999 Frontiers in Education Conference.*

- Yokomoto, C.F., Fox, P., Goodwin, C., Hundley, S., and Needler, M., panel discussion on "How We developed a School-Wide Assessment Plan: Five Voices Tell the Story," presented at the 1999 Assessment Institute.

- Yokomoto, C.F., "Measurable Outcomes—What Are They and How Do We Write Them?" 2000 Rose-Hulman Best Assessment Practices III Symposium.

Volume 3—2000

- E&T Annual Report
- Scholarship of Assessment
- Results from Marj Hovde's Writing and Speaking Assessment Project
- Tutorial on Writing Scoring Rubrics
- The Reasonable Minimum
- Tutorial on Writing Measurable Outcomes

Volume 4—2001

- ◆ E&T Annual Report to PRAC
- ◆ Appendices
  - – Alumni and Employer Survey Forms
  - – Marj Hovde's Scoring Rubrics for Writing and Speaking
  - – Updated ABET "required" outcomes
  - – ABET to PUL relational matrices

Volume 5—2002

- E&T Annual Report to PRAC
- Power Point slides of E&T and ME presentations to PRAC
- Appendices

Volume 6—2003

◆ E&T Annual Report to PRAC

◆ Updated Outcomes Pyramid

◆ Updated Definitions of Terms

◆ Appendices

◆ Document finder

ECE DEPARTMENT OUTCOMES ASSESSMENT PROCESS

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│    Begin the Outcomes Assessment Process │
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┌─────────────────────────────────────────┐
│         Review mission statements         │
└─────────────────────────────────────────┘
                 ↓
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│   Write (revise) Broad Goals (Mission)*   │       *With involvement of your industrial
└─────────────────────────────────────────┘              advisory committee
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│  Write (revise) Program Educational Objectives * │
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│ Write (revise) Program Outcomes and Measurable Learning Outcomes* │
└─────────────────────────────────────────────────────┘
                 ↓
┌─────────────────────────────────────────────────────┐
│ Prioritize your measurable learning and program outcomes. * │
└─────────────────────────────────────────────────────┘
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| Develop (or revise) your teaching methods and classroom/ laboratory experiences | ↔ | Develop (revise) scoring rubrics and establish performance expectations | Develop (or revise) methods for assessing alumni, industry, continuing students, and the community | Develop (or revise) methods for collecting admissions, retention, graduation, and employment data |

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                              Develop instruments to obtain data
```

- Implement the new and revised course design elements.
- Collect student works (artifacts), institutional data, and data from other constituencies
- Analyze the collected works and data
- Compare analysis results with desired performance expectations (targets) to produce findings
- Set priorities on problems to correct.
- Feed findings back into the planning process to affect *

Short cycle feedback loop

Medium cycle feedback loop

Long cycle feedback loop

The Outcomes Assessment Pyramid

1-Mission Statements

2-Department Goals (Broad)

3-Program Educational Objectives

4-Program Outcomes

(Embraces ABET's a-k)

5-MEASURABLE LEARNING OUTCOMES

6-Course Outcomes

7-Unit Instructional Objectives

Definitions of Terms Used in E&T

See handout

Concluding Remarks

◆ I don't know how useful committee members have found the Golden Book, but I dig through mine very frequently.

◆ I find it much easier to pull out a bound volume than to find the right folder, paper or computer.

FRESHMEN

Academic and Intellectual Experiences	Variable	Respndent	Never	Often/Very Often	Sig[a]
Asked questions in class or contributed to class discussions	CLQUEST	FAC	1%	70%	
		STU	4%	57%	
Made a class presentation	CLPRESEN	FAC	30%	**28%**	**
		STU	16%	**33%**	
Prepared two or more drafts of a paper or assignment before turning it in	REWROPAP	FAC	52%	**24%**	**
		STU	7%	**75%**	
Worked on a paper or project that required integrating ideas or information from various sources	INTEGRAT	FAC	16%	**57%**	**
		STU	3%	**80%**	
Included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments.	DIVCLASS	FAC	18%	51%	
		STU	11%	51%	
Came to class without completing readings or assignments	CLUNPREP	FAC	1%	**66%**	**
		STU	20%	**20%**	
Worked with other students on projects during class	CLASSGRP	FAC	21%	**48%**	**
		STU	8%	**54%**	
Worked with classmates outside of class to prepare class assignments	OCCGRP	FAC	10%	**36%**	**
		STU	22%	**29%**	
Tutored or taught other students (paid or voluntary)	TUTOR	FAC	27%	**28%**	**
		STU	68%	**10%**	
Participated in a community-based project as a part of a regular course	COMMPROJ	FAC	76%	8%	
		STU	75%	7%	

1

Academic and Intellectual Experiences -cntd.	Variable	Respndent	Never	Often/Very Often	Sig [a]
Used an electronic medium (list-serv, chat group, Internet, etc.) to discuss or complete an assignment	ITACADEM	FAC	20%	54%	
		STU	19%	48%	
Used email to communicate with an instructor	EMAIL	FAC	1%	76%	
		STU	5%	64%	
Discussed grades or assignments with an instructor	FACGRADE	FAC	3%	**74%**	**
		STU	11%	**49%**	
Talked about career plans with a faculty member or advisor	FACPLANS	FAC	5%	32%	**
		STU	23%	26%	
Discussed ideas from your reading or classes with faculty members outside of class	FACIDEAS	FAC	9%	**38%**	**
		STU	49%	**12%**	
Received prompt feedback from faculty on your academic performance (written or oral)	FACFEED	FAC	2%	**91%**	**
		STU	9%	**47%**	

Mental Activities

Mental Activities	Variable	Respndent	Never	Often/Very Often	Siga
Memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form	MEMORIZE	FAC	29%	**28%**	**
		STU	7%	**65%**	
Analyzing the basic elements of an idea, experience, or theory such as examining a particular case or situation in depth and considering its components	ANALYZE	FAC	1%	79%	
		STU	2%	74%	
Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships	SYNTHESZ	FAC	3%	**84%**	**
		STU	4%	**64%**	
Making judgments about the value of information, arguments, or methods such as examining how others gathered and interpreted data and assessing the soundness of their conclusions	EVALUATE	FAC	9%	64%	
		STU	9%	60%	
Applying theories or concepts to practical problems or in new situations	APPLYING	FAC	3%	72%	
		STU	5%	68%	

Quality of Advising

1=poor, 2=fair, 3=good, 4=excellent

	Variable	Respndent	Never	Often/Very Often	
Overall how would you evaluate the quality of academic advising you have received at your institution?	ADVISE	FAC	4%	72%	
		STU	11%	65%	

Time Usage

median hours per week

	Variable	Respndent			
Preparing for class (studying, reading, writing, rehearsing, and other activities related to your academic program)	ACADPR01	FAC	4.4	*	
		STU	2.5		

STUDENTS

Academic and Intellectual Experiences	Variable	Respndent	Never	Often/Very Often	Sig[a]
Asked questions in class or contributed to class discussions	CLQUEST	SR	2%	70%	**
		FR	4%	57%	**
Made a class presentation	CLPRESEN	SR	7%	59%	**
		FR	16%	33%	**
Prepared two or more drafts of a paper or assignment before turning it in	REWROPAP	SR	14%	55%	**
		FR	7%	75%	**
Worked on a paper or project that required integrating ideas or information from various sources	INTEGRAT	SR	1%	86%	
		FR	3%	80%	
Included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments.	DIVCLASS	SR	11%	57%	
		FR	11%	51%	
Came to class without completing readings or assignments	CLUNPREP	SR	17%	19%	
		FR	20%	20%	
Worked with other students on projects during class	CLASSGRP	SR	10%	50%	
		FR	8%	54%	
Worked with classmates outside of class to prepare class assignments	OCCGRP	SR	13%	51%	**
		FR	22%	29%	**
Tutored or taught other students (paid or voluntary)	TUTOR	SR	50%	18%	**
		FR	68%	10%	**
Participated in a community-based project as a part of a regular course	COMMPROJ	SR	64%	10%	**
		FR	75%	7%	**

STUDENTS

	Variable	Respndent	Response		Sig[a]
Academic and Intellectual Experiences -cntd.		1=never, 2=sometimes, 3=often, 4=very often			
Used an electronic medium (list-serv, chat group, Internet, etc.) to discuss or complete an assignment	ITACADEM	SR	9%	66%	**
		FR	19%	48%	**
Used email to communicate with an instructor	EMAIL	SR	2%	78%	**
		FR	5%	64%	**
Discussed grades or assignments with an instructor	FACGRADE	SR	4%	60%	**
		FR	11%	49%	**
Talked about career plans with a faculty member or advisor	FACPLANS	SR	28%	31%	**
		FR	23%	26%	**
Discussed ideas from your reading or classes with faculty members outside of class	FACIDEAS	SR	33%	24%	**
		FR	49%	12%	**
Received prompt feedback from faculty on your academic performance (written or oral)	FACFEED	SR	4%	62%	**
		FR	10%	47%	**

STUDENTS

	Variable	Respndent	Response		Sig [a]
Mental Activities			1=very little, 2=some, 3=quite a bit, 4=very much		
Memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form	MEMORIZE	SR	10%	61%	
		FR	7%	65%	
Analyzing the basic elements of an idea, experience, or theory such as examining a particular case or situation in depth and considering its components	ANALYZE	SR	2%	87%	**
		FR	2%	74%	**
Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships	SYNTHESZ	SR	3%	78%	**
		FR	4%	64%	**
Making judgments about the value of information, arguments, or methods such as examining how others gathered and interpreted data and assessing the soundness of their conclusions	EVALUATE	SR	7%	71%	**
		FR	9%	60%	**
Applying theories or concepts to practical problems or in new situations	APPLYING	SR	3%	79%	**
		FR	5%	68%	**
Quality of Advising			1=poor, 2=fair, 3=good, 4=excellent		
Overall how would you evaluate the quality of academic advising you have received at your institution?	ADVISE	SR	17%	55%	**
		FR	11%	65%	**
Time Usage			median hours per week		
Preparing for class (studying, reading, writing, rehearsing, and other activities related to your academic program)	ACADPR01	SR		2.6	
		FR		2.5	