Assessment Report

2006 – 2007 Academic Year

Lawrence Technological University

Walter K. Dean
Director of Assessment

Lawrence Technological University Assessment Report
2006 – 2007 Academic Year

Introduction and Summary

Assessment of student educational outcomes at Lawrence Technological University is the responsibility of the University Assessment Committee. This committee is chaired by the Director of Assessment, a faculty member appointed by the Provost; one member from each academic department; and as non-voting members, the Provost, the Associate Provost, and the Coordinator of Institutional Research and Assessment:

University Assessment Committee Membership (2006-2007)

Chair and Director of Assessment	Walter Dean

College of Architecture

Architecture	Daniel Faoro
Art and Design	Thomas Regenbogen

College of Arts and Science

Mathematics and Computer Science	William Arlinghaus
	Jonathan Brewster
Natural Sciences	Nicole Villeneuve
Humanities, Social Sciences and Communication	Barry Knister
	Harold Hotelling

College of Engineering

Civil Engineering	Donald Carpenter
Electrical and Computer Engineering	Peter Csaszar
Engineering Technology	William White
Mechanical Engineering	Christopher Riedel

College of Management

College of Management	Diane Cairns

Ex-Officio Members

Associate Provost	Maria Vaz
Coordinator, Institutional Research and Assessment	Mary Thomas

The Committee meets every other week during the academic year, in addition to spring and fall planning retreats. Its function is to advise the Director of Assessment, to plan and carry out assessment programs of the University, to supervise and coordinate assessment activities within their own departments, and to report these back to the whole committee.

In addition, individual meetings took place during the fall term at which each individual Committee member, the Director of Assessment, the Associate Provost, and the Department Chair or Program Director (and in some cases the Coordinator of Institutional Research and Assessment) discussed the specifics of assessment in each program, and agree on strategies for assessment within the Departments. These meeting help to ensure the vitality of the assessment effort within individual programs.

Most of the members of the Assessment Committee have three hours of release time per year to dedicate the necessary time to the assessment activities in their department.

Student Assessment Committee Activities for the Academic Year 2006-2007

1. Assessment Day 2006 (September 15, 2006)

Assessment Day is an all-day in-service faculty program held on the third Friday of each fall term. Its purpose is to give the faculty an opportunity each year to focus on student outcomes assessment, to share information and methods, and to learn about assessment in the areas of our educational goals.

The 2006 Assessment Day was dedicated to the assessment focus topic of the year, critical thinking. Dr. Peter A. Facione of Loyola University visited our campus, giving the Assessment Day keynote address and leading a faculty workshop on teamwork in the afternoon.

Dr. Facione's program was chosen because of a perceived need, on the part of the Assessment Committee, to generate some consensus among the Lawrence Tech faculty, as to what critical thinking is and how it might be promoted in our students. Although critical and creative thinking have been included in our student outcome goals for many years, no such consensus, or even a working definition of critical thinking, had even been proposed.

Dr. Facione based his keynote address on the American Philosophical Association report, "Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction" ("The Delphi Report", Committee on Pre-College Philosophy, ERIC Document No. ED 315 423 (1990)). According to this statement, critical thinking involves a number of skills:

- Interpretation – categorization, understanding significance, clarifying meaning
- Analysis – identification of relationships among statements, claims, questions, etc.
- Evaluation – assessing the credibility of statements, and the logical strengths of the relationship among statements
- Inference – drawing reasonable conclusions, form hypotheses, and educe consequences from statements or data
- Explanation – presenting the results of one's reasoning

- Self-regulation – self-conscious monitoring of one's cognitive activities in the exercise of these skills

Critical thinking also requires more than a particular skill set: it requires the inclination to exercise these skills. This includes several dispositions of good critical thinkers:

- Inquisitiveness
- Truth-seeking
- Trustfulness of reason, and confidence in one's ability to exercise reason
- Open-mindedness to divergent views, and flexibility in considering alternatives
- Fair-mindedness and honesty in facing one's own limitations
- Willingness to suspend judgment and reconsider views when warranted

Teaching critical thinking, then, involves nurturing both these skills and these dispositions. Dr. Facione's address and the afternoon workshop dealt with methods for teaching and assessing critical thinking.

In addition, the Assessment Day program included a report on the Teamwork assessment survey, carried out the previous spring (and reported in detail in the 2005-06 Assessment Report) and a presentation on efforts to include teaming experiences in Calculus I and University Physics I. Also presented was a first look at the proposal for a Leadership Development Curriculum.

The agenda for the 2006 Assessment Day is presented on the next page.

Lawrence Technological University
Assessment Day
Friday, September 15, 2006

Lear Auditorium - T429

AGENDA

Continental Breakfast 8:30 – 9:00 A.M.

Welcome 9:00 – 9:15 A.M.
** Dr. Lewis Walker (President)*

Introduction
** Dr. Walter Dean (Director of Assessment)* 9:15 – 9:30 A.M.

Leadership Development Curriculum Proposal 9:30 – 9:45 A.M.
** Dr. Andy Gerhart*

Spring 2006 Teamwork Survey: First Look 9:45 – 10:00 A.M.
** Dr. Don Carpenter*

Teamwork in Calculus 1 and
University Physics 1: A Trial Run 10:00 – 10:15 A.M.
** Drs. Chris Cartwright, Valentina Tobos, Guang-Chong Zhu, and Scott Schneider*

Break 10:45 – 11:00 A.M.

Keynote Address:
"Teaching For and About Critical Thinking" 10:30 A. M. – Noon
** Dr. Peter A. Facione, Provost, Loyola University*

Lunch – *Café Lawrence* Noon – 1:00 P.M**.**

Workshop: *Lear Auditorium - T429*
"Classroom Assessment of Critical Thinking" 1:00 – 2:30 P.M.
** Dr. Peter A. Facione*

Adjournment

2. Assessment of Critical Thinking

Critical thinking is a core competence addressed in Goal II. 5 of Lawrence Tech's educational goals:

II. 5. Graduates will demonstrate creativity and critical thinking, as well as analytical and problem solving skills consistent with the technological focus of the University.

Since no systematic data existed on the critical and analytical thinking capabilities of Lawrence Tech students, the Assessment Committee elected to perform a baseline assessment with no particular target in mind. After some deliberation the ACT-CAAP Critical Thinking exam was selected as the instrument for this assessment. This exam offered several advantages:

- It is nationally normed, so that data from LTU students could be compared with students at other Universities
- It is administered in 40 minutes, making it relatively easy to administer in a single class period
- It can be customized by adding questions of local significance

It was further decided to administer the exam to both fourth-year and entering first-year students in order to assess what changes in critical thinking ability might take place. The administration of the exam to entering students took place at the end of August, 2007, and therefore strictly speaking outside the timeframe of this report; however, for completeness, the results are reported here.

The Critical Thinking exam was administered in the Spring semester of 2007 to senior students in "capstone" classes in each of the four Colleges. It was administered to a random sample of freshmen during the "Discovery Days" event for entering students in the days immediately preceding the beginning of the Fall 2007 term. The sample represented approximately half of the students at the event. For both assessments, students were able to earn a certificate of achievement for those exceeding the national mean (this is provided as part of the CAAP assessment package), but no other inducement was offered.

Results are shown in the tables below:

Critical Thinking Assessment Results – LTU Seniors

	n*	Mean score	S. D.
CAAP National results	12,097	62.7	5.4
LTU seniors overall	144	63.3	5.5
LTU seniors subgroups:			
College of Architecture (Dept. of Architecture)	50	62.9	5.4
College of Architecture (Dept. of Art and Design)	15	64.1	3.7
College of Arts and Sciences	12	66.9	5.6
College of Engineering	62	62.8	5.7
College of Management	5	62.6	5.9
Male	112	63.3	5.3
Female	33	63.4	5.2
African-American	5	59.8	5.6
Asian	5	56.8	4.0
White	112	63.8	5.4
(Other/No response)	23	63.4	5.3
Age 21-25	96	63.2	5.5
Age 26-30	24	62.7	5.5
Age 31-older	8	66.5	5.3
English is first language	136	63.5	5.5
English is not first language	9	60.4	4.9
FTIAC at LTU (< 30 sem hrs transferred)	95	64.5	5.1
Transfer (30 – 59 sem hrs transferred)	20	63.9	6.3
Transfer (> 59 sem hrs transferred)	18	61.3	3.0
Full time	116	63.2	5.6
Part time	19	63.8	4.5
(no response)	9	63/3	6.5

Critical Thinking Assessment Results – LTU Seniors (cont.)

	n*	Mean score	S. D.
Local Questions:			
When do you take the majority of your classes?			
Mostly during the day	29	63.8	6.0
Mostly during the evening	34	61.9	4.4
About equal	70	65.0	4.9
I consider myself to be good at critical thinking.			
Agree	90	64.9	5.1
Neutral	41	62.3	4.7
Disagree	2	55.5	0.7
The ability to think critically is an important trait for a leader.			
Agree	123	64.1	5.2
Neutral	8	64.3	5.3
Disagree	2	54.5	0.7
It is important to learn critical thinking skills in college.			
Agree	113	63.9	5.0
Neutral	16	63.6	6.3
Disagree	2	70.0	0.0
The number of opportunities for learning critical thinking skills at Lawrence Tech is			
Not enough	36	64.1	4.4
About right	91	63.8	5.4
Too many	5	64.0	7.1

*Totals vary because not all students responded to all questions

Critical Thinking Assessment Results – LTU Freshmen

	n*	Mean score	S. D.
CAAP National results	12,097	62.7	5.4
LTU freshmen overall	97	62.4	5.3
LTU freshmen subgroups:			
College of Architecture (Dept. of Architecture‡)	53	62.8	4.2
College of Arts and Sciences			
College of Engineering	30	61.4	5.6
College of Management			
Male	68	62.7	4.9
Female	29	61.7	4.9
African-American	12	57.2	4.6
Asian	1	63	(n/a)
White	79	63.5	4.8
(Other/No response)	5	58.0	5.1

*Totals vary because not all students responded to all questions
‡Includes both the Department of Architecture and the Department of Art and Design

Three obvious conclusions can be reached from this data. First, it is apparent that, as far as the CAAP Critical Thinking exam indicates, neither LTU seniors nor entering freshmen differ overall from the national sample – the mean score differences are far less than one standard deviation, indicating that no statistical significance can be attached to them.

Second, the LTU seniors and entering freshmen do not appear to differ significantly from one another. This is a more troubling observation, tending to suggest that the LTU experience has no measurable effect on their critical thinking ability as measured by this test. We will certainly have to take this possibility seriously and consider what to do about it. However, it must be kept in mind that these two groups are not the same, and we will learn more when the present freshmen are tested again as seniors.

Likewise, there are only very minor differences between subgroups of LTU students, at both the senior and freshman level. We have not subjected these differences to rigorous statistical analysis, but it is apparent by inspection that even the largest differences observed between any two subgroups are only a little more than one standard deviation, and again are without statistical significance at any meaningful confidence level.

Finally, it might be noted qualitatively that the answers "local questions" show a distinct bias toward the *status quo*.

Aside from these results, some other lessons were learned in the course of this assessment. For the assessment of seniors, we originally had commitments to assess more than two hundred students, carefully proportioned among the four Colleges according to the number of senior students in each. Owing to several delays the assessment took place later in the Spring than we had originally intended, and only 144 were actually administered. This would still be adequate for a representative sample, but unfortunately the balance was thrown off, with the Colleges of Arts and Sciences and Management being underrepresented. In the future, we will make more effort to administer spring term assessments earlier in the term and avoid the problems associated with late-term assessments. In fact, it is becoming apparent that our students are subjected to so many surveys and assessments that some University-wide organizing effort will be necessary.

The assessment of entering freshmen went smoothly enough, and we were able to administer the planned number of assessments. However, all these were given to students attending Discovery Days, which is almost entirely a "FTIAC" (First Time In Any College) event, attracting few transfer students. This ensures measurement of the maximum impact of the LTU curriculum on critical thinking ability, by maximizing the interval between the two assessments, but makes the two groups harder to compare. We should give some thought to how to assess transfer students coming in at various points in the curriculum.

An extraordinary feature of this assessment is the small variance about the mean in both the local samples and the national sample. It might be concluded that it has limited discriminatory power. We will have to look into this possibility.

Finally, at both levels this is a "snapshot" type assessment, intended only to provide baseline data on the state of critical thinking at LTU. We now have the task of setting a measurable goal and designing curriculum to enable us to achieve it.

3. Assessment of Teamwork

Follow-up discussions on the teamwork assessment survey administered in Spring 2006 led to the following conclusions and recommendations:

- The same survey can be used, probably on a five-year cycle.

- Teamwork education can be encouraged by local champions, by targeting specific classes and through the Educational Initiatives Consortium.

- To this end, we will compile a list of courses where teamwork is a significant component (unlike the previous list which contained all courses having any teamwork or group work at all) which can be used as

- Prof. Carpenter will organize a Round Table to discuss these issues.

4. Assessment of "Advanced Knowledge"

Another focus of this year's assessment activities, according to the revised schedule adopted in 2005-06, was the assessment of "advanced knowledge":

I. 1. Graduates will demonstrate knowledge, and expertise in applying this knowledge, in their fields.

I. 2. Graduates will demonstrate effective use of technology and the ability to apply it in their fields.

In this context, "advanced knowledge" is taken to mean any content that goes beyond the introductory curriculum taught in a given program, and is normally studied only by students majoring in the program. Since this content, and the appropriate technology set, are unique to each program, assessment of these goals was turned over to the individual departments, and the results are included in the departmental reports where available.

This effort did not go altogether smoothly. It had been assumed that most departments were assessing "advanced knowledge" as a matter of course, as part of their accreditation process, but it proved difficult to obtain detailed information on this process in a number of cases. Further efforts will be made to clarify the reasons for this and to assemble a comprehensive list of "advanced knowledge" and technology assessments now in use.

5. Assessment of Competence in Science

Competence in mathematics and science is included among the goals under "Fundamental Cognitive Skills and Abilities":

II. 4. Graduates will demonstrate competence in mathematics and in the use of the scientific method and laboratory technique.

This year the Assessment Committee concentrated on the question of how and when "use of the scientific method and laboratory technique" could be assessed. At the outset, the Assessment Committee felt that laboratory techniques and the scientific method would best be undertaken by the Natural Sciences Department. But Prof. Villeneuve reported that the Natural Sciences faculty felt that this assessment should be done by the colleges, on the basis that most assessment testing is done in the senior year and students are done with their Natural Sciences courses well before their senior year.

If the Department of Natural Sciences is to be responsible for assessing the scientific method, this would need to be done before the junior year since the natural sciences general education requirements are done by that time. This is the first time a discussion has occurred about doing assessment testing in the early years of a student's degree program.

After lengthy discussions, there are two fundamental approaches: (1) take a sample testing during the junior/senior years, after students had exposure to the scientific method (even transfer students), or (2) take a sample testing during the freshmen/sophomore years during the courses in which they are learning the scientific method at LTU. There was no consensus within the Assessment Committee to give this assessment to seniors. It was decided that, for the time being, the best approach would be to try to obtain a University-wide consensus on which approach to take. This will be done at the next Assessment Day in September 2007.

The committee also briefly discussed the idea of "core competency" exams with the intention of having a series of assessments given to all undergraduate students at the end of their core curriculum, before they approached their advanced courses. This could function something like the Writing Proficiency Exam.

Members of the University Assessment Committee thereupon took these suggestions back to their departments for comment. Some departments want Natural Sciences to conduct this assessment; other departments want to do the assessment within their own academic unit. There was also a suggestion of having it done in the "Foundations of the American Experience" course.

There was overall consensus to have Natural Sciences develop a method of assessing the Scientific Method, then extend it to all majors rather than having several different assessment tools for this goal. Prof. Villeneuve will take this idea to her Department for further comments.

6. Use of the Writing Proficiency Exam to Assess Other Cognitive Skills

A meeting was convened to discuss the possibility of using the Writing Proficiency Exam to assess other educational goals by choosing topics related to these goals and subjecting the writing samples to a second assessment that would focus on these goals rather than on the writing. Present were:

Walter Dean, Chair, Assessment Committee and Director of Assessment

Joyce Munro, Director, Writing Proficiency Program

Betty Stover, Chair, Department of Humanities, Social Sciences, and Communication

Melinda Henderson, Professor, Department of Humanities, Social Sciences and Communication

After some discussion it was apparent that the sense of the meeting was that this was inappropriate, for several reasons:

- To add other assessments to the WPE would put too much on it; the WPE is already freighted with significance since it is a mandatory graduation requirement in all programs.

- Students must be made aware of how and why they are being assessed; combining the WPE with other assessments would confuse the message.

- Students would not be able really to show what they can do under the conditions of the WPE (limited time, need to focus narrowly on writing, etc.) – humanities and social science topics would require a more reflective response.

- The goal of "breadth and depth in the humanities" is specifically addressed in the Junior/Senior elective course, which would in most cases follow the WPE rather than precede it.

- The WPE is administered every month – we would need a lot of questions.

In the course of the discussion, a number of suggestions were made for assessing other goals:

- Science goals: Include a paper in science classes – "writing across the curriculum". Have students write a paper in collaboration with English Composition.

- Character Education goals: Address in senior projects or leadership course.

- Something like a senior thesis, or possibly an interview at which open questions would be discussed. Possibly record these. Could the new media program have a role?

- The idea of "writing across the curriculum" as an appropriate way to address the humanities, social science, and natural science goals kept recurring.

Finally, it was suggested that it might be possible to address the critical thinking goals (II.5) through the WPE, because some of these skills are inherent in good writing. It was agreed that this idea would be pursued, but specific plans for doing so will be made later.

7. Completion of Educational Goals Revision

The revised Educational Goals were approved by the Dean's Council in November, 2006, as reported in the 2005-06 Annual Report.

8. Revision of Assessment Committee By-Laws

Some minor revisions were made to the Assessment Committee By-Laws to reflect desirable changes that have arisen in the course of several years. The revised by-laws are presented on the next page.

Assessment Committee Membership Rules
(Adopted, 7 May 2007)

Membership Composition

The Assessment Committee includes a representative from each academic department at LTU, a chairman that is the Director of Assessment for the University, and two *ex officio* members: the Provost and the Coordinator of Institutional Research.

Proposed:

The Assessment Committee is made up of the following individuals:

The Director of Assessment (Chairperson)
The Provost, *ex officio* and non-voting
The Coordinator of Institutional Research, *ex officio* and non-voting
One representative from each academic department.
One representative from any other academic unit as the Provost may direct.

Comment: The revision is intended to be read more easily, to emphasize the central roles on the Committee, and to limit the membership (the previous wording says who is included but does not exclude any number of others being added) while allowing the Provost to decide about units such as LTU Online and the Undergraduate Management Programs in Arts and Sciences (but not to select their representatives directly).

Chairperson:

(1) The Chairperson of the Assessment Committee is the University's Director of Assessment. He/she is a faculty member appointed by the Provost.

Committee Members:

(1) Each department, and each other unit designated by the Provost, names its own representative.

(2) Each department or unit representative serves for a term of three years. In the event of a vacancy during a term, the department or unit will name a representative to serve the unexpired part of the regular term.

(3) Continuous membership as a department or unit representative is limited to two regular terms plus up to two semesters' service in an unexpired term before the first regular term. A member who becomes ineligible because of this limit remains ineligible for three years unless the Provost decides that the department or unit lacks sufficient faculty for a normal rotation.

(4) Renewed terms start at the beginning of each academic year.

(5) Members will serve 3 years in staggered terms. The Chairperson will publish a schedule of expirations of terms in force at the time of adoption of these by-laws.

(8) Each member will attend an NCA conference, or another conference on academic assessment approved by the Director and the Provost, during his or her first year of service.

Rules of Order

(1) A two-thirds majority vote of the voting members of the Assessment Committee is required to change any of the membership rules once this proposal is approved.

(2) Robert's Rules of Order will be followed in other details that may not have been mentioned in the membership rules.

9. Attendance at Conferences

Members of the Assessment Committee attended three conferences on academic assessment in 2006-07:

Christopher Riedel: Rose-Hulman Institute of Technology, "2007 Best Assessment Processes IX", April 12-14, 2007

Donald Carpenter and Walter Dean: Higher Learning Commission, 112th Annual Meeting of the North Central Association, "Leading for the Common Good: Assessing and Improving Student Learning", April 20-24, 2007. Presented a paper entitled, "An Institutional Assessment on the Teaming Experiences of Undergraduates".

Diane Cairns: San Diego State University, "Evaluating Institutional Learning Centeredness", July 12-14, 2007

10. Assessment "Levels of Implementation" Matrix

As in the past, members of the Assessment Committee have, in collaboration with the Faculty of their departments, filled out a "levels of implementation" matrix to evaluate the state implementation of the assessment plans of their department and of the University as a whole. As expected, there have been no significant changes from the high levels recorded 2004-05, when this exercise was last done. The 2006 matrix is presented on the next page.

Assessment of Student Academic Achievement
Levels of Implementation: 2006 - 07

Departments	I. Institutional Culture		II. Shared Responsibility			III. Institutional Support	
	a. Collective/Shared Values	b. Mission	a. Faculty	b. Administration & Board	c. Students	a. Resources	b. Structures
Architecture	3	3	2.8	2.8	2.4	2.5	2.8
Art & Design	3	3	3	3	2	3	3
Civil Engineering	3	3	3	3	2	3	3
Electrical & Computer Engineering	3	2.5	3	3	2	2.5	2.5
Mechanical Engineering	2.8	2.8	2.8	2.8	2	2.3	2.3
Engineering Technology							
Management (BSIT)	2	2	2	3	2	2	2
Management (BSBM/IM/TM)	2	2	2	3	2	2	2
Humanities, Social Science, Communication	3	3	2	2	2	3	3
Natural Sciences	2.25	2.25	2.25	2	1	2.25	2.25
Math & Computer Science	3	2.5	2.8	2.6	1.2	2.5	3
2006 - 07 Overall average	2.7	2.6	2.6	2.7	1.9	2.5	2.6
2004 - 05 Overall average	2.8	2.7	2.7	2.8	1.9	2.6	2.6
2003 - 04 Overall average	2.9	2.6	2.6+	2.6	1.9	2.6	2.7
2002 - 03 Overall average	2.6	2.6	2.4	2.5	1.8	2.4	2.5
2001 - 02 Overall average	2	2	1.7	2	1.7	1.8	1.6

Levels: 1,2,3
Level One: Beginning Implementation Assessment Programs
Level Two: Making Progress in Implementing Assessment Programs
Level Three: Maturing Stages of Continuous Improvement

Departmental Assessment Reports

2005 – 2006 Academic Year

College of Architecture and Design

Department of Architecture

Architecture Department
Objectives and Outcomes Assessment Summary
2006 - 2007

1. Program Educational Objectives, Outcomes and Accreditation Status

The Department of Architecture offers two degrees: The Bachelor of Science in Architecture, the Master's in Architecture. The Educational Objectives and Outcomes for the Master of Architecture are established by the National Architectural Accreditation Board (NAAB). There are thirty-seven Performance Criteria for this program. The Master of Architecture holds a full six-year accreditation from NAAB, with the next accreditation visit scheduled for the spring of 2008.

2. Assessment Activities and Assessment Results

The following yearly plan was conceived during fall 2005:

- As a major assessment activity, at least one assessment goal will be assessed every semester. Assessment goals will be aligned with the NAAB 37 Student Performance Criteria. The Committee will continue to coordinate a yearly schedule as to which goals and which core courses are to be assessed every semester for the next few years in preparation for the next NAAB Accreditation visit. Every selected goal (i.e., performance criterion) will include outcomes, objectives, and assessment implementation strategies.
- The committee will promote more active participation of the full-time architecture faculty in the aforementioned assessment efforts. For the last couple of years, the Architecture Assessment Committee members have volunteered to assess their classes. The committee will seek for other faculty members' assistance in assessing their courses in coming years.
- As part of the ongoing debate among ACSA member schools regarding suggested revisions/clarifications to the current NAAB student performance criteria, the Committee will continue to assess and record COAD's evaluation of NAAB's criteria.
- The Architecture Assessment Committee will continue to work in collaboration with the COAD Curriculum Committee concerning the review of the current curriculum during the academic year 2006-2007). This will include discussion of recent revisions to the Freshman studio courses, as well as the IDS3-IDS4 sequence.
- The Committee will continue to update the Architecture faculty on the ongoing and future activities of the Architecture and the University Committees. In addition, the Committee will engage the faculty in the assessment-related activities via emails, letters, and faculty meetings throughout the year.

2. Other items accomplished for the academic year 2006-2007

Fall 2006

1. Assessment of two courses

- The College is gearing up for the next NAAB Accreditation Review Team's visit in 2 years and is in the process of developing a comprehensive plan for preparation this semester. Therefore, the selection and assessment of courses should be based on and developed in conjunction with such plan as soon as it becomes available.
- In the Fall of 2006, Professor Orlowski will introduce a teamwork seminar into the Allied Design: Sustainable Architecture Studio, and will conduct phase two of the teamwork assessment. The results will be compared with the baseline data gathered in the Fall of 2005.
- In conjunction with the Critical Thinking / Creative Problem Solving initiative planned by the University Assessment Committee, the COAD assessment committee will develop an assessment tool for the architecture capstone studio: Architectural Design Five. This assessment will occur in the Fall 2006 semester.
- There will be no departmental assessment in the spring of 2007, as the Department and its faculty will be preparing the Architecture Program Report (self assessment) due to NAAB in the Fall of 2007.
- The Department of Architecture Assessment Committee will be chaired by Professor Dan Faoro during the 2006-2007 academic year.

Spring 2007

In conjunction with the Critical Thinking / Creative Problem Solving initiative planned by the University Assessment Committee, the COAD assessment committee will develop an assessment tool for the architecture capstone studio: Architectural Design Five. This assessment will occur in the Spring 2007 semester.

3. Action Plan for 2006-2007

1. Assessment of the university-wide educational goals

Decided by the University Assessment Committee

1. Advanced Knowledge/ Technical Communication (Arch. Dept. based)
2. Critical thinking (part of the university wide assessment)
3. Teamwork (Arch. Dept. Based and ongoing)

(also writing and oral communication skills and other goals to be decided by the University Assessment Committee)

Current plan under consideration at Architecture to deal with the aforementioned goals (faculty input & approval required)

- The Architecture Committee to continue to develop a set of guidelines for each of these three goals through faculty participation and input
- Align these goals with the NAAB 37 criteria and develop a yearly assessment plan to assess the selected core courses where these criteria are applicable.
- Work with the University Assessment Committee to develop evaluation criteria for the three goals that are intended for adaptation to the specific needs of Architecture Department. However, it is recognized that assessment criteria should be tailored to the Department's uniqueness as per NAAB Accreditation Criteria.
- Reinforce the need for broader assessment participation by faculty who are not current members of the assessment committee.

Assess one goal from the above list for each academic year (note: this would be only our secondary objective because it is recognized that assessing one course based on one assessment goal aligned with the NAAB Student Performance Criteria is a major assessment-related activity for the Architecture Department due to significance of NAAB Accreditation and given limited faculty and heavy involvement to date of faculty in other committee areas – *See #1 Yearly Assessment Plan on the previous page*).

4. Summary Report of COAD Assessment Fall 2006/Spring 2007
The report has three parts as indicated below.

A. Assessment of Advanced Knowledge.
B. Technical Communication
C. Attachment 1 Teamwork Evaluation**.**

A. COAD Assessment of Advanced Knowledge- Fall 06/Spring 2007

ARC4114 Architecture Design 5.
This class is the final course in the design studio sequence in the senior year and is generally regarded as a 'capstone course'. The course is considered appropriate to assess 'Advanced Knowledge' in the architecture design sequence.

Advanced Knowledge in the architecture design studio sequence is represented by Criteria # 23, and 28. from the NAAB Accreditation Criteria- 2004 cited below. Criteria # 16-22 describe the fundamental (basic) knowledge which is incorporated in criteria 23 and 28.

The Arch. department Assessment Team met with professor Tom Nashlen who coordinates AD5 to discuss his process of course assessment. He incorporates reviews from external evaluators as resident experts in the field of architectural design. He employs a list of criteria for evaluation for multiple in progress

evaluations in the term to which include the NAAB criteria cited below. These reviewer comments are documented and incorporated into the project grade. This course will be documented for NAAB Accreditation program/degree review in 2007 and subject to evaluation by the NAAB review team.

National Architectural Accreditation Board (NAAB) Criteria. 2004

List of key assessment criteria as related to "advanced knowledge".

16. Program Preparation
Ability to prepare a comprehensive program for an architectural project, including assessment of client and user needs, a critical review of appropriate precedents, an inventory of space and equipment requirements, an analysis of site conditions, a review of the relevant laws and standards and assessment of their implication for the project, and a definition of site selection and design assessment criteria.

17. Site Conditions
Ability to respond to natural and built site characteristics in the development of a program and the design of a project.

18. Structural Systems
Understanding of principles of structural behavior in withstanding gravity and lateral forces and the evolution, range, and appropriate application of contemporary structural systems.

19. Environmental Systems
Understanding of the basic principles and appropriate application and performance of environmental systems, including acoustical, lighting, and climate modification systems, and energy use, integrated with the building envelope.

20. Life Safety
Understanding of the basic principles of life-safety systems with an emphasis on egress.

21. Building Envelope Systems
Understanding of the basic principles and appropriate application and performance of building envelope materials and assemblies.

22. Building Service Systems
Understanding of the basic principles and appropriate application and performance of plumbing, electrical, vertical transportation, communication, security, and fire protection systems.

23. Building Systems Integration
Ability to assess, select, and conceptually integrate structural systems, building envelope systems, environmental systems, life-safety systems, and building service

systems into building design

28. Comprehensive Design
Ability to produce a comprehensive architectural project based on a building program and site that includes development of programmed spaces demonstrating an understanding of structural and environmental systems, building envelope systems, life-safety provisions, wall sections and building assemblies and the principles of sustainability.

The summary results for the Fall 06 and Spring 07 report are below. The assessments levels 1-4 are defined in the legend.

Definitions:

Analysis: The research and background work prepared as part of the design process that incorporates clients needs/programming, characteristics of the building site and legal and code requirements, building codes regulations, potential building systems, and precedent studies.

Concept: The formulation of a comprehensive schema or strategy, expressed as an idea to resolve the central issues in the design , site and program response, esthetic and spatial objectives, and construction and building performance.

Schematic Design: The first phase or initial design study of the proposal to respond at a cursory level to the preliminary priorities from the concept issues cited above.

Technical Development : The development and resolution of the schematic design with increasing levels of detail evident as new priorities and performance measures unfold in the decision process of developing spaces, user program requirements, building materials, and construction and systems.

Documentation/Graphics: The development of the final drawing, and written presentation documents that describe the merits and resolution of the architectural design problem.

Concluding Comments: In the attached Graphic Assessment Report 2006/07 Advanced Knowledge, The final results of performance are shown in the Percentage /Levels at the right. Comments from the 2008 NAAB team will be considered for further development of the Advanced Knowledge in the program.

ARC 4114 Architectural Design Studio 5 Assessment Report 2006-2007 Advanced Knowledge COAD

Summary Reporting Term Fall 06/Spring 07

Evaluation Criteria	Levels of Achievement															General Observations	Percentages/Level				
	Fall 2006 Section 01					Fall 2006 Section 02					Spring 2007 Section 01										
	4.00	3.99-3.0	2.99-2.0	1.99-1.0	.99-0	4.00	3.99-3.0	2.99-2.0	1.99-2.0	.99-0	4.00	3.99-3.0	2.99-2.0	1.99-1.0	.99-0		4.00	3.99-3.0	2.99-2.0	1.99-1.0	.99-0
Analysis	0	2	4	7	1	0	3	6	7	1	1	3	4	2	0		2%	20%	34%	39%	5%
Concept	0	2	10	2	0	0	2	7	8	0	1	5	1	3	0		2%	22%	44%	32%	0%
Schematic Design	0	2	10	2	0	0	4	11	2	0	1	6	0	3	0		2%	29%	51%	17%	0%
Technical Development	0	1	3	7	3	0	4	4	4	5	1	2	2	3	2		2%	17%	22%	34%	24%
Documentation/Graphics	0	6	4	4	0	0	6	10	1	0	1	5	3	1	0		2%	41%	41%	15%	0%
																	2%	26%	39%	27%	6%

Legend:
4 - very well addressed
3 - well addressed
2 - adequately addressed
1 - minimally addressed
0 - not addressed

Total all sections/term
Total all terms
Numeric breakdown/level
Percentage/breakdown/level

NOTE: These evaluations constitute 60% of the student's final course grade.

B. Assessment of University Goal ;Technical Communication:

The Department continues to develop existing courses and expand technical communication in new classes. While no formal documentation of course or curricular outcomes was completed, ongoing program modifications and development took place. The department will await comments from the NAAB (Spring 2008)team to address the degree the department incorporates digital and technical communication in the program.

1.The Electronic Methods classes have adopted Building Information Modeling (BIM) learning modules in 2006/07. This is new system for architectural information based on developments of object –oriented software and will have a substantial impact on the technical documentation process and drawings produced in practice..

2. Representatives from AutoDesk ® (Revit) have made two presentations/ workshops regarding BIM applications to the faculty in Fall/Spring . Lawrence Technological University has been established as a beta test site for the Revit,® Sustainability Module when released in 2007/08.

3. A new elective course in Construction Project Management Estimating and Scheduling has been offered in will be a permanent course this Spring (08). The class provides an introduction to cost estimating and construction scheduling type software applications (Primivera,® and Timberline ®) which are interoperable with CAD software.

4. The Sustainability Studio has introduced applications in whole building energy analysis software, Green Studio ® with presentations and workshops sponsored by COAD and conducted by John Kennedy the company president. Applications of building component Life Cycle Analysis software, BEES ® and Athena ® are planned for 2007/08.

5. The Department of Architecture initiated a University research project for 2006-2007 the NREL sponsored grant for Solar Decathlon has included new software applications in Building Information Modeling (BIM) in preparation of their working drawings, energy analysis in the design development phase, and project estimating scheduling and management.

6**.** Dept. of Architecture faculty applied for a research grant to The American Institute of Architecture Large Firm Roundtable ($20,000). Joint Application, Daniel Faoro, Dan Price, (PI's) Janice Means, and Ashraf Rageb. Applicants proposed a field study to assess advantages of Building Information Modeling (BIM) in the provision of architecture services by large firms in the U.S. The study was based on a comparative analysis of data obtained from case studies which document design, construction, and post construction services of large firms, from projects completed using the BIM process and those completed without the BIM process. The data and documentation gathered would provide insight regarding the efficiencies of the BIM process compared to non-BIM projects**.** *Submitted; 9/14/2006 (Status; Denied).*

C .(Attachment 1) Team work.

Student Academic Achievement Assessment – Fall 2006

Course to be assessed: <u>Allied Design Studio: Sustainable Architecture (ARC4224) Phase 2</u>

Goal
Collaborative Skills: Ability to recognize the varied talent found in interdisciplinary design project teams in professional practice and work in collaboration with other students as members of a design team.
(Collaborative skills is #7 of the updated NAAB student performance criteria)

Outcome
In recognition of the University's mission to assess teamwork and leadership skills in our graduates, this will be the first part of a two-year comparative study in the implementation of teamwork training and skill development. In demonstration of an understanding of the collaborative nature of the design process, it is seen as necessary that students are able to engage in work activities that require negotiation, critical thinking, task delegation, and cooperative planning. Students will be able to successfully complete a design project demonstrating a collaborative approach to design and production.

Objectives

Attachments three and four summarize the data collected in phase one of this assessment effort, and establishes the benchmarks for phase two. The assessment objectives are as follows:

1. Improve upon the mean absolute value differential between each student's self-assessment and his/her partner's assessment of participation and workload. In phase one (see attachment three), this number was 6.72. A lower number would indicate a more uniform understanding of workload assessment, and reflect a greater sense of participatory equity among the design partners.

2. Improve upon the mean absolute value differential between each student's self-assessment and his/her partner's assessment across the eight areas of teamwork assessment (see attachment two). In phase one (see attachment four), this number was .54. A lower number would indicate a more uniform understanding of teamwork assessment.

3. Table two of attachment four indicates the mean evaluation scores of the entire class (both self-and partner assessment) against each of the eight teamwork assessment categories. The mean class self evaluation score (total) was 4.25. The mean class partner evaluation score (total) was 4.10. Improvement in both of these numbers would

indicate higher quality of teamwork, and is an objective, special attention will be paid to the four lowest categories (flexibility, leadership, organization, and preparation).

Implementation
The assessment will be conducted as follows:

Phase 1 (Completed Fall 2005): Students were required to complete the attached survey form (attachment two), and evaluated the efforts and abilities of both themselves, and their design partners. This will provide a baseline for teamwork abilities, as well as an opportunity to measure any disparity between self-assessment, and peer assessment.

Phase 2 (Fall 2006): Based upon input and recommendations form the University Assessment Committee, the course instructor will integrate a teamwork training seminar into the course syllabus (see attachment seven). At the end of the semester, students will be required to complete the attached survey. The resulting data will indicate the degree to which the training seminar improved the students' collaborative skills.

After reviewing the data (and the student comments) from Phase 1 as a benchmark, the following potential steps are proposed for phase two of this study:

1. Identify the teamwork categories in which students (or their partners) viewed as being areas of weakness, and focus upon improving student understanding and skills in those areas: flexibility, leadership, organization, and preparation.

2. Guide the student teams in strategies of workload sharing and management, with the goal of minimizing assessment differential in this area.

3. Mentor the students in identifying the characteristics of dysfunctional teams, and strategies for dealing with the most common of these potential setbacks.

Results

A summary of the students' responses to the three questions included in the survey is included in attachment five-A, as well as an accounting of the differentials between each student's assessments of their percentage of project responsibility, as compared to their partner's views of the breakdown of responsibilities. Attachment six-A includes three fields of data analysis. The first segment features a summary of each student's responses to the eight categories of assessment in the teamwork evaluation, as well as their teammate's assessment of that student's teamwork. The second set of data looks at the class as an aggregate, with the self-assessment scores in each category measured against each student's assessment of their partner in the same categories. Lastly, a comparison is made between the mean assessment differential for each design team, the mean responsibility differential for each team, and the final project

grade for each team. Copies of each student's Teamwork Evaluation form are available upon request.

In reviewing the percentages of overall work that students felt they had performed (and their partners' assessment), ten of thirty-three respondents felt their contribution was greater than their partners gave them credit for, and fifteen were in general agreement with their partner's assessment. Five students did not respond with a percentage assessment of comparative work responsibilities. The mean (absolute value) differential in this category was 7.8% (an increase from phase one results of 6.72%).

In reviewing the data in the first table of attachment six-A, the average of each student's self assessment in the eight assessment categories is compared to their partner's assessment. In sixteen cases, the student's self assessment was higher that their partners assessment. Nine students were more self-critical than were their partners, and in eight cases the student's self-assessment matched that given by his or her partner exactly. The mean of the absolute values of the comparative differentials was .67 points (an increase from phase one totals of .54 points).

Chart two attempts to compare the score of the whole class against each of the eight assessment categories. The categories where students scored themselves most highly were commitment and participation, an assessment born out in the assessments of their partners. In phase one, categories in which students felt they were least successful were in preparation, leadership and organization. Phase two saw increases in self assessment in each of these categories, with the largest gain the category of preparation (a percentage gain of .66 over phase one). Among the phase one students' assessment of their partners, leadership and flexibility were deemed the weakest aspects of teamwork. Phase two also saw gains in these areas, with the mean assessment in flexibility gaining 62 percentage points. In phase two, partner assessment averages dropped in four categories: communication, participation, preparation, and commitment. The mean of the absolute value differentials for all categories was .384 points (an increase from phase one, in which the value was .315 points).

The final chart on attachment six-A compares the teamwork assessment results against the grade received on the final design project. In comparison with the same data from phase one, there is no logical trending demonstrated here between teamwork assessment and project grade. Although the team with the largest mean of differentiation also received the lowest project grade, the teams with the second and third highest means of differentiation achieved the highest grades on the final project.

Results versus Objectives

In this section, the previously cited objectives are reiterated and measures against the data collected in phase two. This section will relate the level to which the assessment

objectives were and were not met. But first, a brief discussion of the major difference between the classes sampled in phases one and two is in order.

In the fall of 2006, student demand for the Allied: Sustainable Architecture studio was so high that a second section was needed. The decision was made that these two sections would be combined, and that both faculty (one full-time and one adjunct, would team-teach this combined class, to facilitate consistency of lecture material and exercises across all 33 students. Once the semester project was underway, three teams were identified as being essentially dysfunctional, with the instructors forced to intervene and consult on numerous occasions. One team in particular, was unable to develop a sound working relationship, and in the end was forced to enact a contract to define the division of work, and the faculty assessment thereof. Of particular concern with this team was communication: in both meetings exclusively of the team members, and with the faculty members, it became apparent that each partner would hear the same words, but came away with totally different perceptions of what had been said, and what agreements were made. It was if these two individuals existed in separate planes of reality, and in retrospect, neither instructor has seen a team which was so utterly dysfunctional. Numerous corrective measures were attempted, with no success.

In an attempt to measure the impact of the three dysfunctional teams upon the class data, attachments five-B and six-B feature a re-computation of the student data with these results from these three teams omitted. The differential in this data is discussed in the remainder of this section.

1. Improve upon the mean absolute value differential between each student's self-assessment and his/her partner's assessment of participation and workload. In phase one (see attachment three), this number was 6.72. A lower number would indicate a more uniform understanding of workload assessment, and reflect a greater sense of participatory equity among the design partners.

The overall class data from phase two yields a differential between each student's self-assessment and his/her partner's assessment of participation and workload of 7.8, meaning that the objective was not met. With the results from the dysfunctional team removed, the resulting differential was 5.0, which would have satisfied this objective.

2. Improve upon the mean absolute value differential between each student's self-assessment and his/her partner's assessment across the eight areas of teamwork assessment (see attachment two). In phase one (see attachment four), this number was .54. A lower number would indicate a more uniform understanding of teamwork assessment.

The overall class data from phase two yields a differential between each student's self-assessment and his/her partner's assessment across the eight areas of teamwork assessment of .67, meaning that the objective was not met. With the results from the dysfunctional team removed, the resulting differential was .49, which would have satisfied this objective.

3. Table two of attachment four indicates the mean evaluation scores of the entire class (both self-and partner assessment) against each of the eight teamwork assessment categories. The mean class self evaluation score (total) was 4.25. The mean class partner evaluation score (total) was 4.10. Improvement in both of these numbers would indicate higher quality of teamwork, and is an objective, special attention will be paid to the four lowest categories (flexibility, leadership, organization, and preparation).

The mean class self evaluation score (total) in phase two was 4.47. The mean class partner evaluation score (total) was 4.09, meaning that this objective was only partially met. With the results of the dysfunctional team removed, these respective aggregate scores were 4.6 and 4.4, which would have met the objective.

The comparative results in the four lowest categories (flexibility, leadership, organization, and preparation) in phase one is outlined below:

Category	phase one score	phase two score	differential
Flexibility (self)	4.28	4.45	+.27
Flexibility (partner)	3.71	4.33	+.52
Leadership (self)	4.14	4.62	+.48
Leadership (partner)	3.71	3.86	+.15
Organization (self)	4.14	4.3	+.16
Organization (partner)	3.85	4.05	+.20
Preparation (self)	3.67	4.33	+.66
Preparation (partner)	4.28	4.00	-.28

In seven of eight instances here, the objective was met. In the one category that was not met (Preparation - partner), removal of the data from the three dysfunctional teams would have yield a score of 4.44 (differential of +.16), which would have met the objective.

Conclusion

Based upon the raw data presented in attachments five-A and six-A, it would appear that the teamwork seminar and individual counseling of the instructors had little-to-no impact upon the student assessment of teamwork in phase two. None of the three objectives were completely met, although if broken down into smaller sub-objectives, eight out of twelve were satisfied. This last number is misleading, as five of these sub-objectives were related to a student's assessment of their own performance, not that of their partners. As demonstrated in the previous section, the results from the three teams (out of 16 – 19% of the sample) which were identified as dysfunctional had a tremendous impact upon the class results, and were a primary determinant in the conclusion stated in the first sentence of this section.

(attachment two)

TEAMWORK EVALUATION

Objectives:	**Name:**
• To assess how team members view their contributions, and their partner's contributions, to collaborative efforts. • To promote successful mentoring of teamwork as part of the architecture curriculum. • To build accountability into the team process.	**Date:**

Directions:

- List the members of your team. Include **yourself** in the list.
- Take one teamwork element at a time and consider each team member, including yourself.
- Use the following rating scale (using "average" as little as possible.) to rate everyone in the group. Use "Elements of Teamwork" as a guide.
- You must answer the questions on the last page.

- Your team members will not see your individual evaluations!

Poor = 1	Fair = 2	Average = 3	Good = 4	Excellent = 5

	Team Member Names				
Teamwork Elements	(your name)	(partner)	(partner #2)		
Communication					
Participation					
Flexibility					
Leadership					
Organization					
Preparation					
Procedure					
Commitment					

ELEMENTS OF TEAMWORK		
	A Poor Team Member	**An Excellent Team Member**
Communication	Is guarded and close to the vest with little voluntary input; attacks and blames.	Is open and communicates freely without fear of reprisal or embarrassment; listens carefully; considers everyone's opinion.
Participation	Lacks initiative to contribute; gives grudging response to requests; is too busy with own concerns; misses scheduled meetings.	Is always ready to lend a hand; reaches out to help; is readily available; contributes ideas and suggestions; regularly attends meetings.
Flexibility	Is stubborn, feels own viewpoint is the only one, is always right, won't consider others' position.	Is willing to understand others' position; considers or respects win-win solutions; gives in to support common objective when appropriate.
Leadership	Is hesitant and unsure, waffles in decisions, is not able to win support, exercises no control.	Is firm and fair; holds others accountable for their commitments; is personally accountable; is supportive.
Organization	Defines and organizes personal responsibilities poorly; thinks about task, not results.	Organizes and divides work and responsibility correctly for best achievement of objectives.
Preparation	Is not prepared for action; is uninformed; neglects responsibility to team members.	Is well informed; has good ideas; researches thoroughly; is ready for action.
Procedure	Applies own rules; has disruptive behavior.	Follows procedures that are followed by all members of team; observes team rules.
Commitment	Does not understand or accept team objective; is not supportive and makes no effort to achieve objectives.	Has high understanding and acceptance of objectives; is fully informed, strongly supportive, active in effort to achieve common objectives.

Please answer the following questions:

What were *your* primary responsibilities on this project? What percentage of the overall project work did *you* do?

What were *your partner's* primary responsibilities on this project? What percentage of the overall project work did *they* do?

What additional instruction / guidance do you feel the instructor could have provided which would have enhanced the quality of your teamwork experience? Was the early-semester seminar and IDEO video helpful?

(attachment three)

Summary of Student Comments (Phase 1):

Please answer the following questions:

What were *your* primary responsibilities on this project? *What percentage of the overall project work did you do?*

	Respondent's assessment	Partner's assessment	Differential
Droski	45%	45%	0
Heine	50%	50%	0
Karczag	60-75%	50%	17.5
Marra	50%	40%	10
McCormick	60%	50%	10
Reece	60-70%	50%	15
Sutter	50%	30-40%	15
Roberts	50%	45-55%	0
Robinson	45-55%	50%	0
Sluiter	50%	40%	10
Spencer	50%	40%	10
Swem	50%	50%	0
Wells	55%	45%	10
Duggar	60%	50%	10
Mack	50%	50%	0
Ewing	50%	50%	0

Mean Differential6.72

What were *your partner's* primary responsibilities on this project? *What percentage of the overall project work did they do?*

See data above.

What additional instruction / guidance do you feel the instructor could have provided which would have enhanced the quality of your teamwork experience?

* None. My partner and I were able to work together very effectively and harmoniously. We had been friends for some time before this project and that helped a lot.

* Nothing.

* Maybe mention an example of how to divide work? At least for final it would have been better to initially say one person does model and other book. Knowing req's for final presentation ahead of time.

* Help establish communications and goals in the team / measures of progress.

* Maybe help designate a team leader from the beginning. We constantly clashed for leadership.

* None

* Just more communication on actual design features.

* This was the best partnership I've been in at LTU. Everything came easy.

* More common workplace teamwork environments, ‘tips’ or strategies and exchanging information plan.

* I think the book should have been a semester-long project. Having it earlier would definitely have helped.

* He could not have helped our group at all.

* Not much from my perspective….It is up to the teammates to be mature and get along. It’s real life!

* Better management of assignment deadlines.

* Board format.

(attachment four)-
phase 1

Student Name	Self Evaluation avg.	Partner's Assessment avg.	differential	ab. val.
Droski	4.5	4	0.5	
Duggar	4	4.88	-0.88	
Heine	4.75	5	-0.25	
Karczag	3.875	3	0.875	
Marra	3.3125	3.125	0.1875	
McCormick	3.75	3.25	0.5	
Reece	5	3.75	1.25	
Roberts	4.25	4.75	-0.5	
Robinson	4.625	4.25	0.375	
Sluiter	3.375	3.25	0.125	
Spencer	4.88	3.75	1.13	
Sutter	4	4.75	-0.75	
Swem	5	5	0	
Wells	4.25	4.5	-0.25	
Mean	4.254821	4.089643	0.165179	0.54

Category	Self Evaluation avg.	Partner's Assessment avg.	differential	ab. val.
Communication	4.28	4	0.28	
Participation	4.57	4.64	-0.07	
Flexibility	4.28	3.71	0.56	
Leadership	4.14	3.71	0.43	
Organization	4.14	3.85	0.29	
Preparation	3.67	4.28	-0.61	
Procedure	4.21	4	0.21	
Commitment	4.71	4.64	0.07	
Mean	4.25	4.10375	0.145	0.315

Team	mean of diff. (a.v.)	mean responsibility diff.	project grade
1	0.375	5%	4
2	1.005	10%	2.7
3	0.125	0%	4
4	0.531	13.75%	3
5	0.3125	10%	3.3
6	1	15%	3
7	0.4375	0%	3.7

(attachment five-A)

Summary of Student Comments: Phase 2 (Fall 2006)

Please answer the following questions:

What were *your* primary responsibilities on this project? *What percentage of the overall project work did you do?*

	Respondent's assessment	Partner's assessment	Differential
Fiema	55-60 %	40%	17.5
Yeldo	60%	40 - 45%	17.5
Bach	60-75%	50%	17.5
Dodge	50%	30 - 35%	17.5
Endres	50%	50%	0
Miller	50%	50%	0
Fercho	50%	50%	0
Groh	50%	50%	0
Altman	50%	N/A	N/A
Faust	N/A	50%	N/A
Corbo	50%	50%	0
Tocco	50%	50%	0
LeFort	50%	50%	0
Long	50%	50%	0
Banchero	50%	N/A	N/A
Smith	N/A	50%	N/A
Dulong	70%	N/A	N/A
Kotrba	N/A	30%	N/A
McGovern	33%	33%	0
Rempel	33%	33%	0
Shelton	33%	33%	0
Lepsetz	60-75%	40%	27.5
Reynolds	60%	25-40%	27.5
Murphy	50%	50%	0
Schauer	50%	50%	0
Bieber	50%	25%	25
Hoerauf	75%	50%	25
Kasperek	N/A	N/A	N/A
Shango	N/A	N/A	N/A
Murray	60%	50%	10
Schwing	50%	40%	10
Gignac	50%	50%	0
Marenco	50%	50%	0

Mean Differential 7.8

What were *your partner's* primary responsibilities on this project? *What percentage of the overall project work did they do?*

See data above and attached survey forms.

What additional instruction / guidance do you feel the instructor could have provided which would have enhanced the quality of your teamwork experience? Was the early-semester seminar and IDEO video helpful?

* I don't think there is any way to guide a group in how to work better with one another, it all depends on the individuals and how they work. The IDEO video is a good video, may not necessarily be helpful, but it's good video to see at least once.

* None, really. My partner should have come to me first if she thought we were having a problem. But instead, she waited until after she dropped the ball on completing her work for a presentation of ours, and went to the instructor to complain of a problem with ME. That seems pretty underhanded and two-faced to me. I have also come to find out from other students that have worked with her in the past that she is not a reliable partner, has unsound design ideas, and doesn't put much thought into what she throws together on a project. I hate to say it, but it doesn't seem the teamwork presentation helped us. We tried very hard not to step on each others toes and did not bring our issues out into the open with one another in order to resolve them and complete a good project.

* To enhance the quality of the teamwork I think it would have helped to simply have more time to work on the project, or make the teams do a small project at the beginning and then jump right into the semester project. The videos and seminar were not very helpful, as I do not remember what they were.

* We did all projects as a team and team work is essential in helping students to communicate with each other as well as sharing different ideas. I personally think that the best way to learn is through the team work. We learned a lot while working on the first couple of projects but our final project definitely needs more time. My suggestion is to start earlier with the final project. This class is about sustainability which is (for most of us) something we have not been exposed to before so most of us would need a more detailed explanation.

* The instructor's guidance of working as a team was a good base start to working as a team. The experience has to be experienced first hand by actually working with other people. Teams sometimes work and sometimes don't but we have to try to make them work no matter what differences may arise. The video was helpful in showing the process of teamwork.

* The instructors were both helpful with their critiques, insight, information and resources and also had a good enthusiasm regarding sustainable architecture! There isn't much else the instructors could have done to enhance our great teamwork experience. This was a very successful semester overall, in part perhaps I had chosen my partner wisely. This is a great studio, giving us a great understanding of sustainable and environmental issues, without getting too bogged down with any scientific aspects. This class could have easily "drifted away" from design and loosing the essence of design and turn into an "environmental" class, but there was a good balance between design and the environment, the main focus still being design!

* For people who got paired up with bad group members, allow groups in extreme circumstances to become singles.

* My biggest complaint about the experience (and entire experience) is that group work lacks consistency. It is my opinion that we should all be at a particular level, not the same level but to a point we share a common background in what is expected. Most people there probably know what is expected and should not be penalized for having higher expectations.

Some groups are people who have known each other from the get-go and work well together which is great. I think that is a valuable experience to have. But for those who do not have that sanctuary, it becomes a crap shoot of who people work with. The reason I mention this is that I don't think it is something anything an instructor can directly influence and it's not fair to say this is how things should have been when there are so many other students and considerations to take into account.

I have had two different groups this semester and they have both been very unsatisfactory, so maybe the problem is with me. So I can't really say what should have been differently.

* Working in a group is very hard to teach. But I feel as if it is a very important asset to have after I graduate. I feel as if the studio was very well prepared and organized. It reflects in everyone's project. The video was not as helpful as actually being able to work with the group and experience the troubles. Working in a large group in the beginning of class made it easier to only work with one person towards the end.

* Yes it was helpful. I would like to see a greater cohesion in terms of the partners that you work with. Like if you work with the same partner on all the projects throughout the semester, you will be forced to bring what you both have learned into the architectural designs.

* Yes and no, I feel that if by now you cannot work in a group you are not going to make it in the real work.

* The instruction and guidance given was helpful, although working together created an experience that only teamwork can provide.

* It was ok. I think that not knowing who your partner is can be dangerous, only because two people have different mindsets. Picking someone who you know will be more successful of a project. For instance, XXX is very nice and willing, however, she was content on waiting until the last minute to do things. Me on the other hand, I wanted to begin early and if we finished early then so be it (throughout due dates of the project). These mindsets played a factor during the final stage of the project, she also never really pushed the design or the graphics – mediocrity was sufficient in her opinion..

Also, one thing to consider – its hard to choose partners whom you don't know. If you don't choose a partner, you might be assigned to someone who doesn't care as much as the tasks as you do.

All in all, these things I have mentioned are very minor, professor, I do not care for acknowledgement (neither do I want you to punish XXX) – only that I learned a great deal from you, this class, and the students around me. The main thing was that the project was completed successfully. As always though, I wished my design could have been better!

* I don't think there is anything else to teach about teamwork. We've done it throughout our time here and if we haven't figured out what good teamwork is by now, then we never will.

* I believe that working in teams was beneficial in many ways. Not only did it *somewhat* lighten the load of a typical final project; it also gave us the experience of working in teams during times that are sometimes stressful.

The IDEO video was definitely helpful in showing us how teams can be very productive. The ability to bring differing ideas together into a compiled project enhances the project and creates better quality results.

Sorry Ed, I don't remember the early-semester seminar.

* At this time, I cant really think of anything that could be added to the course to enhance the teamwork experience. The seminar and video are effective in providing some expectations and key situations to watch for in order to prevent conflict amongst team members. In addition, the IDEO video provides a viable, real world, visual representation of a well organized team, along with good plan of attack on how to organize our own teams.

* The video helped. There was excellent communication to our group when we needed the help the most. More conflict resolution should be addressed to emphasize that there ***will*** be miscommunications / problems.

* I feel that both professors handled our situation accordingly. I feel that I am very capable of working in teams. However, I managed to fall into a situation which was out of my hands.

* With this team, I feel there is nothing more that could have improved our team experience. I've been in some bad groups in the past, so I made sure this semester to team up with someone who shared my work ethic. The seminar and videos were good, but there is nothing that can be done to motivate a partner that doesn't share your ideas of what a complete and successful project are.

* My partner shared the same visions as myself and there is little that could have changed our ethic. The video / seminar was somewhat helpful.

* The group project format worked out well. I don't really think that the IDEO video helped out that much, and I don't recall the early semester seminar.

* Shorter, more frequent meetings would be beneficial. The video was helpful for harnessing creative energy.

* I feel all resources were given to us. Teamwork is teamwork, and sometimes it works and sometimes it doesn't, but I feel the video and seminars were helpful and informative.

* Yes, it was. I enjoyed the experience, and I learned a lot about my own abilities as well as had a chance to work with a different group of people.

* I'm not sure. Maybe you should check-in on the amount of work that each person did, and if they actually did their part or if one just had to take over the majority of work to get it done.

* It (the video) was nice. I think the instructors were well prepared and knowledgeable in terms of what information we required (as a team) to work together.

(attachment five-B)

Summary of Student Comments: Phase 2 (Fall 2006)

Please answer the following questions:

What were *your* primary responsibilities on this project? *What percentage of the overall project work did you do?*

	Respondent's assessment	Partner's assessment	Differential
Fiema	55-60 %	40%	17.5
Yeldo	60%	40 - 45%	17.5
Endres	50%	50%	0
Miller	50%	50%	0
Fercho	50%	50%	0
Groh	50%	50%	0
Altman	50%	N/A	N/A
Faust	N/A	50%	N/A
Corbo	50%	50%	0
Tocco	50%	50%	0
LeFort	50%	50%	0
Long	50%	50%	0
Banchero	50%	N/A	N/A
Smith	N/A	50%	N/A
McGovern	33%	33%	0
Rempel	33%	33%	0
Shelton	33%	33%	0
Murphy	50%	50%	0
Schauer	50%	50%	0
Bieber	50%	25%	25
Hoerauf	75%	50%	25
Kasperek	N/A	N/A	N/A
Shango	N/A	N/A	N/A
Murray	60%	50%	10
Schwing	50%	40%	10
Gignac	50%	50%	0
Marenco	50%	50%	0
		Mean Differential	5

(attachment six-A) Phase 2: Fall 2006

Student Name	Self Evaluation avg.	Partner's Assessment avg.	differential	ab. val.
Fiema	4.625	4.25	0.375	
Yeldo	4.5	4.75	-0.25	
Bach	4.375	2.125	2.25	
Dodge	3.25	2.25	1	
Endres	5	5	0	
Miller	5	5	0	
Fercho	4.87	4.375	0.5	
Groh	4.25	5	-0.75	
Altman	4	4.5	-0.5	
Faust	4.75	4	0.75	
Corbo	4.625	4.625	0	
Tocco	4.625	4.625	0	
LeFort	4.625	3.75	0.875	
Long	4.25	4.625	-0.375	
Banchero	5	5	0	
Smith	5	5	0	
Dulong	3.875	1.5	2.375	
Kotrba	3.625	2.375	1.25	
McGovern	4.75	3.9375	2.375	
Rempel	4.625	4.6875	-0.625	
Sheldon	4.375	4.75	-0.375	
Lepsetz	3.9375	3.75	0.1875	
Reynolds	4.5	2.7875	1.7125	
Murphy	5	4.25	0.75	
Schauer	4.375	5	-0.625	
Bieber	5	3.625	1.375	
Hoerauf	4.375	5	-0.625	
Kasperek	3.5	2.5	1	
Shango	5	3.75	1.25	
Murray	3.5	4.625	-1.125	
Schwing	4.5	3.625	0.875	
Gignac	5	5	0	
Marenco	5	5	0	
Mean	4.475227	4.092045	0.413636	0.667

Category	Self Evaluation avg.	Partner's Assessment avg.	differential	ab. val.
Communication	4.29	3.84	0.45	
Participation	4.74	4.33	0.41	
Flexibility	4.45	4.33	0.12	
Leadership	4.62	3.86	0.76	
Organization	4.3	4.05	0.26	
Preparation	4.33	4	0.33	
Procedure	4.29	4	0.29	
Commitment	4.77	4.32	0.45	
Mean	4.47375	4.09125	0.38375	

Team	mean of diff. (a.v.)	mean responsibility diff.	project grade
1	0.3125	18%	4
2	1.625	18%	2.3
3	0	0%	3.7
4	0.625	0.00%	3
5	0.625	N/A	2.7
6	0	0%	2.7
7	0.625	0%	4
8	0	N/A	4
9	1.81	N/A	2.7
10	0.4167	0	3.7
11	0.95	27.5	3.7
12	0.6875	0	4
13	1	25	3
14	0.9688	N/A	4
15	1	10	3.7
16	0	0	3.7

(attachment six-B) Phase 2: Fall 2006

Student Name	Self Evaluation avg.	Partner's Assessment avg.	differential	ab. val.
Fiema	4.625	4.25	0.375	
Yeldo	4.5	4.75	-0.25	
Endres	5	5	0	
Miller	5	5	0	
Fercho	4.87	4.375	0.5	
Groh	4.25	5	-0.75	
Altman	4	4.5	-0.5	
Faust	4.75	4	0.75	
Corbo	4.625	4.625	0	
Tocco	4.625	4.625	0	
LeFort	4.625	3.75	0.875	
Long	4.25	4.625	-0.375	
Banchero	5	5	0	
Smith	5	5	0	
McGovern	4.75	3.9375	2.375	
Rempel	4.625	4.6875	-0.625	
Sheldon	4.375	4.75	-0.375	
Murphy	5	4.25	0.75	
Schauer	4.375	5	-0.625	
Bieber	5	3.625	1.375	
Hoerauf	4.375	5	-0.625	
Kasperek	3.5	2.5	1	
Shango	5	3.75	1.25	
Murray	3.5	4.625	-1.125	
Schwing	4.5	3.625	0.875	
Gignac	5	5	0	
Marenco	5	5	0	
Mean	4.597037	4.453704	0.180556	0.4907

Category	Self Evaluation avg.	Partner's Assessment avg.	differential	ab. val.
Communication	4.48	4.28	0.2	
Participation	4.85	4.69	0.16	
Flexibility	4.52	4.48	0.04	
Leadership	4.7	4.31	0.39	
Organization	4.44	4.39	0.05	
Preparation	4.52	4.44	0.08	
Procedure	4.44	4.3	0.14	
Commitment	4.81	4.32	0.49	
Mean	4.595	4.40125	0.19375	

College of Architecture and Design

Department of Art and Design

Art and Design Department
Objectives and Outcomes Assessment Report
2006-2007

The Art and Design Department offers three undergraduate degrees: a Bachelor of Interior Architecture, a Bachelor of Arts in Imaging and a Bachelor of Arts in Transportation Design.

The educational outcomes and objectives for the Interior Architecture Degree are established by the Council for Interior Design Accreditation and are accredited by CIDA and the National Association of Schools of Art and Design (NASAD).

The educational outcomes and objectives for the Bachelor of Fine Arts in Imaging are established and accredited by NASAD.

The Bachelor of Arts degree in Transportation Design is in its first year and has applied for accreditation by NASAD, as well.

The Interior Architecture program prepares people for careers in interior architecture and design through placing value and emphasis on technical, social, psychological, cultural, environmental, economical, spiritual and physical factors to comprehensively respond to human needs.

The BFA degree in Imaging is based on a broad foundation in the fine arts and visual communications with application to a variety of media and techniques to achieve creative solutions to design problems. The primary objective of the program is to apply creative design processes to the development of skills in hand drawing, graphic identities, Internet designs, photography, motion graphics and other new and emerging technologies that meet the needs of corporate and private enterprises.

The Bachelor of Science in Transportation Design program will develop advanced knowledge, skills and experience to lead design teams in developing vehicle concepts integrating Marketing, Ergonomics, Engineering, Manufacturing and Sustainability in a global market.

Accreditation is pending further review by NASAD.

An advisory council for the Imaging Program has been formed and is in its first year of overseeing the goals and vision for the future of the program in the areas technology, practice and education.

All in-house assessment activities support the University Educational Goals and Assessment Foci.

The following is a summary of assessment tools and performance criteria used in each of our three degree programs. Learning objectives are written for each course and there are written performance appraisals for projects done in each course. Student learning is continuously monitored during class sessions, mid-term and in final reviews, wherein, both oral and written presentations are required to demonstrate project intent.

. Outside critics and jurors are invited to all student reviews and provide performance appraisals to students along with oral feedback to program coordinators and faculty.

There are professional evaluations of all capstone courses.

In the design fields, competitions replace national exams for our students to demonstrate knowledge and talent, as well as, effective uses of advanced technologies, such as, Google Earth and BIM/REVIT.

External reviewer's comments during studio reviews are noted and serve as an informal survey of LTU employers and their perception of LTU grads use of technology.

The programs in COAD as a whole place a priority on developing personal values as the foundation of integrity and professional ethics and are mandated by accrediting agencies ethics learning criteria.

Our success in instilling a sense of professional ethics can be measured by the student involvement in service learning and outreach programs.

There are internship requirements in each program and their results are continuously monitored to guide curriculum and course content.

The action plan for 2007-2008 is to document how and when each degree program's course offerings accomplish the university's undergraduate educational goals and reinforce the need for assessment participation by faculty who are not current members of the Assessment Committee.

College of Arts and Sciences

Department of Humanities, Social Sciences and Communication

Humanities, Social Sciences and Communication Department (HSSC)
Objectives and Outcomes Assessment
Summary 2006-07

Action Plan for 2006-07
1. Maintenance of the department's cycle of regular written-work evaluations for student writing. This year, **Development of the American Experience, World Masterpieces I and Technical and Professional Communication** will be evaluated. World Masterpieces I essays collected the previous spring will be evaluated in the Fall. The same procedure will apply when World Masterpieces II essays are collected in the spring.
2. Initial evaluation of the Psychology assessment plan.
3. Visitation of second full-time post-doctoral instructor.
4. Initial implementation and development in HSSC of instructional features related to Leadership/Teamwork education.

This year's Action Plan, mandated that HSSC faculty members continue to implement the department's approved standards for grading student written work. These standards are represented by the **Banned Error List** and the HSSC **Guidelines for Writing Papers** (see attachments to the report for 2002-03). Both documents are distributed to all Composition students, as well as to those taking other courses in the Core Curriculum where writing is emphasized. Assessment for the 2006-2007 academic year found that implementation of the writing rubric is inconsistent among instructors.

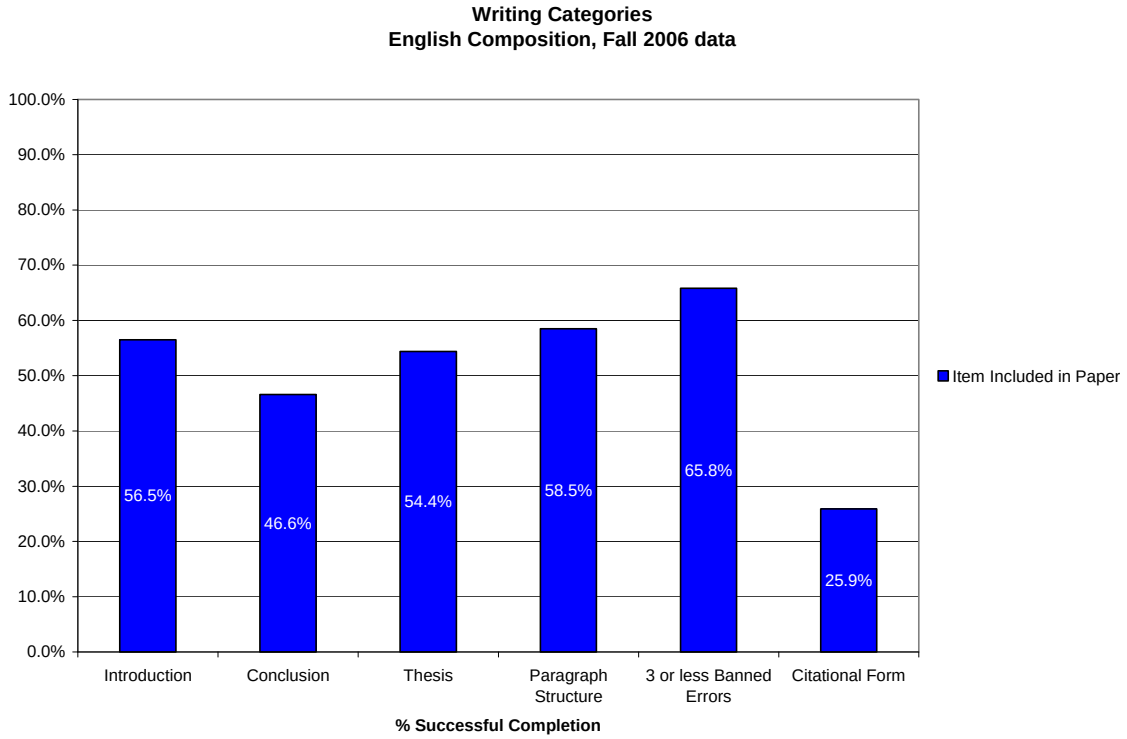
1. **Maintenance of the department's cycle of regular written-work evaluations of student writing**.

In the three-year cycle, the focus this year was on World Masterpieces I (LLT1213--1223), Development of the American Experience (SSC2423), and Technical and Professional Communication (COM2103). These Core courses--or their equivalents approved for transfer credit--along with Foundations of the American Experience, Development of the American Experience and Economics make up HSSC's contribution to the Core Curriculum.

Key to these courses (excepting Economics) is an emphasis on writing proficiency. Again, both the Banned Error List and HSSC Guidelines for Writing Papers serve as the general basis for evaluating student written work (where indicated, the Guidelines are modified).

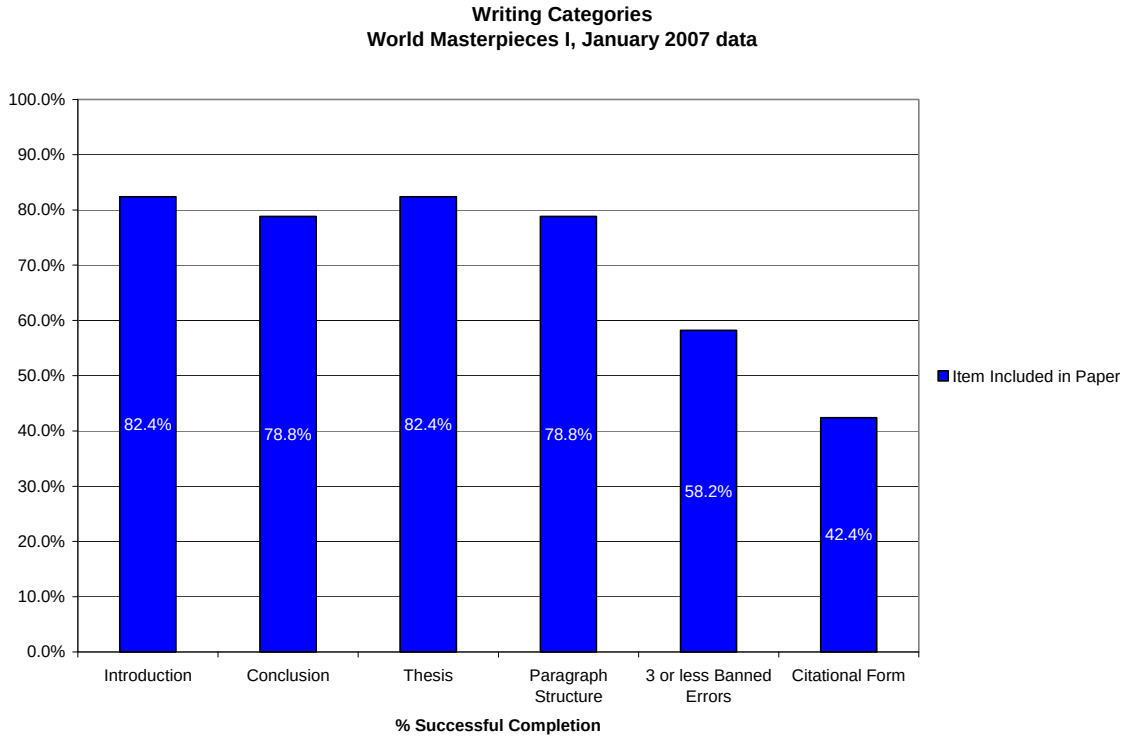
WORLD MASTERPIECES I--ASSESSMENT METHODOLOGY
At the beginning of the Spring semester 2006, English coordinator Melinda Weinstein arranged for faculty to review final essays from **English Composition** (COM1103) collected in the Fall 2005. Three full-time faculty members and six adjuncts reviewed 193 essays for effective introductions and conclusions, thesis statements, paragraph structure, banned errors and citational form. In order to ensure objective measuring of student learning outcomes as opposed to evaluating teaching performance, the papers did

not have students' or professors' names attached to them. **Each instructor used a grid and marked whether a paper was successful in each category. These grids were then collated.** The attached graph shows what percentage of students adequately mastered each category.



At the end of the Spring semester 2006-07, the core coordinator for English collected the final papers of every student taking World Masterpieces I , for a total of 199 papers. Using criteria based on the BEL and Guidelines, the papers were evaluated. (The English Core Coordinator had also collected World Masterpieces I final essays during Spring Semester of the preceding year, 2006.)

At the beginning of the Fall Semester 2006, a team of adjunct and full-time faculty used the same grid to determine the success of final essays in World Masterpieces I. A team of part-time and full-time faculty reviewed 158 essays. These essays also did not have student or faculty names attached to them. **The shift from Composition to World Masterpieces I reveals marked improvement in the writing of Introductions and Conclusions, thesis statements, and paragraph structure, with some decline in the mastery of citational form and avoidance of banned errors. This change is reflected in the bar graph below.**



World Masterpieces II papers were also collected in the Fall 2006.

In the Spring of 2007, a team of adjunct and full-time faculty used the same grid to determine the success of final essays in World Masterpieces II. A team of part-time and full-time faculty reviewed eighty-five essays. These essays also did not have student or faculty names attached to them. The results of this assessment procedure are pending. In Spring 2007, final essays were also collected from upper-division electives in English. These papers will be assessed at the beginning of the Fall semester 2007.

Arranging for the deletion of grades, as well as the names of both students and their instructors, the coordinator numbered the papers 1-199. She then created a spreadsheet with 1-199 down the left column. At the top of the sheet the coordinator listed categories of evaluation: introduction, conclusion, thesis, paragraph structure, three or fewer banned errors, and citational form. At two meetings, the papers were divided among full-time and adjunct faculty. All faculty members used the spreadsheet to evaluate the essays for effectiveness. The statistical results of this procedure are currently being tabulated by Ann Thomas.

At the end of Spring semester, the final essay written by each student enrolled in World Masterpieces I was also collected. During the week preceding the first class day of the Fall 2006-07 academic year, these essays will also be analyzed in the manner described above. At that time, the results of this work along with the tabulated results of Composition essays will be distributed at a meeting within HSSC. The purpose will be to aid in establishing a plan of action for improving the performance of students taking English Composition. This assessment meeting before the beginning of the Fall semester

will be required of all faculty involved in teaching the courses, both full-time and adjunct. NOTE: in the Spring of 2007, this procedure will be applied to essays collected from all students taking World Masterpieces II.

DEVELOPMENT OF THE AMERICAN EXPERIENCE (SSC2423)

Dr. Philip Vogt, coordinator for history in HSSC, directed assessment of the second of two required history/philosophy courses. Along with World Masterpieces I and II, this course with its companion offering (Foundations of the American Experience SSC 2413) represent the humanist core of the Core Curriculum.

As is true of its companion course, Development student performance is evaluated with a clear emphasis on written work. A condensed version of Dr. Vogt's report follows.

I. Introduction:

All of the instructors who taught SSC2423, "Development of the American Experience," in the fall of 2006 bring to the classroom a proven record of success. Their outstanding abilities have been demonstrated either through tenure review or, in the case of adjunct faculty, by a process of evaluation that includes classroom visits by the core coordinator and end-of-semester student evaluation. The university is fortunate to have them on its team.

II. Overview of Results:

Assessment of student writing in SSC2423, "Development of the American Experience," for the fall semester of the 2006-2007 academic year failed to show a broad improvement in student performance and indeed revealed an overall decline. Each instructor's students did show improvement for specific categories of assessment. Instructor 1's students improved in assessment categories pertaining to thesis. Instructor 2's students improved in assessment categories pertaining to argument. Instructor 3's students improved in assessment categories pertaining to grammar and style. Overall, however, assessment for the 2006-2007 school year found that student performance in Development of the American Experience was worse at the conclusion of the course than at the beginning.

III. Plan of the Assessment Exercise:

The goal of the exercise was to determine whether or not students show intellectual growth and improvement in writing ability as a result of completing the second social-science course in LTU's core curriculum, SSC2423, "Development of the American Experience."

In sections taught by three instructors, eighty-nine students were enrolled in SSC2423 in the fall 2006 semester. Each instructor was asked to contribute one set of papers from the beginning of the semester and another from the end. It was not stipulated that papers from the two samples should have been written by the same students. Instead, papers chosen for each set were simply to reflect the distribution of grades given for that assignment. "Clean" copies, free of grades or other markings, were to be submitted. Reflecting their respective shares of total student enrollment, two instructors were each asked to contribute two sets of five papers; the third instructor was asked to contribute two sets of nine. The actual distribution of papers received is given in Table 1.

Table 1: Numbers of Papers Received.

	First Papers	Last Papers	
Instructor 1	5	5	
Instructor	10	10	
Instructor 3	3	5	
Total:	18	20	**38 papers, total.**

Each instructor was asked to assess all of the papers that had *not* been submitted by his own students and to evaluate each paper by the same twelve-point checklist (Appendix 1). All papers were also assessed by the core coordinator. To guard against bias, each paper was identified only by an assigned number (Appendix 2), concealing the instructor for whom, and the point in the semester at which, the paper had been written. With each of the 38 papers being evaluated by three readers, the exercise should have generated 114 separate evaluations. However, one instructor marked his evaluation sheets incorrectly, rendering them unusable. As a result, a total of 96 accurately tabulated evaluations were generated. (Note: all appendicese are included at the end of this report.)

IV. Results: Full Presentation and Analysis:

Assessment participants (instructors and the core-coordinator) found that aggregate student performance in their colleagues' classes declined in all categories but one (Table 2):

Table 2: Average Score by Assessment Category,
III. Reported by Instructors and Core-Coordinator

	1	2	3	4	5	6	7	8	9	10	11	12
First Papers	4.75	4.5	5.97	6.27	5.48	4.34	5.75	6.33	6.46	6.15	5.84	5.86
Last Papers	4.64	3.89	5.77	5.95	5.0	3.76	5.58	6.39	6.36	5.48	5.17	5.5
Gain	*	*	*	*	*	*	*	0.06	*	*	*	*
Loss	0.11	0.61	0.2	0.32	0.48	0.58	0.17	*	0.1	0.67	0.67	0.36

One factor biasing these results might have been the input from the core-coordinator, since he alone of exercise participants had not taught the class in the fall of 2006 and therefore had contributed no papers to the assessment exercise. However, similar results were obtained when his evaluations were removed from the calculation (Table 3):

Table 3: Average Score by Assessment Category,
IV. Reported by Instructors Alone

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**		
First Papers	5.75	5.5	6.64	6.5	6.36	4.21	7.42	6.64	7.61	7.32	6.25	6.14
Last Papers	5.83	4.63	6.23	6.0	5.96	3.73	7.23	6.56	7.03	6.8	5.73	5.7
Gain	0.08	*	*	*	*	*	*	*	*	*	*	*
Loss	*	0.87	0.41	0.5	0.4	0.48	0.19	0.08	0.58	0.52	0.52	0.44

Results that broke from the pattern of overall decline were obtained when calculations were computed for individual instructors (Tables 4, 5 and 6):

Table 4: Average Score by Assessment Category for
Instructor 1

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
First Papers	3.66	3.33	6.64	7.33	5.0	3.83	5.67	5.83	6.83	5.16	5.16	6.33
Last Papers	4.77	3.55	5.22	4.88	3.66	2.66	4.44	5.88	5.66	4.11	4.11	4.44
Gain	1.11	0.22	*	*	*	*	*	0.05	*	*	*	*
Loss	*	*	1.42	2.45	1.34	1.17	1.23	*	1.17	1.05	1.05	1.89

Table 5: Average Score by Assessment Category for
Instructor 2

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
First Papers	4.55	4.55	4.22	5.77	4.66	5.5	6.22	6.0	7.11	6.77	5.77	5.55
Last Papers	4.5	4.2	5.5	5.8	4.6	3.66	5.6	5.7	6.1	4.9	5.2	5.7
Gain	*	*	1.28	0.03	*	*	*	*	*	*	*	0.15
Loss	0.05	0.35	*	*	0.06	1.84	0.62	0.3	1.01	1.87	0.57	*

Table 6: Average Score by Assessment Category for Instructor 3

	1	2	3	4	5	6	7	8	9	10	11	12
First Papers	5.03	4.76	6.16	6.62	5.83	4.13	5.63	6.53	6.36	6.17	6.0	5.83
Last Papers	4.53	4.1	5.77	6.13	5.37	4.0	5.7	6.57	6.46	5.9	5.47	5.57
Gain	*	*	*	*	*	*	0.07	0.04	0.10	*	*	*
Loss	0.5	0.66	0.39	0.49	0.46	0.13	*	*	*	0.27	0.53	0.26

ANALYSIS OF THE DATA FOLLOWS IN APPENDIX II.

TECHNICAL AND PROFESSIONAL COMMUNICATION--ASSESSMENT REPORT FOR 2006-07--provided by Professor Corinne Stavish

Background

COM2103 *(Technical and Professional Communication)* is a required course in the Humanities, Social Sciences, and Communication contribution to LTU's Core Curriculum. It functions as the second semester of English Composition. Some of the course goals include the following:

- **Understanding** the basic principles of technical writing and how these differ from other forms of writing
- **Using** computerized software programs to write and format documents, prepare graphics, and design presentations
- **Organizing** and **presenting** formal written and oral proposals and reports incorporating graphics
- **Writing** effectively different forms of practical, professional communication

The final written research report, worth 25% of the grade, is the capstone of the course and reflects all of the skills in writing, designing visuals, and formatting studied during the semester. [written and oral proposals on the research precede the report, and the student presents a final oral report based on the written document.]

During the 2006-2007 academic year, the Director of the Technical and Professional Communication Programs collected 26 final written reports from faculty, ranging in grades from "F" to "A." She then compiled and analyzed the data.

Summary of Major Areas Evaluated

The Final Report Evaluation Form has 18 skills that all instructors use to evaluate the approximately 12-page report (See attachment. Note: Owing to the specialized nature of Tech comm writing, this form replaces the HSSC department's "Guidelines for Writing Papers." However, the department's Banned Error List is applied). For the purpose of assessment, these 18 skills have been combined into the following five areas: Writing, reporting on specific sections, formatting, using visuals, and documenting research. Unless otherwise noted, the percentages provided are for students whose success translates in letter-grade terms to C or better for a particular skill.

Writing—writing skills are evaluated in two areas: technical correctness and concision.

Results—Correctness: 58% of the students had a C or better grade
Concision: 69% of the students had c or better grade
Banned Errors: 10 students (38%) had 13 banned errors

Reporting on other tech comm assignments. as part of the technical report assignment, students study correct methods for writing letters of transmittal, abstracts, executive summaries, introductions, methods, results, evaluations, conclusions, and recommendations sections, as well as awareness of audience and appropriate tone.

Results—Letters/memos of transmittal: 81% of the students earned C or better
Abstracts: 62% of the students earned C or better
Executive Summaries: 69% of the students earned C or better
Introductions: 85% of the students earned C or better
Methods: 77% of the students earned C or better
Evaluations: 58% of the students had higher than a C-
Conclusions/Recommendations: 62% of the students had higher than
Audience/Tone: 77% of the students earned C or better

Formatting—formatting includes using consistent headings, bolding, italics, white space, lists, bullets, and pagination in designing the document.

Results—85% of the students earned C or better

Using Visuals—using visuals includes conceiving, executing, placing, labeling, titling, explaining, and referencing visuals aids, tables, graphs, and charts.

Results—71% of the students earned C or better

Using Documentation—using documentation includes sourcing original and secondary references in APA style.

Results—54% of the students earned C or better

Analysis of Strengths and Weaknesses of Areas Evaluated

Writing—Concision is the strongest area of written skills (69% of the students had a C or higher), reflecting it as both a goal in the course and a characteristic of technical writing. In contrast, only 58% of
students earned a C or better for technical correctness. This area still needs work, especially since 38% of the students committed banned errors in their reports.

Reporting on Specific Sections—assessment revealed that writing letters, memos, and introductions, achieving a professional tone, and reporting the methodology of research are the strongest areas in student report writing. **Where assessment indicates a need for greater emphasis is in writing abstracts, executive summaries, evaluations, conclusions, and recommendations**. However, the weakest area of report writing seems to be in writing the **results section**. This is a major weakness, since it is the most important part of a technical report. Assessment data indicate that students did either very poorly or very well in this area, implying that understanding rather than skill needs to be addressed.

Formatting—That 85% of the students showed aptitude in this area is not a surprise for two reasons: 1. Today's students are visually discerning; 2. students are given design templates for reports that they are encouraged to incorporate in their work.

Using Visuals—Although 71% of students earning a C or better is a good number, it should be higher. Designing and incorporating visuals are essential to technical and professional communication. Most deficient students were weakest in the narrative explanation of their visuals, rather than in the design itself. **This indicates that greater emphasis must be placed on instruction related to descriptive writing.**

Using Documentation—54% of students earning a C or better grade in this area does not reflect an effective level of mastery. Although documentation is emphasized and exercises are assigned in all sections of the course, students are still not adequately proficient as researchers, nor are they sufficiently familiar with the APA style demanded in the discipline. Here as well, assessment results point to the need for added emphasis in this area.

Conclusion/Goals

Although the majority of students did fairly well to well in most areas of the final report, there are specific areas that need work in the coming years. The following goals are recommended for all instructors of the COM2103 course:

- Continue to work on technical correctness, concision, and elimination of banned errors
- Give emphasis to work on abstracts, evaluations, and conclusion/recommendation sections
- Focus added attention on the results area of the final report. Have students write numerous drafts of results for peer review.
- Develop more exercises for describing and explaining data in charts, tables, graphs, and illustrations.
- Devise strategies for and commit more time to developing research skills and APA documentation.

PSYCHOLOGY ASSESSMENT IMPLEMENTATION

VISITATION OF SECOND FULL-TIME POST-DOCTORAL INSTRUCTOR

HSSC determined that hiring a qualified faculty member as a Senior Lecturer would serve the department better than a second post-doctoral instructor. Sarah Lamers was retained in this capacity. She was observed and evaluated by English Coordinator Melinda Weinstein, who reported her findings to department chair Dr. Betty Stover.

INITIAL IMPLEMENTATION AND DEVELOPMENT IN HSSC OF INSTRUCTIONAL FEATURES RELATED TO LEADERSHIP/TEAMWORK EDUCATION

University Seminar, HSSC's one-hour orientation course for incoming freshman is where the department this year added support to the university-wide initiative to give greater emphasis to focused leadership education. HSSC agreed, on short notice, to a request from the office of the provost to include in the course's requirements the assigning of Thomas Friedman's book, The World is Flat. The book emphasizes globalization in a changing world, and was seen as a work that could initiate new students to the demands of leadership. Ideally, it would also provide a unifying text, with illustrations and references points of ongoing relevance in the classroom.
After reading the book, students were surveyed to learn their impression of the value or lack thereof of Friedman's book. The results are presented below.

Teacher	Yea	Nay	Neutral
Koch T 8:00	5	9	2
Koch T 9:30 (only read 2 chapters)	3	9	2
Wyatt M 11:00	10	3	2
Wyatt F 11:00	8	7	3
Sobota W 2:00	7	10	4
Sobota W 11:00	8	5	1
Hobart W 2:00	6	8	
Anneberg T 11:00	9	4	7
Anneberg T 4:20	9	6	1
Hotelling M 2:00	7	7	7
Hotelling R 3:30	5	5	4
Don R 11:00	15	3	1
Don R 2:00	13	8	2
Kathy TR 9:30	2	3	
	108	87	35

Common complaints

Boring
Too expensive
Repetitive
Already knew this information
Dry
Great book, but not used well in this class/not necessary for this class
Too long

Common lauds

New point of view

Comments:

- Many students admitted to not reading it.
- Most students said that they heard other students had not read it.
- It appeared that of the students who didn't read it most were negative toward it (as if they had judged based on peer review, rather for themselves).
- Of the positive comments, about ¼ were strongly positive, the rest were OK with it, but not strongly positive.
- The most common comments were that the book was boring/dry/repetitive.

Action Plan for 2007-08

Maintenance of the department's cycle of regular written-work evaluations for student writing. This year, the focus will be on English Fundamentals, junior/senior electives, and Foundations of the American Experience.

Submitted by Barry Knister, HSSC Assessment Coordinator

DEVELOPMENT OF THE AMERICAN EXPERIENCE: APPENDICES

APPENDIX 1: INDIVIDUAL PAPER EVALUATION FORM

"Development" Assessment **Paper Number** **_____**

F D C B A

1 2 3 4 5 6 7 8 9

I. Thesis

1. Clear & focused thesis in first paragraph: 1 2 3 4 5 6 7 8 9

2. Original & insightful thesis in first paragraph: 1 2 3 4 5 6 7 8 9

II. Argument

3. Adequate textual citation: 1 2 3 4 5 6 7 8 9

4. Logical continuity between paragraphs: 1 2 3 4 5 6 7 8 9

5. Topic sentences add up to clear outline: 1 2 3 4 5 6 7 8 9

6. Counter-arguments anticipated & answered: 1 2 3 4 5 6 7 8 9

III. Grammar & Style

7. Concision: paper cannot be substantially cut: 1 2 3 4 5 6 7 8 9

8. Conjunctions: smooth transitions between paragraphs: 1 2 3 4 5 6 7 8 9

9. Clear compound sentences: 1 2 3 4 5 6 7 8 9

10. Free of errors in grammar & spelling: 1 2 3 4 5 6 7 8 9

IV. Intellectual Accomplishment

11. College-level analysis: 1 2 3 4 5 6 7 8 9

12. College-level cultural literacy: 1 2 3 4 5 6 7 8 9

APPENDIX II: DEVELOPMENT OF THE AMERICAN EXPERIENCE

A Comment on the use of Quantitative Methods to Assess Qualitative Issues

The achievements in writing essays reported on page 4 of the HSSC Assessment Report 2006-2007 disappear, however, when all students in a semester are analyzed as a single population (Tables 1 and 2). Logically, it must be possible that other patterns of achievement are similarly obscured when all of one instructor's students are analyzed as a single population or even when the students in one section are analyzed as a single entity: a composite individual who never wrote a college paper and who exists nowhere but in a statistician's (or an assessor's) imagination. Results where every instructor's cohort of students apparently improved in only three categories of assessment could have been obtained even if *every* student in the course – each of the eighty-nine – had shown measurable improvement in as many categories as nine. Improvement registers only where it is most common; otherwise, it is statistically invisible, indeed, it can exist and be statistically effaced. It is no wonder that the attempt at quantifying student achievement in the humanities meets with such resistance.[2]

On the other hand, a pattern of overall improvement which might otherwise have been concealed ought to have emerged in categories eleven ("College-level analysis") and twelve ("College-level cultural literacy"), where achievement was measured in its totality, not its particularity. This is to say that categories one through ten identify specific aspects of the broad competence in analysis and/or cultural literacy that was measured in categories eleven and twelve. Given the measurable decline in the final two categories, it must either be true that student performance in SSC2423 declined in the course of the semester or that it held even or possibly improved, but that assessment participants then misinterpreted (and undervalued) what had been accomplished in their colleagues' classes.

How likely is the second scenario? One instructor undoubtedly brings to the classroom very particular ideas about what constitutes an excellent thesis, an excellent argument, brilliant style, etc. Another instructor undoubtedly has equally particular ideas. The longer students work with the first instructor and the more they conform to his or her

standards, the more their performance will depart from the second instructor's expectations. What one instructor sees as student improvement might then appear to another as an actual decline. However, it is in the 'totalizing' categories, eleven and twelve, that interpretative differences between instructors ought to have been minimized. Those of us who teach in the core curriculum might argue about the merit of a particular thesis statement or a particular topic sentence, but we substantially agree – or think we agree – on what constitutes improvement in the general categories of analytic ability and cultural literacy. The findings therefore suggest that student performance in these crucial areas did indeed decline and that performance may therefore have declined (almost) across the board, as in fact tables 2, 3, 4, 5 and 6 suggest it did.

It is possible, too, that students in the course of a semester will gain in knowledge and skill and still show a decline in performance. As their knowledge grows and their abilities improve, students may be inspired (as we hope they will be inspired) to 'step outside their zones of comfort' and attempt new and more ambitious things. When they do, their lack of mastery is likely to be evident in their early results. Even if every "Development" student in the fall of 2006 gained in knowledge and skill, assessment results might show a decline in the quality of the papers submitted. A temporary decline in performance might be the paradoxical evidence of intellectual growth.

So does the data show that a general decline in student performance occurred in SSC2423 in the fall of 2006 and that the decline corresponded to a decline in student ability?

No.

The data cannot provide conclusive answers to these questions, though if an overall decline did occur, its cause might be revealed in Tables 3, 4 and 5, which suggest that instructors are defining narrow goals for their students. Specifically, the results for individual instructors raise the possibility that the broad goals reflected in the Writing Rubric are effectively being abandoned for more limited aims.

Are there non-statistical reasons for thinking that this is what happened?

Yes.

Circumstances at LTU might be combining to force instructors in the core curriculum to seek shortcuts. One shortcut would be to abandon the Writing Rubric in all but spirit and to gauge student performance through narrowly defined criteria: to extract, if you will, a thin slice of the Writing Rubric and to apply it in grading as a litmus test of student performance.

What are the circumstances that might cause instructors to take shortcuts?

1. They are overworked.

The university does not acknowledge the particularly labor-intensive nature of the teaching of writing. While it is true that the Writing Rubric has been adopted across the

university, it is only in the humanities that every course is writing-intensive. It is only the Department of Humanities, Social Science and Communication which bears primary responsibility for the development of student competence in writing. For anyone whose courses are all writing-intensive, and particularly for instructors in the core curriculum where the university community expects students to be made into competent writers, the 4/4 courseload is excessive.

2. Morale among core-curriculum instructors has recently suffered.

The adoption by the Deans' Council of a new transfer-credit policy (12/13/04) was a blow to morale because it made it easy for students to earn a Lawrence Tech degree while avoiding the core curriculum.

3. While it has been clear from the first that students are to be made acquainted with the Writing Rubric, precisely how the rubric is to factor into classroom instruction and the grading of papers has been left to the discretion of instructors.

V. Recommendations:

1. Administrative support for the core curriculum should be public, wholehearted and supported by a transfer-credit policy that emphasizes the unique quality of LTU's core curriculum.

2. The Writing Rubric should be configured as a checklist to be completed by instructors and stapled to papers when they are returned to students. One version of such a checklist is provided in Appendix 4.

3. In the 2007-2008 academic year, an assessment exercise should be conducted to measure the burden placed on instructors by the teaching of writing and the correction of student papers. Results of the exercise should then be used to reevaluate the appropriate courseload for instructors in core-curriculum classes.

4. Assessment should gauge student performance from class to class across the core-curriculum, and not just within individual classes. For this purpose, it will be necessary to design a long-term assessment exercise that follows the progress of a specific cohort of students.

Endnotes

[1]Instructions for evaluating papers were conveyed to instructors in my letter of 5/8/07 (Appendix 3). For each paper he assessed, Instructor 3 'voted straight-ballot,' assigning the same numerical score across all twelve categories of assessment. This was equivalent to ignoring the specific categories of assessment and assigning each paper a single overall score: the very thing that participants in the exercise had been asked not to do.

[2]"We're just kind of fed up with the attempt to quantify everything" said John Wilson, President of St. John's College in Annapolis, explaining the decision of eighty liberal-arts colleges to stop cooperating with *US News & World Report*'s college rankings. "Liberal arts colleges may drop out of 'U.S. News' rankings" in *USA Today*. 6/20/07, p. 9D.

APPENDIX 3: INSTRUCTIONS FOR EVALUATING PAPERS

Assessment of Student Writing in "Development"

May 8, 2007

To my colleagues who taught "Development" last fall:

Attached are samples of the student papers that were submitted to your colleagues. Each paper has been assigned a number with a corresponding evaluation sheet. We will be evaluating each paper according to twelve criteria, all of which are drawn directly or indirectly from the writing rubric that has been adopted across the university.

For each of the twelve criteria, assign a value from 1 to 9, corresponding to grades ranging from F to A (1=F, 9=A). Do not assign the papers an overall grade. The code at the top of the evaluation sheet is simply for your reference.

Please complete your evaluation of the papers and mail me the evaluation sheets by Monday, June 4. Discard the papers and mail me only the marked evaluation sheets.

I'll compile the results and send them to you before I leave for my sabbatical.

Thanks for your help and for the great job that you do on behalf of our students.

Philip Vogt
Core-Coordinator in Social Sciences

College of Arts and Sciences

Department of Mathematics and Computer Science

Assessment Report: 2006-2007
Department of Mathematics and Computer Science
College of Arts and Sciences
Lawrence Technological University

1. Program Educational Objectives, Outcomes and Accreditation Status

There is no change from the 2005-2006 report.

2. Assessment Activities and Assessment Results

During the academic year 2006-2007, the Department of Mathematics and Computer Science remained active in several areas where previous assessment efforts have been made, and began to implement plans for new areas. specifically those related to Advanced Knowledge and Critical Thinking, Basic Studies and Writing in the Curriculum. Data are being collected in these areas. The department's students are participating in the University-wide assessment of critical thinking skills; no separate departmental assessment is deemed necessary.

a) Assessment of Placement of Students upon Entering Lawrence Tech

Activity:
Previous results have indicated a lack of correlation between placement and grades in courses. Professor Bashkim Zendeli continues to work on early assessment in the lower-numbered courses to ensure that students are being placed in the correct courses.

A placement exam for computer science course has been created and administered to students who self-identify as proficient in basic programming skills. No assessment of its effectiveness has yet been made.

b) Assessment of Student Performance in Basic Studies

Activity:
Professor Zendeli is continuing to compare syllabi and and course outlines from different sections to ensure consistency across sections and instructors. He has also begun to use the comparison of median and mean grades across sections to evaluate consistency.

Result:
Loop-closing actions include feedback to individual instructors in the relevant courses. Data from these assessments also resulted in raising the minimum passing grade in the developmental classes from D- to C-.

Assessment of Student Performance in Service Courses

Activity:
The department continued to have a common final in Calculus 2 during Fall 2006 and Spring 2007 terms, with Professors Arlinghaus and Merscher as authors.

Result:
The results of the common final are consistent with past years, and student performance still shows the need for improvement. The faculty are exploring ways to generate the needed improvement. The department continues to strive for consistency among individual graders.

c) **Assessment of Student Performance in Major Areas**

Activity**:**
The department continues to develop methods to evaluate the success of students in both the mathematics and computer science curricula. Problem sets are being collected for use as a baseline for evaluating student performance. The computer science faculty have decided to create problem sets for two senior-level courses that are required for all CS majors, MCS4613, Computer Networks and MCS 4663, Operating Systems, to assess performance related to the University education goal I.1.

d) **Assessment of Writing in the Curriculum**

Activity:
Writing projects continue in both Mathematical Modeling and Linear Algebra courses. Assessment of writing in senior project courses will begin during the Spring 2007 term.

Results:
Students are able to write effectively, but students sometimes seem to consider effective writing an option rather than a requirement connected to their major.

3. **Action Plan for 2007-2008**

Assessment activities planned for the 2007-2008 academic year include:

a) **Assessment of Placement of Students upon Entering Lawrence Tech**

The department will continue to assess and improve its mathematics placement exam.

An assessment plan for the computer science placement exam will be initiated.

b) **Assessment of Student Performance in Basic Studies**

Professor Zendeli will continue to investigate consistency and effectiveness of our basic studies curriculum.

c) **Assessment of Student Performance in Service Courses**

The department will continue to utilize the common Calculus 2 final as a way of assessing the effectiveness of the mathematics service curriculum. During the Spring 2007 term, the University faculty voted to allow individual programs to define math competency. This decision will necessitate the creation of new assessment techniques in the future.

d) Assessment of Student Performance in Major Disciplines

The department will expand its efforts to carry out assessment of senior project courses in both mathematics and computer science. During the Spring 2008 term, faculty will be asked to commit to attendance at one or more presentation.

The initial assessment for MCS4613 will be carried out during the Spring 2008 term.

e) **Assessment of Writing in the Curriculum**

Analysis of writing in the Mathematical Modeling and Linear Algebra courses will continue, and the new guidelines for evaluating student writing will be used to assess student ability in writing.

f) **Assessment of Oral Communication in the Curriculum**

Assessment of oral communication will be carried out in the Spring08 term. Copies of the assessment rubric will be distributed to faculty to ensure consistency in evaluation.

College of Arts and Sciences

Department of Natural Sciences

Department of Natural Sciences
Objectives and Outcomes Assessment
2006 – 2007

1. Program Educational Objectives, Outcomes, and Accreditation Status

The Department of Natural Sciences offers two programs that are accredited by outside agencies. The B.S. in Chemistry (Option 1) is certified by the American Chemical Society, but this certification does not require ongoing assessment of objectives and outcomes.

The Master of Science Education program is accepted by the Michigan State Board of Education. While this acceptance is periodically renewed, it again does not require ongoing assessment of objectives and outcomes. Accordingly, the Department faculty set education objectives and outcomes based on the nature of the individual programs.

Beyond this, the Department participates in the general accreditation of the University by the North Central Association.

Educational Objectives and Outcomes are described in the Departmental Assessment Plan (attached).

2. Assessment Activities and Assessment Results

Attached are the Assessment Plans for the programs offered by the Department of Natural Sciences. Goals, Strategies, Indicators, and Timeline for the Chemical Biology, Chemistry, Physics, and Master of Science Educations programs are given in the form of a matrix. This and other relevant documents have been posted to the Assessment Blackboard site.

The 2006 – 07 academic year was a year of consolidation for assessment activities in the Department of Natural Sciences. We concentrated on minor refinements of the Assessment Plans and on solidifying the implementation of procedures begun in 2002 - 03.

Biology faculty developed the program's assessment plan to be implemented in 2007-08.

Physics faculty updated their assessment plan to fit the matrix format with updated indicators and timelines that correspond more with what is actually being done.

Chemical Biology:

This is a new program so most of the assessment of the programs goals will start in 2008 or beyond. The following are current program goals that have been assessed for this academic year. See plan for more information about timeline and goals.

II. Graduates are satisfied that they have been effectively prepared for their professional careers.

Courses BIO1213 and BIO1223 were assessed with both having over 80% "confident" and "very confident" overall of their mastery of the course objectives which meets the strategy set forth in the plan.

IV. Graduates will demonstrate skill in analytical and critical thinking appropriate to their discipline

IVb. Selected courses will include laboratory exercises in which students must plan experiments and understand results with minimal assistance.

Course BIO 1221 was assessed and had over an 80% "satisfactory" or "superior" performance satisfying the strategy set forth in the plan.

Chemistry:

The chemistry assessment plan was updated during the academic year 2006-07. Some assessment strategies have been modified to correspond with what is actually being done by the department.

I. Graduates demonstrate knowledge in five major division of chemistry: organic/biochemistry, inorganic chemistry, analytical chemistry, and physical chemistry.

Ib. The ETS exam was administered to all chemistry graduating seniors. Results for Spring 2007 graduates are expected in Fall 2007, and the results from 2002 – 2007 will be analyzed in detail at that time. 2006 results have not been reported to departmental assessment coordinator at this time.

Ic The Chemistry Department needs to review of exit exam results along with reviewing how the chem. program corresponds to the questions asked on the ETS exit exam.

II. Graduates demonstrate competence/ appropriate to their program in use of modern laboratory instrumentation, chemical synthesis and chemical analysis, and use of the chemical literature. Courses evaluated:

CHM4542 - Physical Analytical Lab II
CHM 3463 - Advanced Synthesis

Students who passed each course with a C or better met course assessment strategy as qualified.

III. "Graduates will demonstrate skill in analytical thinking appropriate to their discipline." Also, students demonstrate written, oral, and visual communications skills appropriate to laboratory reports, technical writing, and public presentation of scientific information.

IIIa. Students will analyze and present a paper from the chemical literature to a panel of faculty and students and CHM4723 (Advanced Organic). The presentation component was evaluated by rubric and students achieved 80% "satisfactory" or "superior" performance.

IIIb. Selected courses will include laboratory exercises in which students must plan experiments and understand results with minimal assistance. The following course was evaluated:

CHM 3463 - Advanced Synthesis

Students who passed the course with a C or better met course assessment strategy.

IIIc. Students wrote a paper as part of CHM3452 (Intermediate Inorganic Chemistry) and CHM3383 (Environmental Chemistry). The writing component will be evaluated by rubric.

CHM 3452- only 67% (2 out of 3 students) achieved "satisfactory" or "superior" performance.
CHM3383 – 83% (5 out 6) achieved "satisfactory" or "superior" performance.

IV. "Graduates will feel that they have been effectively prepared for their professional careers."

IVa. Course objectives have now developed for all chemistry courses, including the freshman courses.

IVb. Surveys were written and administrated electronically for the following courses. All courses had student responses greater than 80% confidence in their mastery of the course objectives unless otherwise noted.

Course	Term	Course	Term
CHM1154/	Fa05	CHM3434	Fa06
CHM3144	All (not surveyed at this time)	CHN3403	Fa06 (not reported)
CHM1213	All (not surveyed at this time)	CHM3431	(not taught)
CHM1221	All (not surveyed at this time)	CHM3441	Fa06 (not reported)
CHM1223	Sp07	CHM3442	(not taught)
CHM1232	Sp07	CHM3452	Fa06
CHM2313	Fa06 (not reported)	CHM3463	Fa06
CHM2323	Sp07	CHM3623	(not taught)
CHM2332	Sp07 (not reported)	CHM4522	Sp07 (not reported)
CHM2342	Fa06	CHM4542	Sp07 (not reported)
CHM2352	Fa06	CHM2631/	Sp06
		CHM4631/4632	(not taught)
CHM3383	Fa06	CHM4643	(not taught)
		CHM4723	(not taught)
CHM3423	(not taught)	CHM4843	Sp07 (not reported)

Unfortunately, after several attempts to get survey results, seven courses were not reported for this academic year.

IVc. The Department Chair informally interviewed each graduating senior about our programs.

All three graduates were "satisfied" or "very satisfied" with their chemistry preparation.

V. "Graduates will be able to work in teams, and will have opportunities to develop leadership abilities."

After some departmental discussion, it was decided that this goal should be addressed in detail only after the University Assessment Committee has considered the questions of leadership development and teamwork at LTU.

VI. "CHM1154 (Introduction to Chemical Principles) students will be adequately prepared for CHM1213 (University Chemistry 1)."

VIb. CHM1154 grade / CHM1213 grade correlation study: Analysis of grade data in these two courses is being repeated with a larger grade database. Results so far indicate that a majority of students getting a C or better in CHM1154 are also getting a C or better in CHM1213. The part of the new program that calculates the percentage of students meeting this objective has been finished, and the objective of 80% is barely being met.

Physics:

I. "Graduates will demonstrate knowledge in the following areas of Physics..."
Ia. No Graduates.

II. "Graduates are satisfied that all areas of Physics listed in goal (I) above have been competently taught."

IIa. (There were no graduating seniors in physics this year.)

IIb. Students in selected courses will be surveyed at the end of the term as to whether these objectives have been met.

Surveys were written and administrated electronically for the following courses. All courses had student responses equal to or greater than 80% confidence in their mastery of the course objectives.

PHY1213/1221
PHY2213/2221
PHY2223
PHY2413/2421
PHY2131
PHY2423/2431
PHY3414 (no results at this time)
PHY3653
PHY3661
PHY4724 (no results at this time)
PHY4743 (no results at this time)
PHY4763 (no results at this time)
PHY4781 (no results at this time)

Other physics courses not on this list have not been surveyed at this time.

III. Graduates demonstrate competence in using modern laboratory instrumentation in the physics labs.

PHY4781 – Optics, Lasers & Micro Lab was taught, however, no assessment results were reported.

IV. Graduates will demonstrate skill in analytical thinking appropriate to Physics which includes data analysis. They will also demonstrate written, and visual communications skills appropriate to laboratory reports, technical writing.

PHY4781 – Optics, Lasers & Micro Lab was taught, however, no assessment results were reported.

V. "Graduates will demonstrate the ability to do independent theoretical or experimental research…"

Successful completion of Physics Project courses (PHY4912 and PHY4922)

(There were no graduating seniors in physics this year.)

VI. "PHY1154 (Introduction to Physical Principles) students will be adequately prepared for PHY2413 (University Physics 1) and PHY2213 (College Physics 1)."

VIb. PHY1154 grade / PHY2213 & PHY2413 grade correlation study: Analysis of grade data in these two courses is being repeated with a larger grade database. Results so far indicate that a majority of students getting a C or better in PHY1154 are also getting a C or better in PHY2413. The percentage of students meeting this objective has been finished and the objective of 80% is being met.

VIc. PHY 2213 and PHY2413 "Force Constant Inventory" pre-post test: Analysis of the results shows an increase in average and normalized scores, with greater increases for students with low scores on the pre-test. This indicates that this objective is being met.

VII. "Graduates will be able to work in teams, and will have opportunities to develop leadership abilities."

After some departmental discussion, it was decided that this goal should be addressed in detail only after the University Assessment Committee has considered the question of leadership development at LTU. Some preliminary work has been done to prepare checklists for evaluating leadership in PHY3661 and PHY4781.

Master of Science Education:

Assessment of the MSE program assessment plan is still a work in progress. Evaluation of the plan will begin in 2007-08.

3. Action Plan for 2007 – 2008

The action plan for the Department of Natural Sciences for 2006 – 2007 will be to review and refine the Departmental Assessment Plan as the department gains experience. The plan will be adjusted to adapt for the

university goals of assessing leadership and teamwork objectives. Further efforts will be made to increase performance in administering surveys, etc and a departmental database. Also, the Molecular and Cell Biology department will have to begin developing their assessment plan along with finalizing the MSE program's assessment plan

College of Engineering

Department of Civil Engineering

Civil Engineering Department
Objectives and Outcomes Assessment
Summary 2006-2007

1. Program Educational Objectives, Outcomes, and Accreditation Status

The Department of Civil Engineering revised its Objectives and Outcomes during the 2001-2002 Academic year and revisited them in 2006 with the Civil Engineering Advisory Board. The decision was made by the Department with feedback from students and the Advisory Board to keep the objectives and outcomes unchanged. The degree is accredited by ABET and was visited during October of 2004. The program received a full six year accreditation cycle from ABET.

A. Assessment Tools for 2006-2007

Table I: Assessment tools, description, and performance criteria.

Assessment Tool	Description	Performance Criteria
FE Exam	The FE Exam is a nationally normed exam that provides a direct measurement of student abilities on a topic-by-topic basis. It provides a comparison between LTU examinees and the corresponding results from comparison institutions on a topic-by-topic basis. This emphasizes strong and weak points within the program.	Perform at or above the national average for comparative Carnegie Master institutions.
Exit Interview	The chair conducts exit interviews of graduating students. The exit interviews provide a summative view of what is happening in the department and gives an indication of overall student satisfaction. The exit interview includes a survey form to be filled out by students regarding their education at LTU.	Qualitative evaluation of student satisfaction and concerns. Qualitative as well as direct evidence that we are meeting our outcomes based on survey form.
Advisory Board Interviews	The Advisory Board conducts a group interview or panel discussion of 12 to 15 senior students during Senior Projects Day.	General satisfaction by the Advisory Board that the students meet the published outcomes of the department.
Professional Evaluation of Senior Projects Day	Advisory Board members (and Employers) are invited to attend Senior Projects Day (Spring Semester) to view and evaluate oral presentations of senior projects. Written evaluations of the Senior Design Projects/Presentations are requested from attendees.	General satisfaction by the Advisory Board (and/or employers). A minimum of a 3.5 on a 5 point scale.
Faculty Evaluation of Senior Projects Day	Similar to evaluation of senior projects by Advisory Board however, faculty evaluate Senior Design presentations in both semesters.	General satisfaction by the Faculty. A minimum of a 3.5 on a 5 point scale.
Course Objectives	Learning objectives have been written for each undergraduate civil engineering course. Students are surveyed on their ability to perform objectives at the conclusion of the course.	85% of the students surveyed are capable of performing the desired outcome.
Direct Assessment	Direct assessment of student learning in specific courses.	A minimum of a 3.5 on a 5 point scale.
Writing Proficiency Exam	A university side assessment of student written communication abilities that serves as a gateway to senior status. All students must pass the exam or complete an additional composition course.	All students must satisfy this criteria to graduate.

Assessment Results for 2006-2007

During the 2006-2007 academic year, seven assessment tools were used to determine if the Program Outcomes are being achieved as indicated in Table I and Table II. With respect to student achievement of individual Program Outcomes, each assessment tool utilized by the department addresses multiple Program Outcomes. Additionally, multiple assessment tools are used to measure each outcome. Therefore, to determine if the Program Outcomes are being met, it is important to systematically consider the entire assessment plan. To accomplish this task, a matrix is generated that indicates the level of student attainment of an outcome based on that particular tool.

The matrix for this academic year is represented in Table II. For a given assessment tool, a number from 1 to 5 was assigned to each outcome that tool is designed to assess. A 1 indicates a low level of student attainment and a 5 a high level of student attainment. These numbers were consensually determined by the faculty based on the results and were limited to half point increments. These values were then used to determine an overall "score" for each program outcome. The overall ranking is not based on an arithmetic mean, but rather a subjective weighting based on faculty input. It is important to note these values are determined by faculty consensus. The faculty decided that any overall score higher than a 3.5 meets program criteria. A score of 3.5 meets the criteria, but with some concern and a 3.0 or lower indicates that the outcome is not obtained for the academic year. From Table II, it can be seen every Program Outcome met faculty expectations for the given academic year.

In addition to assessment of student learning, the department also conducts assessment of student satisfaction with the program. As such, one of the key features of the assessment program is the utilization of our advisory board to evaluate our senior projects and then interview a sample of our graduating students. This provides a direct assessment evaluation of our students capabilities as well as provides a chance for the students to meet directly with and provide feedback to the advisory board. Feedback from the advisory board was very positive for this academic year. Another assessment of overall student satisfaction is the exit interviews with graduating seniors. Overall, the results from the exit interviews were positive. The department believes we are on the right path based on the feedback from our constituents.

Table II - Assessment/Outcome Matrix – 2006 – 2007 Academic Year

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
Exit Interviews Fall 2006						3		4	5	4			5
Exit Interviews Spring 2007						4		4	5	4			5
Advisory Board Interviews							5						
Advisory Board Senior Project Spring 2006			4.3	4.0	4.4		4.1			4.1	4.2		
Faculty Senior Project Spring 2006			4.6	4.7	4.7		4.4			4.0	4.5		
Senior Project Oral Pres & Final Report				5			5						
Course Objectives Spring 2007	4	4	4	4	4	4	4	4	4	4	4	4	4
Course Objectives Fall 2006	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Direct – ECE40511						5	4.5	4.5	5	4.5			4
Direct – ECE4743[1]	4.5		4.0	3.0					2.5		4.0	4.0	
Direct – ECE3213(spring only)	4.0		5.0		4.0	3.0	4.0	5.0	4.0	4.0	4.0	4.0	
Direct – ECE3324[1]	5.0	4.5	3.0	4.0	3.0		4.5			4.0	4.5		
OVERALL	**4.5**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.5**	**4.0**	**4.0**	**4.0**	**4.0**	**4.5**

Note: the rankings are on a scale from 1 to 5 with 5 being the highest level of attainment. The numbers are assigned with faculty consensus in 0.5 increments. The OVERALL ranking is not based on an arithmetic mean but rather a subjective weighting based on faculty input.

Interpretation: 4+ meets program goals

3.5 meets program goals, but with some concern

3 or lower indicates outcome not obtained for academic year

I indicates incomplete for the given item

1 Reported numbers for direct assessment in courses are average values for fall and spring term offerings of the course in question.

C. Incomplete or Postponed Activities

There were no incomplete or postponed activities based on our regular assessment of student learning and satisfaction. However, a survey of recent alumni to determine program objective obtainment is past due and will be conducted in the spring of 2008. In addition, formal direct assessment of student learning is maturing.

2. Action Plan for 2007-2008.

The Civil Engineering Department has a comprehensive Assessment Plan in place to assess student learning, graduate capability to perform published program outcomes, and overall student satisfaction with our program, our facilities, and our instruction. The Assessment Plan is reviewed and adjusted annually by the Civil Engineering faculty under the guidance of the Coordinator of the Civil Engineering Assessment Program, Dr. Donald Carpenter. Table III includes a timeline for the upcoming assessment. Tables IV and V indicate which courses will facilitate direct assessment of student learning.

Table III Civil Engineering Department Assessment Timeline

Assessment Description	Fall 2006	Spring 2007	Fall 2007	Spring 2008	Fall 2008	Spring 2009	Fall 2009	Spring 2010
1) Exit Interview and Survey	X	X	X	X	X	X	X	X
2) Advisory Board Interviews		X		X		X		X
3) Professional Senior Project Evaluations		X		X		X		X
4) Faculty Senior Project Evaluations		X		X		X		X
5) Faculty Senior Project Progress Evaluations	X	X	X	X	X	X	X	X
6) Course Objectives	X	X	X	X	X	X	X	X
7) Performance Appraisals (Case Dependent)	X	X	X	X	X	X	X	X
8) Direct Assessment	X	X	X	X	X	X	X	X
9) Focus Groups	X				X			
10) COM3000 Writing Proficiency Exam	X	X	X	X	X	X	X	X
11) FE Exam			X				X	

Table IV - Course coverage of Program Outcomes for all required courses.

Outcome	ECE 1012	ECE 1013	ECE 1101	ECE 1102	ECE 1413	ECE 3213	ECE 3324	ECE 3424	ECE 3523	ECE 3723	ECE 3823	ECE 4021	ECE 4033	ECE 4051	ECE 4544	ECE 4743	ECE 4761
a	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
b		X			X		X	X			X	X	X		X		X
c	X	X			X	X	X	X	X	X		X	X		X	X	X
d	X				X		X	X		X	X	X	X		X	X	X
e	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
f	X				X	X	X	X		X	X			X		X	X
g	X	X			X	X	X	X			X	X	X	X	X	X	X
h	X	X			X	X		X			X	X	X	X		X	
i	X	X				X		X		X	X	X	X	X		X	
j	X	X			X	X	X	X			X	X	X	X			
k	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X
l		X				X		X		X	X				X	X	X
m	X	X			X	X		X	X	X	X			X		X	

Table V - Course coverage of Program Outcomes for direct assessment.

	ECE 3213	ECE 3324	ECE 3424	ECE 3523	ECE 3723	ECE 3823	ECE 4051	ECE 4544	ECE 4743	ECE 4761
Outcome	06-07	06-07	07-08	07-08	08-09	08-09	Every Term	08-09	06-07	07-08
a	X	X	X	X	X	X		X	X	X
b		X	X			X		X		X
c	X	X	X	X	X			X	X	X
d		X	X		X	X		X	X	X
e	X	X	X	X	X	X		X	X	X
f	X	X	X		X	X	X		X	X
g	X	X	X			X	X	X	X	X
h	X		X			X	X		X	
i	X		X		X	X	X		X	
j	X	X	X			X	X			
k	X	X	X	X	X			X	X	X
l	X		X		X	X		X	X	X
m	X		X	X	X	X	X		X	

- **Annual assessment cycle insures a mixture of day/night courses.**
- **Multiple measures of each outcome is required and tracked by table coverage.**
- **Faculty teaching the course responsible for collecting assignments, course coordinator is responsible for writing a short summary and presenting to faculty for consensus, and program assessment coordinator is responsible for integrating results into overall assessment program.**
- **ECE4051 will be assessed during every course offering. The remaining courses are on a three-year rotation.**

Appendix

Civil Engineering Program Objectives and Outcomes

Civil Engineering Program Educational Objectives

The following italicized paragraph represents the current and published Program Educational Objectives for the Civil Engineering Department at LTU:

The mission of the Civil Engineering Department is to offer a program directed toward a broad, high quality, contemporary, baccalaureate educational experience in the civil engineering discipline, in parallel with the guiding principle of the university of "Theory and Practice." The objectives are to offer a program:

- *designed to provide students with a strong understanding of the fundamental principles of engineering;*
- *where students have the ability to identify the problem, formulate and analyze engineering alternatives, and solve the problem individually as well as in a team environment;*
- *that prepares students to apply contemporary computer based skills for the solution of civil engineering problems;*
- *that prepares students to effectively communicate in a professional engineering environment;*
- *that stresses all aspects of professionalism including the need for professional development through life-long learning and the benefits of becoming a licensed professional engineer.*

Civil Engineering Program Outcomes

The following italicized paragraph represents the published Program Outcomes for the Civil Engineering Department at LTU:

The Civil Engineering Department at Lawrence Technological University will offer a program in which our graduates have:

(a) an ability to apply knowledge and principles of mathematics, science, and engineering in the solution of civil engineering problems
(b) an ability to design and conduct experiments, as well as to analyze data and interpret results
(c) an ability to design a civil engineering system, component, or process to meet desired project needs
(d) an ability to function on multi-disciplinary teams including participation in a senior-level design project sequence
(e) an ability to identify, formulate, analyze, and solve engineering problems
(f) an understanding and appreciation of all aspects of professionalism including ethical responsibility, participation in professional organizations, and service
(g) an ability to communicate effectively developed through report writing and in-class presentations
(h) the broad education necessary to understand the impact of engineering solutions in a global, sustainable, and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
(l) an ability to apply the fundamentals of civil engineering to the analysis of an existing project component
(m) an understanding of the benefits of passing the FE exam and becoming a licensed professional.

College of Engineering

Department of Electrical and Computer Engineering

(Owing to personnel and leadership changes in this Department this year, no assessment report was received for 2006-07)

College of Engineering

Department of Engineering Technology

Engineering Technology Department
Objectives and Outcomes Assessment
Summary 2006-2007

1. Program Educational Objectives, Outcomes and Accreditation Status

The Engineering Technology Department is assessing its classes to meet the requirements for NSA and we are moving into the direction of assessment for ABET. The department is changing in direction and considering ABET accreditation. The department is responsible for four associate degree programs and two bachelor program. The associate degree programs are:

- Associate of Science in Mechanical Engineering Technology
- Associate of Science in Manufacturing Engineering Technology
- Associate of Science in Mechanical Engineering Technology
- Associate of Science in Construction Engineering Technology

The two bachelor degrees are:

- Bachelor of Science in Engineering Technology
- Bachelor of Science in Construction Management

The fall semester 2006-2007 academic year is a continuation of the previous year. Each faculty member is evaluating their classes with pre-test and post-tests.

The Engineering Technology department has had some changes. Dr. White is returning to fulltime teaching. Professor Ken Cook has taken the helm as the Department Chair and he is also teaching two sections of TIE4115, Senior Project.

2. Assessment Activities and Results

Assessment Activities

During the 2006-2007 year the Engineering Technology Department is identifying new areas of assessment and continuing with existing ones.

a. Individual designed assessment instruments. Professor Jerry Cuper is continuing with his variation of pre-test/post/test activities.
b. Additional Individual designed assessment instruments. Professor Ken Cook is continuing with his TIE4115 Senior Project. He developed an instrument last year and is improving for this semester. He improved it for this year. He is using it to identify knowledge of topic ideas. The questions were used to sub-divide each topic area into sub-topics. Questions were to be answered simply as “yes” or “no”. A total of approximately 20% gave “yes” answers and “no” responses. The post-test showed nearly 100% “yes”. His courses involve selecting and designing a product. A prototype product, patent search, a business plan, and measures of financial success further follow this. To succeed in the class, all areas must be applied.

c. The intent of the department leadership to have all faculty members perform a pre-test/post-test for all classes. This year showed an increase of approximately another third of the faculty.
d. The department is starting to develop portfolios. They are to include:

- Course syllabi
- Copies of examinations
- Homework

Portfolios are to contain examples of student work that is rated as excellent, average, and poor.

Assessment objectives for 2006-2007 school year have been directed at measuring writing content skills and examining leadership skills. Writing, as well as oral skills were examined I the following classes.

- TIE2063 Manufacturing Processes 1
- TIE3153 Manufacturing Processes 2

Dr. White is continuing to require that all students in TIE2063, Manufacturing Processes 1 and TIE2153, Manufacturing Processes 2, participate in the group presentations. Both group writing and group presentations are difficult to assess because the finished work may not accurately represent the work that was undertaken by each of the team members. For this, a peer review is being used to evaluate themselves and as their team colleagues. The peer evaluation now includes questions that are used to identify leaders. It is common to have one person who is identified as being capable of direction and control. There is seldom more than one leader but there can be groups that have no leader.

The BSCM degree is also headquartered in the department as well. It has been a challenge to identify and recruit new faculty members. Students can enter the Associate of Science in Construction, and then move up to either the Bachelor of Science in Engineering, or in the Bachelor of Science in Construction Management. This is in its infancy stages now.

3. Action Plan for 2007-2008

- An additional 1/3 of the faculty members will perform pre-test/post-test in their class rooms.
- All faculty members, both fulltime and part-time will present goals that are written in the ABET format.
- New faculty members will be assisted in the development of goals.
- Copies of How to Write and Use Instructional Objectives, Classroom Assess Techniques: a Handbook for College Teachers will be available in the Engineering Technology office.
- Heaviest of the actions activities that are goals and objectives to be written in ABET format.

The pre-test/post-test applications are being accepted as a useful tool. Faculty members are also encouraged to develop their own instruments.

College of Engineering

Department of Mechanical Engineering

Mechanical Engineering Department
Objectives and Outcomes Assessment
Summary 2006-2007

1. Program Educational Objectives, Outcomes and Accreditation Status

The Department of Mechanical Engineering

The following are the current program objectives for the Mechanical Engineering program at Lawrence Technological University:

1. Produce graduates capable of applying fundamental science, math, and engineering principles, in conjunction with modern technology, in an interdisciplinary engineering work environment.
2. Produce graduates who are competent to pursue advanced degrees in engineering.
3. Produce graduates capable of working in global technical locations as well as in the automotive related industries of southeast Michigan.
4. Produce graduates capable of working in teams while utilizing ethical judgment and strong communication and leadership skills.
5. Produce graduates capable of understanding contemporary global engineering issues and recognizing the importance of lifelong learning.
6. Provide equivalent day and evening engineering degree programs for both full-time and part-time or working students.

The following are the program outcomes for the Mechanical Engineering program at Lawrence Technological University:

a) An ability to apply knowledge of math, engineering and science
b) An ability to design and conduct experiments as well as analyze and interpret data.
c) An entry level ability to design a mechanical component and/or system to meet predetermined design requirements.
d) An ability to function on a cross disciplinary team.
e) An ability to identify, formulate, and solve mechanical engineering problems.
f) An understanding of professional and ethical responsibility of mechanical engineers.
g) An ability to produce effective oral and written communications.
h) A broad education necessary to understand the impact of engineering solutions in a global and societal context.
i) A recognition of need and ability to engage in life-long learning.
j) A knowledge of contemporary issues.
k) An ability to use the modern techniques, skills, and tools of mechanical engineering.

2. Assessment Activities and Results

Goal Group I of the LTU Undergraduate Educational Goals is application of Advanced Knowledge which has the following outcomes:

1) Graduates will demonstrate knowledge, and expertise in applying this knowledge in their professional fields.
2) Graduates will demonstrate effective use of technology and the ability to apply it in their professional fields.

These two outcomes will be cross-referenced to the already existing program outcomes of the Mechanical Engineering program as follows:

Goal Group I – Application of Advanced Knowledge	**ME Program Outcomes**	**Method**
Graduates will demonstrate knowledge, and expertise in applying this knowledge, in their professional fields	An entry level ability to design a mechanical component and/or system to meet predetermined design requirements (Outcome c)	**Evaluation of coursework and design work in the following course: EME 4222. The work is evaluated according to criteria developed by the faculty.**
	An ability to identify, formulate, and solve mechanical engineering problems (Outcome e)	**Evaluation of coursework. Evaluate engineering problem solving using common problems on final exams and design work in the following courses: EGE2013, EME3013, EME4003, EGE3003, EME3024, and EME4103. The work is evaluated according to a faculty developed rubric.**
Graduates will demonstrate effective use of technology and the ability to apply it in their professional fields	**An ability to use the modern techniques, skills, and tools of mechanical engineering (Outcome k)**	**Successful completion of courses: EGE1012, EGE1102, EME2012, EME3033. Focus is on use of software which is integrated throughout the curriculum: PowerPoint, Excel, Word, Solid Edge, and Matlab.**

The results of the assessment from Spring 2007 are as follows:

Outcome	Target	Spring 2007
C	70% score 87% or above	78%
E	50% score 70% or above	50%-90%
K	N/A	N/A

The results from outcome c indicate that students are exceeding the specified target. For outcome e, there is a range for the assessment results due to the fact that six different courses are utilized for this outcome. While all six courses meet or exceed the target value, two of the courses, EME4003 and EGE3003 were at the bottom of the target (50%). For outcome k, no targets or metrics exist. The reason for this, as explained in earlier assessment reports, is that the courses listed for this outcome are based on the usage of the various software packages. Thus, students cannot pass the course without successfully demonstrating their ability to use the software and hence their passing of the course is sufficient to deem them proficient in the specific software.

In addition, Critical Thinking was assessed in capstone courses in Spring 07 using the Collegiate Assessment of Academic Proficiency (CAAP) ACT. In the mechanical engineering department, the test was administered in the Project 2 course (EME4222). Results (based on a scaled score) for the college of engineering (62 students) as compared to a national benchmark are as follows:

	National	LTU College of Engineering
Mean	62.7	62.8
Standard Deviation	5.4	5.7

The results indicate that the engineering students at LTU are at the national norm when it comes to critical thinking.

3. Action Plan for 2007-2008

The ME department has collected a significant amount of data for the program outcomes a thru k listed above. In an effort to close the loop, this data will be analyzed to determine how well the program outcomes are being met and if there is a need to revise the assessment techniques/methods or their targets. In addition, leadership and character education are two additional educational goals that will be worked on in conjunction with the university assessment committee.

College of Management

Lawrence Technological University
College of Management
Objectives and Outcomes of Assessment Summary
2006-2007

1. Program Educational Objective, Strategies and Accreditation Status

College of Management Objective: Align COM resources, programs, and strategies around the needs of our constituents—students, faculty, staff, alumni, and industry.
Strategies: Develop distinctive academic programs and provide enhanced student services.

Accreditation:
Lawrence Technological University is accredited by The Higher Learning Commission and a member of the North Central Association. The College of Management also has two business accreditations: The International Assembly of Collegiate Business Education (IACBE), and the Association of Collegiate Business Schools and Programs (ACBSP).

A. Assessment Areas for 2006-2007

1. DMIT
2. DBA
3. MBA/CIMBA
4. MSIS
5. MSOM
6. BSBM and BSIT
7. COM Online
8. Graduate Survey

Note: Please refer to Assessment Report OA COM 07 for the detailed results of each program as listed above.

B. Assessment Results for 2006-2007

1. DMIT Program

The first graduates of the DMIT program occurred in May 2007. Program results including comprehensive exams, dissertations and course evaluations were reported.

2. DBA Program

The comprehensive exams occurred for Cohort 1 in December 2006. In addition, Cohort 1 registered for their first dissertation course in January 2007. Program results including comprehensive exams and course evaluations were reported.

3. MBA/CIMBA Programs

Course evaluations occurred for the MBA and CIMBA programs.

MBA Strategic Management Capstone Exam

The MBA Strategic Management Capstone Exam Package was completed in Fall 2006 and implemented in Spring 2007. All professors teaching this course attended an Outcomes Assessment Workshop in March to assist them in understanding and executing this new assessment. The initial pilot showed impressive results and subsequent changes and improvements are planned prior to Fall 2007 for full implementation. The MBA Strategic Management Capstone Exam with instructions follows.

MBA Strategic Management Capstone Exam Package

Recommended Instructions

Attached please find a copy of the MBA Management Strategic Management Capstone Assessment Test (Attachment A) and Scoring Rubric (Attachment B). This assessment test is considered the final exam for the Strategic Management course. This document recommends delivery methods with instructions to the students. If you should develop an alternative method, not mentioned here or refine some of the delivery, please forward that information to castelli@ltu.edu to help keep this document current. The instructor should read the case completely prior to assigning to students.

There are two additional attachments in this packet. Attachment C was developed to help you identify areas that should be raised by students in the assessment test. Attachment D is the form that you will complete for reporting your outcomes for this assessment. This form along with a copy of the completed student rubrics should be completed within 30 days after the end of the semester and sent to Patty Castelli.

The following are recommendations to consider for the delivery of the assessment test.

Recommended Delivery and Instructions:

The assessment test should be scheduled and conducted during the final class session. Alternative methods of delivering follow this section.

Final Night of Class/Final Exam (on-ground):

If used as the final exam in an on-ground course, a full three hour class session should be dedicated to the exam.

Instructions to Students (modify as needed):

1. Bring your laptops to class. This is a written exam; your responses will be typed.
2. The entire 3 hour class period has been dedicated to taking and completing the exam.
3. You may use your class notes and any textbooks to assist you in completing the assignment.
4. Read the case carefully, you will find guidance at the end of the case to organize your thoughts:
    a. Basic concepts of strategic business planning
    b. Strategic planning at the Corporate level
    c. Roles of SBU managers and functional executives

d. Analysis of external and internal environments
e. An effective business plan
f. Execution!
g. Analytical tools and concepts (Leadership and Management, Accounting, Finance, Marketing, International Business, Management Information Systems, Human Resource Management and Operations Management).

5. Any questions?

Alternative Deliveries and Instructions:

Online:

If the course is an online course it is recommended that the instructor write detailed instructions for the students. The more information the students have, the better the end product. The instructor should limit the time students have to complete the assignment. One suggestion would be to assign the exam on a Monday and have the final product submitted by Friday of that same week. Another might be to assign the exam on Friday with a delivery of Sunday for the final product.

Instructions to Students (modify as needed):

1. This is a written exam; your responses will be typed in Word or a Word compatible word processing package.
2. You may use your notes and any textbooks to assist you in completing the assignment.
3. Your final paper will be in APA format and delivered the final night of class.
4. Your paper will must be delivered to Assignments – Final Exam. It will be checked by Safe Assignment and delivered to the instructor.
5. Read the case carefully, you will find guidance at the end of the case to organize your thoughts:
    a. Basic concepts of strategic business planning
    b. Strategic planning at the Corporate level
    c. Roles of SBU managers and functional executives
    d. Analysis of external and internal environments
    e. An effective business plan
    f. Execution!
    g. Analytical tools and concepts (Leadership and Management, Accounting, Finance, Marketing, International Business, Management Information Systems, Human Resource Management and Operations Management).
6. Any questions should be directed to the instructor.
7. Late assignments consequences (instructor to determine if a reduction in grade will be made or if the assignment will not be accepted).

Group Project (any delivery method):

As a group project, the instructor may want to pick the groups. The instructor may want to give the group more than a week to work this assignment.

Instructions to Students:

1. This is a written exam; your response will be typed in Word or a Word compatible word processing package.
2. The group should divide the case response up among its members.
3. You may use your notes and book to address the situation outlined in the test
4. Your final paper will be in APA format and delivered the final night of class.
5. Your paper will must be delivered through Blackboard, under Assignments – Final Exam. It will be checked by Safe Assignment and delivered to the instructor.
6. Read the case carefully, you will find guidance at the end of the case to organize your thoughts:
    a. Basic concepts of strategic business planning
    b. Strategic planning at the Corporate level

c. Roles of SBU managers and functional executives
d. Analysis of external and internal environments
e. An effective business plan
f. Execution!
g. Analytical tools and concepts (Leadership and Management, Accounting, Finance, Marketing, International Business, Management Information Systems, Human Resource Management and Operations Management).

7. Any questions should be directed to the instructor.

Take Home (hybrid and on-ground delivery):

Good for hybrid and on-ground courses it is recommended that the instructor write detailed instructions for the students. The more information the students have, the better the end product. The instructor should limit the time students have to complete the assignment. One suggestion would be to assign the exam on a Monday and have the final product submitted by Friday of that same week. Another might be to assign the exam on Friday with a delivery of Sunday for the final product.

Instructions to Students:

1. This is a written exam; your responses will be typed in Word or a Word compatible word processing package.
2. You may use your notes and textbooks to assist you in completing the assignment.
3. Your final paper will be in APA format and delivered the final night of class.
4. Your paper will must be delivered through Blackboard, under Assignments – Final Exam. It will be checked by Safe Assignment and delivered to the instructor. **(Recommended)**
5. Read the case carefully, you will find guidance at the end of the case to organize your thoughts:
    a. Basic concepts of strategic business planning
    b. Strategic planning at the Corporate level
    c. Roles of SBU managers and functional executives
    d. Analysis of external and internal environments
    e. An effective business plan
    f. Execution!
    g. Analytical tools and concepts (Leadership and Management, Accounting, Finance, Marketing, International Business, Management Information Systems, Human Resource Management and Operations Management).
6. Any questions should be directed to the instructor.
7. Late assignments consequences (instructor to determine if a reduction in grade will be made or if the assignment will not be accepted).

The MBA Strategic Management Capstone Exam

Student Instructions:

1. This is a written exam; your responses will be typed in Word or a Word compatible word processing package.
2. This test will take approximately three hours to complete, please plan accordingly.
3. You may use your notes and textbooks to assist you in completing this test.
4. Your final paper will be in APA format and delivered per course instructions.
5. Read the case carefully, you will find guidance at the end of the case to organize your thoughts:
    a. Basic concepts of strategic business planning
    b. Strategic planning at the Corporate level
    c. Roles of SBU managers and functional executives
    d. Analysis of external and internal environments
    e. An effective business plan
    f. Execution!
    g. Analytical tools and concepts (Accounting, Business Law, Finance, Organization Behavior, Microeconomics, Marketing, Macroeconomic, Leadership and Management)
6. Any questions should be directed to the instructor.

MBA Strategic Management Capstone Exam

You are interviewing for the position of Director of Strategic Business Planning at the Lawrence Manufacturing Corporation. Present are the Chief Executive Officer (CEO), the Chief Financial Officer (CFO), the Presidents of three of the six business units, and the Vice Presidents for Marketing, Economics, Engineering, Information Technology, and Government Relations.

Lawrence is a $20 billion dollar, multi-national corporation with production facilities in six countries and sales in over 50 countries around the globe. The company has six major business units: Home Appliances; Electrical Equipment; Industrial Tools; Agricultural Equipment; Automotive Parts; and an expanding Financial Services business that markets a broad range of commercial financing, insurance and credit services. Many of the business units purchase common parts and components from the same vendors; utilize similar technologies; and serve common customers.

The CEO explained that the company had never engaged in business planning. The business units operate "more or less on their own." She explained that this has worked well in the past but that the company has failed to meet its profit and market share goals in the last three years. She expressed confidence in her management team, explaining that the economies in several of their largest markets were depressed; new, onerous environmental regulations had increased their costs; and that they had been surprised when several domestic competitors introduced new, innovative products, and when a new foreign competitor had entered the market offering products at significantly lower prices. Nevertheless, she feels it is now necessary to introduce business planning at Lawrence to improve overall performance.

The CFO, in a hostile voice, quickly added that his staff always established challenging financial targets for the business units, and held them to strict capital spending limits and tight budgetary controls. In his view, this was sufficient. You took note of this.

The CEO then asked you to explain the basic concept of strategic business planning and how it would help improve performance at Lawrence since they had never engaged in any type of planning beyond basic financial forecasting. She specifically asks you what her role would be in the planning process, what the corporate headquarters' responsibilities would be and how the corporation would add value to the business units.

The three Presidents of the business units and the functional executives also wanted to know what their specific roles and responsibilities would be in this new planning process, and how their performance would be evaluated and rewarded.

The Vice President of Information Technology also wanted to know what types of external and internal information would be required to develop the business plans, and how they would obtain this information. He wanted to know what types of analytical tools, methodologies and skills they would need to generate and analyze this information.

One of the Presidents of the business units asks you to explain what a business plan consist of and how they will know if they have developed a good plan.

Finally, the CEO stated emphatically that she did not have the time to spare or the resources to devote to writing business plans that would only "gather dust on the shelves." She asks you how you would ensure that the plans were implemented effectively.

You take a deep breath – long enough to organize your response to the questions they raised:

- Basic concepts of strategic business planning
- Strategic planning at the Corporate level
- Roles of SBU managers and functional executives
- Analysis of external and internal environments
- An effective business plan
- Execution!
- Analytical tools and concepts (Accounting, Business Law, Finance, Organization Behavior, Microeconomics, Marketing, Macroeconomic, Leadership and Management)

You look right at the CFO with the confidence that comes from long hours of study, hard work and thorough preparation. You say to yourself: "This job is mine!"

MBA Strategic Management Capstone Exam
Scoring Rubric

Student Name _____ Professor _____

Strategic Planning Issues	**Score**
Basic Concepts of Strategic Business Planning (Understands basic planning concepts, methodologies and the planning process in a large, complex organization)	_____
Strategic Planning at the Corporate Level (Understands the role of the CEO, corporate-level responsibilities, portfolio management, cash flow analyses, and how the Corporation adds value.)	_____
Roles of SBU Managers and Functional Executives (Understands the roles of the SBU managers in writing and executing the business plans, and the roles of key functional executives in supporting planning at the Corporate and SBU levels.)	_____
Analysis of the External Environment and Assessment of Internal Strengths and Weaknesses **(**Understands the importance, scope, and techniques for analyzing the external environment, and for assessing internal capabilities.)	_____
The Business Plan (Understands strategic alternatives, sustainable competitive advantage, and the structure and criteria for effective business plans.)	_____
Executing the Business Plan (Understands the obstacles encountered in implementing business plans, leadership and management techniques for overcoming these obstacles; the need to maintain alignment among the strategy, structures, systems and culture; and the importance of monitoring and rewarding performance.)	_____
TOTAL SCORE	_____

MBA Strategic Management Capstone Exam
Scoring Rubric

Scoring:

4.0-3.50: Student demonstrates a thorough knowledge of all the issues, their relationship to all aspects of the planning process, and their importance to the success of the planning effort. Student effectively utilizes a variety of tools and concepts from a number of different disciplines, and is able to address the issues in the specific context of the case.

3.49-3.0: Student demonstrates a thorough understanding of most of the issues, their importance and roles in the overall planning process. Student applies some concepts and tools from other disciplines, and addresses some issues in the specific context of the case.

2.99-2.50: Student demonstrates an adequate understanding of the majority of the issues and their importance and roles in the overall planning process. Student makes general references to some tools and concepts from other disciplines, and addresses issues with general reference to the case.

2.49-2.0: Student demonstrates a limited understanding of many of the issues, and no understanding of others. Student demonstrates an equally limited knowledge of the importance and roles of the various issues in the overall planning process. Student does not effectively utilize tools and concepts from other disciplines, or effectively assess issues in the context of the case.

1.99-0.0: Student demonstrates a clear lack of understanding of the issues, and their importance and roles in the overall planning process. Student does not utilize any concepts or tools from other disciplines, and does not assess the issues in the context of the case.

Recommendations for Professors in Evaluating Student Submissions

Strategic Management Capstone Exam

The student should identify and respond to ten critical strategic planning issues that are raised during the job interview.

1. The first issue is the CEO's request for an overview of the basic planning process since she and the other executives at Lawrence have no prior experience with strategic business planning.

   Planning occurs at both the Corporate and the business unit levels, though it is quite different in nature at the two levels. Corporate planning is similar to portfolio management where the Corporation allocates its assets to its portfolio of business units so as to maximize overall corporate profitability.

   The Corporation launches the planning effort with a long-term vision of what Lawrence wants to achieve, including specific goals and strategies for achieving those goals.

   Each of the business units need to develop a clear mission that defines they business they are in; analyze the external economic and socio-political environments to identify potential business opportunities and threats to their business; assess its internal strengths and weaknesses; establish a balanced set of financial, operating, customer satisfaction and developmental goals; and the best strategies for achieving these goals given the external opportunities and threats and its particular strengths and weaknesses.

   Once plans are developed and approved, it is, of course, necessary to monitor performance, make necessary mid-course corrections for unanticipated changes in the environment, and finally to reward achievement of business plan- goals.

2. The CEO has expressed confidence in her management team though Lawrence has failed to meet it profit and market share goals for the past three years. She attributes these failure to meet company goals to depressed markets; new, costly environmental regulations; and to the unanticipated introduction of new products at lower prices by several domestic and foreign competitors. She does, however, concede that the company needs to engage in business planning going forward.

   The events that have caused Lawrence to miss its goals for the past three years identified by the CEO support her decision to implement a strategic business planning process at Lawrence. The analysis of both the external economic and socio-political environments in which Lawrence operates will help them anticipate and prepare for business cycles and depressed markets in its major markets, and for new

environmental, safety, health and other social demands that might b made upon Lawrence in the future.

The identification and assessment of all significant domestic and foreign competitors is a major component of the analytical effort that supports any business planning activity. Peter Drucker writes that next to knowing what your customers want, the most important thing is to know what your competitors are doing. The planning process we would implement here at Lawrence would identify these competitors, determine what their goals are; what their capabilities are, and what strategic initiatives they are most likely to undertake so that Lawrence is not surprised by their competitors in the future.

3. The CEO also told you that they launched a strategy to reduce prices and add unique features to their products in response to the new and unanticipated competition. She allowed that it has not been effective, and that they seem to be "stuck in the middle."

   There is a Japanese expression that he who chases two hares catches neither. That may be your difficulty in attempting to both reduce prices and add unique features to your products. It is very difficult to pursue two different strategies such as these at the same time because each strategy requires different skills, resources, structures, systems, management styles and norms of behavior to implement successfully. As a result, firms often get "stuck in the middle" when they attempt to implement two different strategies. They wind up not implementing either one very effectively.

   I would venture that Lawrence would fare better pursuing a single business strategy. There are five basic business strategies a company can pursue, though there are an infinite number of variants on these basic or generic strategies.

   Lawrence will have to decide, based on its analysis of the external environment and assessment of its internal strengths and weaknesses, to pursue either a broad or niche differentiation strategy or a broad or niche low-cost strategy. There is one additional strategy – the best value strategy. It sounds as though Lawrence may have been trying to implement a best-value strategy by lowering its prices while adding new features to its products. This, however, is an extremely difficult strategy to implement because the company must have the ability to provide additional product features and quality at significantly lower cost than its rivals.

4. The CFO has made it clear that in his view the establishment of financial targets and imposition of tight capital spending and budgetary controls is all the planning that is required at Lawrence.

   Establishing financial goals and maintaining strict capital spending and budgetary controls are certainly essential to any business planning effort. The benefits of business planning are that it helps identify what those goals should be, and, most importantly, creates strategies for achieving those goals. Business planning will help the Corporation allocate its available capital more efficiently among the various

business units, and help hold the business units accountable for earning a return on that capital. It will also provide greater flexibility for modifying capital expenditures and budgets in light of new business opportunities and changing external conditions. Business planning also provides an opportunity to develop a set of integrated financial and non-financial goals that will promote the company's continued profitability over the longer term.

5. The CEO wants to know how you would organize a business planning activity within Lawrence.

   It sounds as though Lawrence is doing fundamental budget and forecast-based planning, but it needs to move on to the next phase of business planning – strategic planning and ultimately to strategic management. I would move to the strategic planning phase gradually because there is a lot of organizational learning required to implement a strategic planning successfully. I would not create a large, centralized planning bureaucracy. A small central office planning staff reporting to the CEO, however, will be needed to administer the planning process, but the fundamental business planning must be done by those who are ultimately responsible for carrying out the plans and achieving the results.

   The central office planning staff, working with the CEO, CFO and others will develop and issue the business planning instructions, the format for the plans, the information required from the business units, and any necessary guidelines for budgets and capital spending. The planning staff can also provide common economic and financial data that all of the operating units will need. Since Lawrence has no prior experience with business planning, it will also be necessary for the planning staff to provide some necessary training in planning for executives throughout the company who will be involved in the process. The planning staff can also function as an effective sounding board for the business units.

   The planning staff will develop a time line for developing the plans at the business units, and for reviewing them with the Corporation. The planning staff will also assist the Corporation in consolidating the strategic aspects of the various plans, identifying strategic interdependencies and assessing the Corporation's overall strategic position just as the Finance Staff consolidates the revenue and cost forecasts for the Corporation.

6. The CEO also wants to know what types of information will be required to develop the business plans, and what types of tools would be used to analyze the data.

   As Sun Tzu emphasized in his classic The Art of War three thousand years ago, knowledge of the external environment and of one's "enemies" is essential to "victory." The analysis of the opportunities and threats in the external environment and objective assessment of the company's internal strengths and weaknesses provide the foundation for the development of effective business plans. The plans must be aligned with market conditions to succeed.

The company will need information on the economies in the countries where it is operating, the structure and competitive conditions of industries in which it competes, key characteristics (incomes, preferences, etc.) of its customer base, changing technologies, government policies that affect Lawrence, and the likely strategic initiatives of its major competitors in each market.

There are a few relatively simple business planning tools that we could effectively utilize in our planning process. One might be the General Electric matrix that assesses the attractiveness of an industry and our competitive position in that industry. This matrix can be used in a lot of ways to improve the planning process. The Michael Porter Five Forces of Competition Model is another useful tool for assessing the long-term profit opportunities in different industries.

7. The CEO wants to be ensured that the plans will be implemented effectively. She does not want to waste resources developing plans that will sit on the shelves.

   I agree with you totally. Unfortunately, this happens all too often. Studies show that 70 percent of the time when business strategies fail it is the result of poor execution rather than a flawed plan.

   Firstly, it is absolutely essential that we monitor business plan performance on a continuing basis, and that the business units be rewarded for achieving the goals stated in the business plan and not for reasons or factors unrelated to the business plan. People know that what counts get counted!

   Effective implementation of the business plan, however, requires more than alignment between the goals of the plan and the incentive system. Indeed, the basic requirement for effective plan implementation is a good "strategic fit" among the plan itself, and the company's organizational structure, business systems, human-relationship systems for motivating, empowering and rewarding members of the organization for pursuing the new vision, and a good strategic fit with the organization's social architecture or culture.

   To ensure the plan is executed effectively at Lawrence, it may well be necessary to alter the structure, some of the business and human-relations systems in place and the company's basic values and norms of behavior. Changing the latter often proves the most daunting challenge.

8. The CEO also wants to know what her specific role is in the strategic business planning process, and how the "Corporation" will add value to the business plans developed by the business units.

   The CEO, as the leader of the organization, has a critical role to play in the strategic business planning process. It is the CEO's primary responsibility to develop the long-term vision for the company; to articulate that vision clearly to all members of the

organization; and to motivate everyone in the organization to pursue that vision. The CEO is the primary "change agent." She must overcome natural human resistance to change, and convince the members of her organization that the changes she is proposing will benefit everyone in the organization.

Implementing strategic change is the major test of leadership. One should never underestimate the amount of resistance to change that will be encountered. The CEO must overcome complacency with the status quo, create a powerful coalition for change and eliminate obstacles to change throughout the organization.

The CEO also must also articulate the basic values and beliefs and norms of behavior that are expected and that are necessary to achieve the vision. All members of the organization need to know what is expected of them and how they are to conduct themselves in dealings with customers, suppliers, fellow employees and the public.

The "Corporation" adds a significant amount of direct (overhead) and indirect (slowed decision-making) costs to the business units. It therefore must add sufficient value to justify these extra costs. If it cannot do that, the business units would be more profitable as independent businesses.

The Corporation adds value to the business units fundamentally by acting as a superior internal financial market, and by exploiting strategic interdependencies among the business units that might exist on either the demand or supply side. The Corporation must allocate resources to the operating divisions to maximize overall corporate profitability.

The Corporation may be able to allocate resources among its business units more efficiently than external capital markets because of superior information that is not available to external markets. It may also be able to reduce costs or increase revenues by capturing a variety of production, distribution, marketing or purchasing synergies among the business units that might exist when some of the products are substitutes or complements, when some products use common parts and components or common technologies, or when they utilize common distribution channels. The business planning process and the consolidation of the business plans by the planning staff will bring these synergies to the surface.

9. The business units leaders also want to know what their specific roles and responsibilities will be in this new planning process, and, predictably, how their individual performance will be evaluated and rewarded.

   The leaders of the business units have the most important roles in the planning process. Firstly, they must define the unit's mission – clearly articulate what business they are in. The mission statement should clarify who their customers are, what customer needs they are meeting and how they are going to meet these needs better than competitors. Such a mission will ensure that everyone in the unit is on the same page. They are also responsible for analyzing the environments in which they

compete, and for both developing and executing the plans for earning superior returns in those environments.

The leaders of the business units and their teams are rewarded for achieving the goals committed to in their business plans. It is sometimes difficult to determine the precise causes of success or failure in meeting the goals of the plan because of unforeseen changes in the external environment, events beyond the leaders' control and because of interdependencies within the organization. Nevertheless, the leaders of the business units, fundamentally, must be rewarded for achieving the goals of the business plans.

10. The Staff Vice Presidents for Marketing, Economics, Government Relations and Engineering are equally concerned about what they will be expected to do in the new planning process.

    Each of the staff Vice Presidents has a major role to plan in the development and execution of the business plans at Lawrence. The staffs exist to help the business units and the Corporation achieve their goals. The staffs possess data, information, knowledge and expertise that the business units need to develop effective business plans.

    The staffs can assist the business units in analyzing the external environment – economic conditions (disposable incomes, inflation, interest rates, energy prices, and exchange rates), customers (demands, profiles and demographics), government regulations (environmental, health, safety, trade policy and social expectations), industries (industry drivers, key success factors, structural conditions and long-term profit potential), competitors (product quality, service and cost), and cost, and technology (short-and long-term developments in technology).

    The staffs can also assist in developing new organizational structures and business systems that might be needed to implement the business plans effectively.

    Finally, the CFO, visibly hostile to any new planning process at Lawrence, wants to know what role he will play in the new process.

    The CFO plays an absolutely essential role in the business planning process that goes far beyond capital and expense budgeting. The CFO needs to ensure that the company's resources are allocated to the business units in accordance with approved business plans. A failure to do so ensures plan failure.

    The CFO should ensure that there is a strategy in place to achieve every financial goal in the business plans. The CFO is responsible for monitoring performance to plan, and for recommending course corrections when necessary.

    Perhaps, most importantly, the CFO is responsible for ensuring that the business units in total are generating sufficient cash flow to meet the company's ongoing needs, and

to fund promising new businesses. The CFO must take a lead role in securing the financing for any strategic expansion, diversification or merger initiatives.

Business planning will not likely succeed without an effective integration of financial and strategic planning. Both are much more productive when they are components of a comprehensive planning process.

4. MSIS Program

Since the elimination of the ICCP exam from the MSIS program in 2006, four pre and post tests were subsequently developed to measure the program effectiveness in Fall 2007. In Spring 2007 implementation occurred along with initial changes and improvements as a result of this new program assessment.

5. MSOM Program

Continued changes and improvements were reported for this program.

6. BSBM and BSIT

The BSBM programs began implementation of their outcomes assessment plan. These results along with the ICCP exam results were reported.

7. COM Online

LTU Online received full-accreditation for its online programs in Spring 2007. Results of outcomes assessment were reported.

8. Graduating Survey

During this academic year, a new online LTU Graduating Survey was implemented. Results for the College of Management showed overall high satisfaction as reported.

Graduating Student Survey

As a future graduate of Lawrence Technological University, you are the most valuable source of information and feedback concerning the effectiveness of our degree programs. Please provide a candid response to the following questions.

Thank you.

1. **Please select the semester you are graduating:**
   - ☐ May, 2007
   - ☐ August, 2007
   - ☐ December, 2007
2. **Please select the College of your primary degree:**
   - ☐ Architecture and Design
   - ☐ Arts & Sciences
   - ☐ Engineering
   - ☐ Management
3. **Please select the level of the degree you will be receiving:**
   - ☐ Associate
   - ☐ Bachelor
   - ☐ Master
   - ☐ Doctoral
4. **What is your primary major?**
   [ ]
5. **PROGRAM CONTENT**

   How well our programs met your learning objectives:
   [Select One... ▼]
6. **How well prepared you feel for professional employment:**
   [Select One... ▼]
7. **The helpfulness of our programs to your career:**
   [Select One... ▼]
8. **The materials/books/equipment used:**
   [Select One... ▼]
9. **The content of the courses taken:**
   [Select One... ▼]
10. **INSTRUCTIONAL EFFECTIVENESS**

Faculty knowledge in their fields of specialization:

Select One...

11. **Faculty preparation and organization:**

    Select One...

12. **Faculty responsiveness and timely feedback:**

    Select One...

13. **Faculty interest in teaching:**

    Select One...

14. **Instructional clarity in presenting concepts:**

    Select One...

15. **Effective use of student motivation:**

    Select One...

16. **Quality of instruction within your major:**

    Select One...

17. **Quality of instruction outside your major:**

    Select One...

18. **Overall effectiveness of the instruction you received:**

    Select One...

19. **IN YOUR DEGREE PROGRAM**

    Which courses in your curriculum were most valuable and why?

20. **Which courses in your curriculum were least valuable and why?**

21. **What program improvements would you recommend to enhance the overall learning experience?**

22. **Please rate the application of coursework to real world situations:**

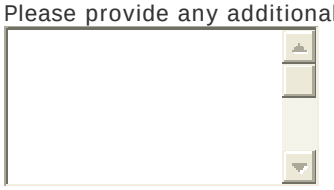
    Select One...

23. Please provide any additional comments related to the above question.

24. **Please rate the classroom environment at LTU:**

Select One...

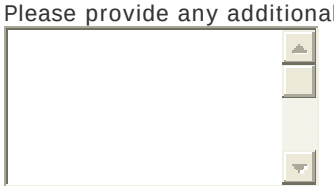
25. Please provide any additional comments related to the above question.



26. **Please rate the computer and lab facilities:**

Select One...

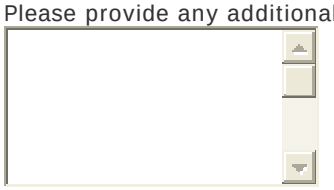
27. Please provide any additional comments related to the above question.



28. **Please rate the administration/support staff:**

Select One...

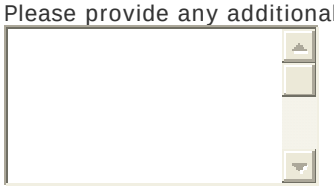
29. Please provide any additional comments related to the above question.



30. **Please rate the studio/lab effectiveness:**

Select One...

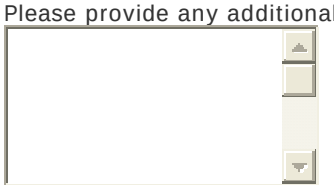
31. Please provide any additional comments related to the above question.



32. **Please rate your preparation in Computer skills:**

Select One...

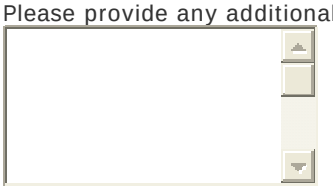
33. Please provide any additional comments related to the above question.



34. **Please rate your preparation in ethical behavior:**

Select One...

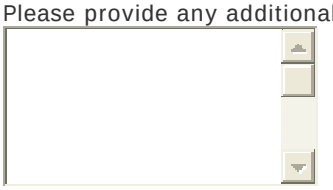
35. Please provide any additional comments related to the above question.



36. **Please rate your preparation in knowledge/appreciation of the Humanities:**

Select One...

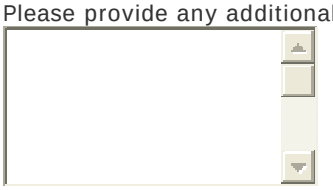
37. Please provide any additional comments related to the above question.



38. **Please rate your preparation in interpersonal skills:**

Select One...

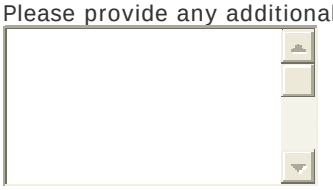
39. Please provide any additional comments related to the above question.



40. **Please rate your preparation in Mathematics:**

Select One...

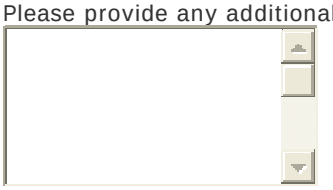
41. Please provide any additional comments related to the above question.



42. **Please rate your preparation in oral communication:**

Select One...

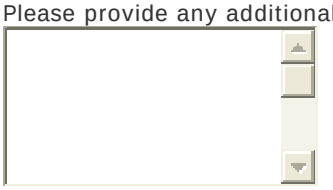
43. Please provide any additional comments related to the above question.



44. **Please rate your preparation in problem solving:**

Select One...

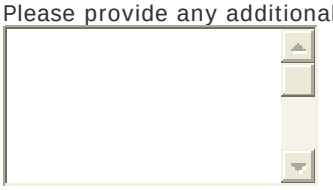
45. Please provide any additional comments related to the above question.



46. **Please rate your preparation in teamwork:**

Select One...

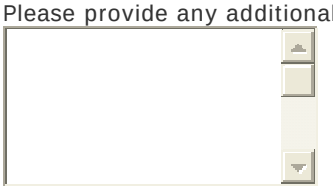
47. Please provide any additional comments related to the above question.



48. **Please rate your preparation in written communication:**

Select One...

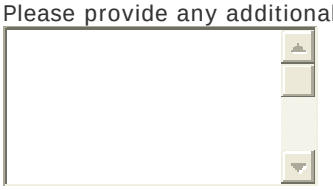
49. Please provide any additional comments related to the above question.



50. **Please rate your preparation in leadership:**

Select One...

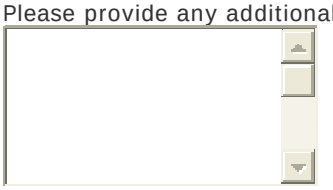
51. Please provide any additional comments related to the above question.



52. **Please rate your overall LTU assessment:**

Select One...

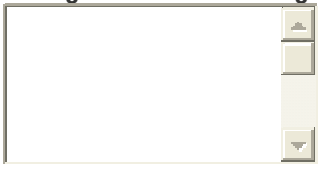
53. Please provide any additional comments related to the above question.



54. **PLEASE GIVE US CANDID AND THOUGHTFUL RESPONSES TO THE FOLLOWING QUESTIONS. THE INFORMATION YOU PROVIDE WILL BE USED TO IMPROVE LAWRENCE TECH AND THE PROGRAMS WE OFFER**

What did you like best about your college and major at LTU? Please be specific.

55. **In your opinion, what topics/areas/applications/skills in your program should either be changed or covered in greater detail? Why?**



56. **What courses or subjects in your major, which are not currently offered at LTU, should**

be added to the program?

57. **Had there been other majors to choose from at LTU when you enrolled, would you have chosen differently? Why?**

58. **Based on your experience in your major, what non-academic areas (that is, areas not pertaining to teaching, faculty, labs, courses, tests or assignments) need the attention of the University administration? Why? Please be specific.**

Submit

C. Realized Outcomes for 2006-2007

Major actions and realized outcomes for 2006-2007 include:

- First doctorate graduates in the DMIT program.
- Comprehensive exams executed and changes and improvements underway for the DBA program. In addition, the Dissertation Proposal Course was implemented with changes and improvements noted for next academic year.
- Implementation of a new program assessment method for the MBA and Bachelor of Management Programs – The Strategic Management Capstone Exam. This method better reflects the College's emphasis on practical leadership skills application.
- A new Online Graduating Survey in which results will be compared as a benchmark for next academic year.
- Continued high satisfaction with the value of learning experience, faculty, and COM overall effectiveness.

D. Action Plans for 2007-2008

- Continued doctorate graduates in the DMIT program.
- First doctorate graduates in the DBA program.
- MBA and Bachelor of Management Programs – Continued implementation of Strategic Management Capstone Exam. Report results of internship courses.
- MSIS, MSOM, LTU Online and BSIT Programs - Continue to exceed last year's actual results.
- Launch Master Degree Programs in Global Leadership and report outcomes assessment findings.

Note: Please refer to Assessment Report OA COM 07 for **individual action plans by course/program/operations.**

Respectfully Submitted by:
Patty Castelli
College of Management, Outcomes Assessment Coordinator
May 2007