Chapter XIII: PORTFOLIO ASSESSMENT

Portfolio Assessment

Who takes it?
Right now, only seniors in classes that require creation of a Liberal Arts and Sciences Portfolio (most often capstone courses or senior seminars) submit portfolios. In May of 2000, eight hundred and fifty four seniors, or 78% of the graduating class turned in portfolios. All students matriculating in or after the fall of 1999 will be required to develop and submit portfolios as a requirement for graduation.

When is it administered?
The instructor of the course requiring participation in the portfolio assessment distributes the guidelines and collects portfolios during the course. This could occur in any semester during the student's senior year.

How long does it take for the student to compile the portfolio?
The average is about five hours.

What office administers it?
The class that requires it.

Who originates the submission requirements for portfolios?
Faculty readers and evaluators, the Assessment Committee and the director of the portfolio assessment design, evaluate and publish the requests for specific portfolio items.

When are results typically available?
The portfolios are read and evaluated in May and generally the results are available in late summer or early fall.

What type of information is sought?
Faculty evaluators and the Assessment Committee designate the types of works requested from students. In the past, many of the requested items have remained constant. In the 1999-2000 academic year, a portfolio included a pair of works showing *growth as a thinker*, a work demonstrating *interdisciplinary thinking*, a work applying *quantitative/mathematical reasoning*, a work showing *scientific reasoning*, an item demonstrating *aesthetic analysis and evaluation*, a work or experience the student considered *most personally satisfying*, and *a cover letter* in which the student reflects on ways they have changed while at Truman and offers any other thoughts they care to express about their experiences here. Other items may be included, and some disciplines may require additional items relating specifically to their major. The implementation of the Liberal Studies Program (LSP) has prompted recent discussions about augmenting the portfolio to include items representative of LSP modes of inquiry that are not currently assessed. These include the Historical, Philosophical/Religious, and Social Scientific modes. Samples of student learning in these modes of inquiry will be included in portfolio assessment in the future, however the details of implementation are still being developed.

From whom are the results available?
The director of portfolio assessment.

Are the results available by division or discipline?
By assessment tradition at Truman, results by discipline are not made available to the general public. However, each Division Head receives the results from students majoring in disciplines within his or her division, and each discipline is provided with results from students in its major. Furthermore, information about the classes serving as sources for portfolio submissions including the scores of those submissions are provided to individual disciplines. In this way portfolio data can be used by disciplines in making informed decisions regarding their curricula and methods.

To whom are results regularly distributed?
The results of portfolio assessment are made available to all members of the Truman community through this Assessment Almanac. Division Heads receive results for students majoring in disciplines within their divisions, and individual disciplines receive results for their major students. Information about classes serving as sources for portfolio submissions are provided to disciplines through their conveners. More detailed data are accessible in consultation with the Portfolio Director. Specific findings are shared with faculty and administrators through planning workshops, faculty development luncheons, and other forums. In the past, data and specific findings have been useful to the university in preparing a self-study report for reaccreditation by the North Central Association and in guiding the core reform that led to the development of the Liberal Studies Program. The Faculty and Student Senates have used the reports in developing planning documents. In discipline committees, some faculty use the information to reform their curriculum, improve their major, and engage in self-study for reaccreditation of their programs. Portfolio findings have also affected the assignments and syllabi of faculty who have read and evaluated them.

Are the results comparable to data of other universities?
No. Few universities are using portfolios for assessment of general education or liberal studies: however; many institutions have inquired about the development and results of the portfolio assessment at Truman.

2000 Liberal Arts and Sciences Portfolio

In 1988, President Charles McClain charged a faculty committee to design a local assessment of the liberal arts and sciences curriculum at then Northeast Missouri State University. The Liberal Arts and Sciences Assessment Committee recommended the use of senior portfolios for sampling and assessing materials that demonstrated student achievement and learning. This volume reports and analyzes the 1999-2000 academic year portfolio assessment findings, concluding with a series of recommendations about the portfolio assessment processes and about the use of the data for improving teaching and learning.

PORTFOLIOS BY MAJOR	
Accounting	39
Art	36
Biology	103
Business	181
Chemistry	34
Communication	80
Computer Science	22
Economics	10
English	64
Exercise Science	67
French	2
German	3
Health Science	29
History	51
Justice Systems	3
Math	20
Nursing	27
Physics	6
Political Science	29
Psychology	87
Sociology/Anthropology	5
Spanish	5
Theater	1

In May 2000, portfolios from eight hundred fifty four, or 78% of the 1089 students who graduated in fiscal year 2000, were read and evaluated by faculty readers. This percentage is only slightly lower than the 79% participation reported for 1999. Eighteen disciplines participated in the portfolio project. This number is significantly lower than was reported for 1998 and 1999, but the number reported previously was the number of majors represented in the portfolios rather than the number of disciplines whose capstone professors acted as portfolio administrators. The difference occurs because some students are double majors. The number of majors represented is the same twenty-three that was reported last year. This year no electronic portfolios (e.g., on CD-ROM) were submitted, but about a dozen web pages created by students were submitted for individual categories within the portfolio.

Sixty faculty members read and evaluated the portfolios, representing all ranks and twenty-seven academic disciplines from every division except Military Science. In addition, three library staff members participated for a limited time each week. Twenty-two of the faculty participants (the same number as last year) and one of the library staff participants were new readers. The portfolio director, a faculty member, organized the readings sessions, trained readers in holistic evaluation, facilitated discussions, and served as a second or third reader of materials that were difficult to assess. Three student employees helped considerably with data entry and sorting. "Table leaders", used in past years, were not employed this year. Instead, newer readers were encouraged to seek advice of those with more experience when confronted with difficulties.

PARTICIPATING DISCIPLINES
Accounting
Art
Biology
Business
Chemistry
Communication
Computer Science
Economics
English
Exercise Science
German
Health Science
History
Math
Nursing
Physics
Political Science
Psychology
Spanish

Reading sessions were scheduled over the three weeks from May 15 to June 2, 2000. Approximately one third, or about twenty, of the readers participated during each week, gathering daily at 8:00 AM and ending at 4:30 PM (8:00 AM to 6:15 PM during the third week shortened due to the Memorial Day holiday) with a long hour for lunch and a morning and afternoon break of about fifteen minutes each. Having tried other arrangements, it seems that twenty readers per week form an optimum cohort, allowing reasonable time for satisfactory discussions without compromising efficiency.

The types of student works sought with the 2000 portfolio were the same as in 1999. Portfolio submissions were elicited by prompts for demonstrating "growth as a thinker", "interdisciplinary thinking", "scientific reasoning", "quantitative/mathematical reasoning", and "aesthetic analysis and evaluation", focussing on students' critical thinking across the liberal arts and sciences curriculum. A sixth prompt asks students to demonstrate or describe their "most personally satisfying work or experiences" during their Truman tenure. Finally, seniors were asked to draft reflective cover letters for their portfolios. Several small changes were made in the portfolio prompts to increase clarity. With only small changes over the last several years in the format of the portfolio, the data collected in these years constitute a good baseline against which the success of the recently implemented LSP can be measured in the future.

The 2000 Portfolio
• Growth as a Thinker
• Interdisciplinary Thinking
• Scientific Reasoning
• Quantitative/Mathematical Reasoning
• Aesthetic Analysis and Evaluation
• Most Personally Satisfying Experience
• Reflective Cover Letter

2000 Portfolio Findings

The findings of the 2000 Portfolio Task Force are presented for the entire group of participating seniors. The findings are also sorted and reported according to three large groupings based on students' majors: "Arts/Humanities", "Science/Math", and "Professional" studies".

MAJOR GROUPS		
Arts/Humanities	**Science/Math**	**Professional**
Art	Biology	Accounting
Communication	Chemistry	Business Administration
English	Computer Science	Justice Systems
French	Economics	Nursing
German	Exercise Science	
History	Health Science	
Sociology/Anthropology	Math	
Spanish	Physics	
Theater	Political Science	
	Psychology	
247 portfolios	**407 portfolios**	**250 portfolios**

Because this assessment relies on students to first keep and then select materials for inclusion in their Portfolios, the resulting data are inherently "fuzzier" than data from a standardized, systematically controlled instrument. Students occasionally indicate that they are submitting work that is not their strongest demonstration because they did not keep or did not receive back the artifacts which best demonstrate their competence in the specified area. Other students report that they were never challenged to use the thinking skills or the mode of inquiry requested by individual prompts and, therefore, cannot submit material. Lack of motivation may inhibit the thoughtfulness of the selection process or engagement in self-assessment encouraged by the cover sheets for each portfolio category. In their reflective cover letters, students report a wide range of motivation levels and frequently are frank in stating that they compiled their portfolio quickly and with little thought because other concerns and responsibilities were considered higher priorities. The administration of the portfolio and the degree of self-reflection it fosters in students are uneven campus wide.

Because some students elect not to submit materials in certain categories and other offer multiple submissions, the number of submissions varies from category to category in the report.

Traditionally, we have kept track of the sources of items selected by seniors for their portfolios. This year, as we did last year, we will attempt to characterize that data by indicating several of the most common sources (disciplines and courses) for each category.

For several years, we have been tallying the occurrences of submissions dealing with issues of race, class, gender or international perspectives. Those findings are also reported.

Growth as a Thinker

Seniors submit early and later works to demonstrate growth over time as critical thinkers. In 2000, items were elicited with the following prompt:

> *Please include two items (one early and one more recent), which best reflect your growth as a thinker. Many students (and the faculty readers) find it easier to compare similar assignments from earlier and later times for this self-assessment. Please note that in the past, some students confused good writing with good critical thinking. Although writing and thinking are correlated, we are most interested in your critical thinking skills. Please reflect on and choose whatever materials best demonstrate your growth as a thinker.*

Students are further provided with a description of Bloom's[1] taxonomy of critical thinking, and are encouraged to use it when reflecting on their growth. The cover sheet encourages metacognition when it specifies that seniors describe how and why their choices demonstrate their growth as thinkers.

Materials come from every sector of the curriculum; some students pair a problem-solving essay from Composition I with a researched assignment from Composition II to show the change in their response over time to similar assignments. Others might pair an early scientific lab report with a later scientific research report.

Growth as a Thinker at a Glance

- Number of paired submissions: **783**
- Number of single submissions: **38**
- Percent of "no submissions":   **3**
- Percent showing growth: **71**
- Mean critical thinking score (on a 0 – 3 scale): **1.97**
- Highest scoring "group":   **Arts/Humanities**
- Lowest scoring "group":   **Professional**
- Most frequent "early" source (course):   **ENG 100**
- Most frequent "early" source (discipline):   **ENG**
- Most frequent "later" source (course):   **ENG 314**
- Most frequent "later" source (discipline):   **ENG**
- Most common course pairing: **ENG 100 with ENG 314**
- Three year trends: **Toward better critical thinking Toward more insightful self-reflection**

Faculty read both submissions, comparing and evaluating the thinking in each as they make three judgements: 1) whether the thinking in the later work is about the same as, better than or worse than the thinking in the earlier paper; 2) whether the quality of the thinking in the later work is strong, competent, weak or nonexistent; and 3) whether the quality of insight evident in the senior's description and self-assessment of

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Bloom, B.S. (Ed). Taxonomy of Educational Objectives Handbook 1: Cognitive Domain. New York: Longman, Green & Co. (1956).
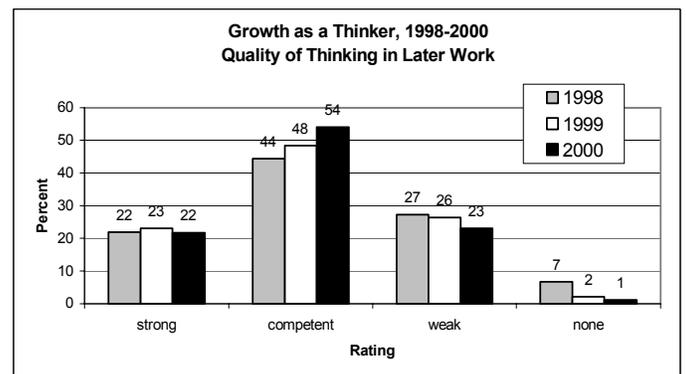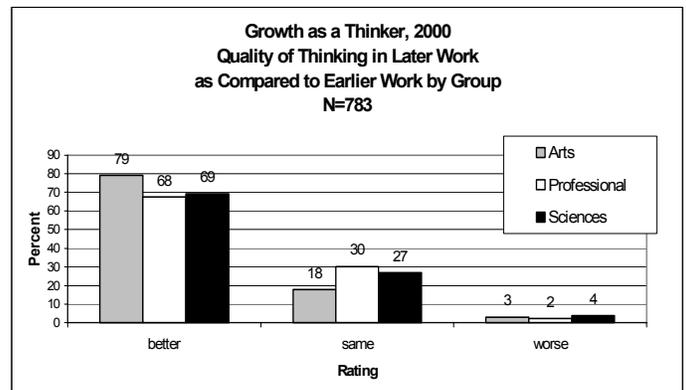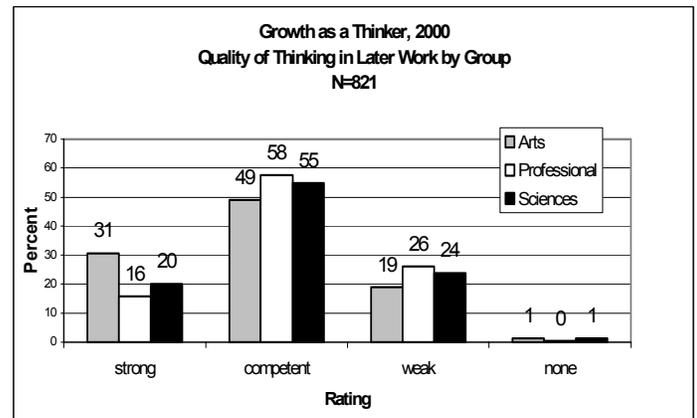
growth as a thinker is strong, competent, weak or nonexistent. Each pair of items was read and evaluated by one faculty reader.

Out of the 854 portfolios collected, 783 (91%) contained paired submissions to demonstrate growth as a thinker. Thirty-eight seniors submitted only a single work, confounding any attempt to evaluate growth in thinking. In these cases, the item was evaluated only for quality of thinking as evidenced in the submitted work. Of the 821 seniors who submitted anything in this category, about 13% offered no meaningful self-assessment.

Growth as a Thinker, 2000
Quality of Thinking in Later Work by Group
N=821

In 2000, some growth in thinking was found in 71% of the paired submissions. This is about the same percentage as was found last year. Twenty-five percent of the submissions were found to demonstrate about the same quality of critical thought over time, and 3% were found to demonstrate worse thinking in the later work. This pattern is demonstrated similarly amongst all three major groups: Arts/Humanities, Professional and Science/Math.

Growth as a Thinker, 2000
Quality of Thinking in Later Work
as Compared to Earlier Work by Group
N=783

Faculty readers evaluated 783 "later" works and 38 single submissions for the quality of critical thinking evidenced, and rated the thinking as "strong", "competent", "weak", or "none". In 2000, 22% of seniors submitted material judged as demonstrating "strong" thinking; 54% submitted material with thinking judged as "competent"; 23% submitted material judged as showing "weak" thinking; and 1% submitted material judged as demonstrating no critical thinking. Typically, entries evaluated as "none" were reflective papers, creative writing, or researched reports displaying neither analysis nor evaluation. The percentage of seniors with submissions judged as "competent" is 6% greater in the current portfolios than was found in 1999 and 10% greater than was found in 1998. This trend accounts for an increase in the mean score from 1.81 in 1998 to 1.91 in 1999 to 1.97 in 2000 (where a score of 0 = "none" and 3 = "strong").

When the data is sorted according to major groups, it becomes evident that seniors with Arts/Humanities majors are judged as significantly stronger critical thinkers than those with Professional or Science/Math majors. Thirty one percent of Arts students were found to be "strong" critical thinkers, while only 20% of Science students and 16% of Professional Studies students were considered "strong" in their thinking. These

Growth as a Thinker, 1998-2000
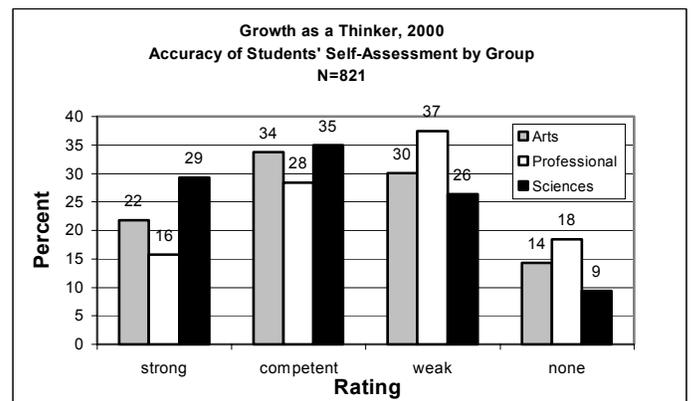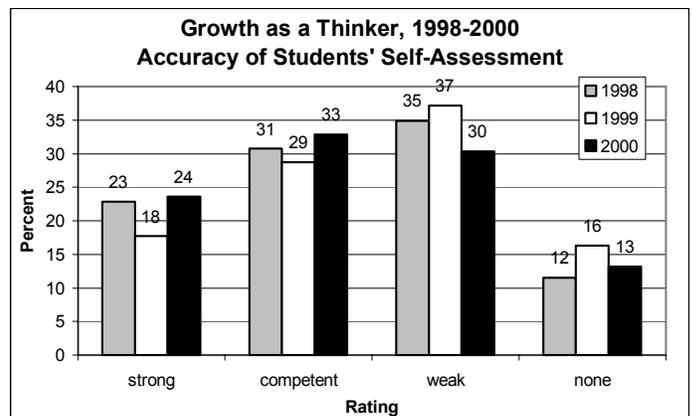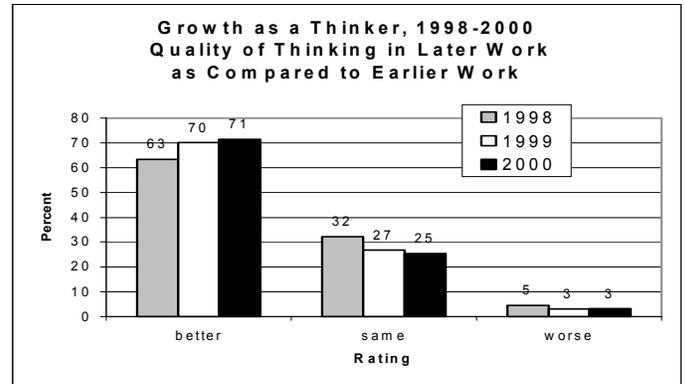**Quality of Thinking in Later Work**

results closely parallel last year's findings.

In previous years we evaluated the "accuracy" of the self-assessment. Some faculty readers had difficulty assessing "accuracy", pointing out that a senior's statement may be literally accurate, yet with little relevance to growth as a thinker. It is common, for example, for seniors to describe their growth as a *writer* without discussing any changes in their cognitive abilities. To allay the readers'confusion, we expanded the judgement criterion to be "accurate insight relevant to growth as a thinker". Twenty-four percent of seniors presented "strong" self-assessments, 33% were judged "competent", 30% "weak", and 13% were found to contain no relevant self-assessment of growth as a thinker. Comparing the 2000 findings to those of 1999, "competent" and "strong" self-assessments increased by 10%.

When sorted according to major groups, we find that seniors with Math and Science majors were most insightful in their self-assessments of growth as a thinker and those with Professional majors were least insightful. In 1999 it was found that students with Arts and Humanities majors provided the most insightful self-assessments.

The "early works" chosen by seniors for this category were generated mostly in the first two years of study. Fifty five percent of the submissions were examples of work done as a freshman, 28% were from the sophomore year, 13% came from the junior year and seniors produced the remaining 4%. Fifty three percent of the "early works" fulfilled assignments for classes in the LAS core, 38% were generated in classes fulfilling major requirements, and the rest were product of elective courses, minor requirements or other sources.

The "later works" submitted by seniors demonstrating growth as a thinker were 61% from the senior year, 35% from the Junior year, 4% from the sophomore year, and less than 1% from freshmen. Thirty three percent of the "later works" fulfilled assignments for classes in the LAS core, 55% were generated in classes fulfilling major requirements. It is interesting to note that more students choose work from their major coursework to demonstrate their best thinking.

Growth as a Thinker, 1998-2000
Quality of Thinking in Later Work as Compared to Earlier Work

Growth as a Thinker, 1998-2000
Accuracy of Students' Self-Assessment

Growth as a Thinker, 2000
Accuracy of Students' Self-Assessment by Group
N=821

English classes were the most common sources of both "early" and "later" works. However, only 262 "early" submissions were from English classes in 2000, whereas 310 were from English classes in 1999. History course were the sources of 82 submissions (64 in 1999), followed by Biology with 54 submissions (53 in 1999). Most other disciplines were represented as sources of "early" works with less than 40 submissions from each. Two hundred fifty five of the later works were produced in English courses (293 in 1999), followed by Business with 98 submissions (60 in 1999), History with 67 (53 in 1999), Philosophy/Religion with 52 (in 1999, Biology followed History with 46 submissions), Communication with 46, and the rest with less than 40.

"EARLY" GROWTH SOURCES			
Top Ten Courses		Top Ten Disciplines	
Eng 100	150	ENG	262
Admissions Essay	34	HIST	82
Eng 190	24	BIO	54
Bio 107	20	COMM	37
Hist 231	20	POL	35
Eng 314	17	BSAD	34
Acct 212	14	Admission Essay	34
Hist 104	14	PHRE	27
Pol 161	14	ART	23
Comm 170	13	ACCT	23

Composition I and the new Writing as Critical Thinking together were the sources of 174 "early" works (205 in 1999). Thirty-four seniors submitted their admissions application essay as an "early" work, and 20 "early" works were submitted from both BIOL 107 and HIST 231. Last year we saw about twenty "early" submissions from courses taken elsewhere by transfer students, but that did not occur again in 2000. No other course accounted for more than 20 submissions of "early"

"LATER" GROWTH SOURCES			
Top Ten Courses		Top Ten Disciplines	
Eng 314	167	ENG	255
Bsad 460	41	BSAD	98
Hist 328	17	HIST	67
Phre 186	14	PHRE	52
Bsad 445	12	COMM	46
Hist 298	11	BIO	39
Phre 188	11	ES	34
Bsad 325	10	POL	25
Bsad 349	9	NU	22
Phre 185	9	PSYC	21

work. Composition II was the source of 167 "later" works (189 in 1999). In 2000 Business Policy (BSAD 460) replaced Principles of Marketing (BSAD 325) as the second most common source of "later" works with 41 submissions (last year BSAD 325 accounted for 16 items as compared with 10 this year).

The most common pairing of submissions remains works from Composition I (ENG 100) paired with papers from Composition II (ENG 314). This pairing of courses accounted for 59 submission and another 11 submissions paired the new English 190 (Writing as Critical Thinking) with Composition II (ENG 314). The next most common pairing was ACCT 212 paired with a "later" work from BSAD 460. Three students paired their admissions essay to Truman with an admissions essay to graduate school.

Of all the 1604 items submitted as both "early" and "later" works, 5% dealt with issues of race (3% in 1999), 3% with issues of class (1% in 1999), 5% with issues of gender (3% in 1999), and 8% with international perspectives (2% in 1999). The percentage of collaborative submissions rose from 3% in 1999 to 6% in 2000.

Interdisciplinary Thinking

Examples of student work demonstrating an ability to engage in interdisciplinary thinking were elicited with the following prompt:

Please include a work which demonstrates that you have engaged in interdisciplinary thinking. "Interdisciplinary" means using the values, perspectives and/or methodologies or modes of inquiry of one discipline to explore content, perspectives and ideas in another discipline as you make meaning or gain understanding. You work in an interdisciplinary way when you synthesize ideas, materials, or processes from at least two distinct academic disciplines. You should not assume that you are generating interdisciplinary work if you merely use essential skills like writing, speaking, a second language, computation, percentages, or averages to explore content, perspective and ideas in one discipline.

*For example, a Chemistry major was assigned as part of her internship to study a pollution problem caused by the company's product. She used ethical inquiry and applied economic theory to balance the criteria of cost to the quality of life and cost to the economy in her recommendations about reducing the pollutant. You might have analyzed a film like **Them** or **The Beast from 20,000 Leagues** to illustrate Cold War mentality in a class presentation of your research into and application of a paradigm from Political Science during a 300-level course in History. Truman students who receive scholarships for study at Reynolda House Museum of American Art must write an "American Arts Discovery Correlation" paper. They correlate perspectives from art, literature, music, and history when they respond to a question like, "in what ways do Thomas Hart Benton with **The Bootlegger**, F. Scott Fitzgerald with **The Great Gatsby**, and George Gershwin with **Rhapsody in Blue** express the insouciance of the 1920's to me?"*

In 2000, 7% of participating seniors did not submit an entry demonstrating "interdisciplinary thinking". This percentage is very similar to the 8% "no submission" rate found in the previous two years. Only 2% provided "self-reports" of interdisciplinary work they remembered but no longer possessed (down from 5% a year ago). Because faculty readers did not have texts or other direct evidence of interdisciplinary thinking, self-reports were not evaluated.

Interdisciplinary Thinking at a Glance	
• Number of submissions:	765
• Percent of "no submissions":	7
• Mean score (on a 0-4 scale):	1.13
• Reader "split" rate percent:	20
• Highest scoring "group":	**Arts/Humanities**
• Lowest scoring "group":	**Professional**
• Most frequent source (course):	**ENG 314**
• Most frequent source (discipline):	**ENG**
• Three year trends:	**Toward higher scores Less major course sources and more from core courses**

Several portfolios contained multiple submissions that were evaluated and scored independently. Altogether 765 submissions were each evaluated by two faculty readers who read the works "holistically" while keeping in mind the following descriptors:

Some Descriptors of Competence as an Interdisciplinary Thinker

The items submitted may have some, many, or all of these features which influence your holistic response to the material you review.

4 Strong Competence
❖ A number of disciplines
❖ Significant disparity of disciplines
❖ Uses methodology from other disciplines for inquiry
❖ Analyzes using multiple disciplines
❖ Integrates or synthesizes content, perspectives, discourse, or methodologies from a number of disciplines

3 Competence
❖ A number of disciplines
❖ Less disparity of disciplines
❖ Moderate analysis using multiple disciplines
❖ Moderate integration or synthesis

2 Minimal Competence
❖ A number of disciplines
❖ Minimal disparity of disciplines
❖ Minimal analysis using multiple disciplines
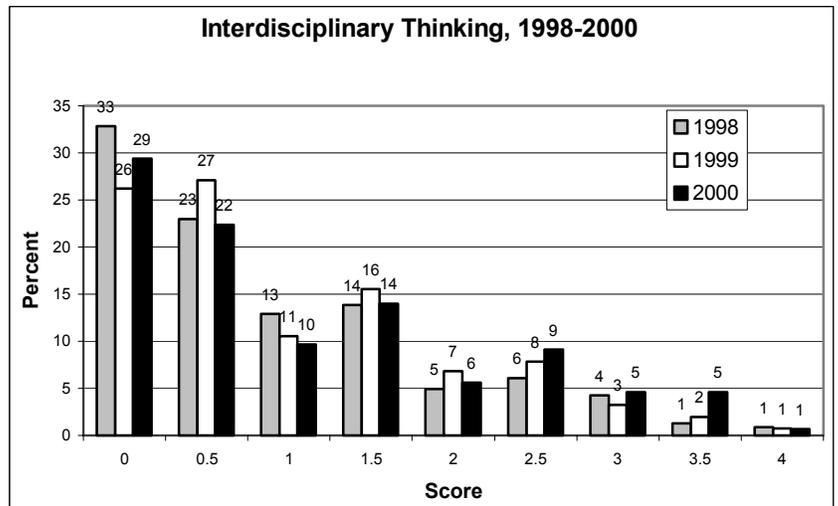❖ Minimal evidence of comprehension of interdisciplinarity

1 Weak Competence
❖ A number of disciplines
❖ Mentions disciplines without making meaningful connections among them
❖ No analysis using multiple disciplines
❖ No evidence of comprehension of interdisciplinarity

0 No demonstration of competence as an interdisciplinary thinker
❖ Only one discipline represented
❖ No evidence of multiple disciplines, of making connections among disciplines, or of some comprehension of interdisciplinarity

With each item read by two different evaluators, the overall score on a 0 to 4-point scale is the average of the two individual scores as long as these differ by no more than one point. Differences of two or more points are "splits", and items receiving split scores are evaluated a third time by an experienced reader to determine
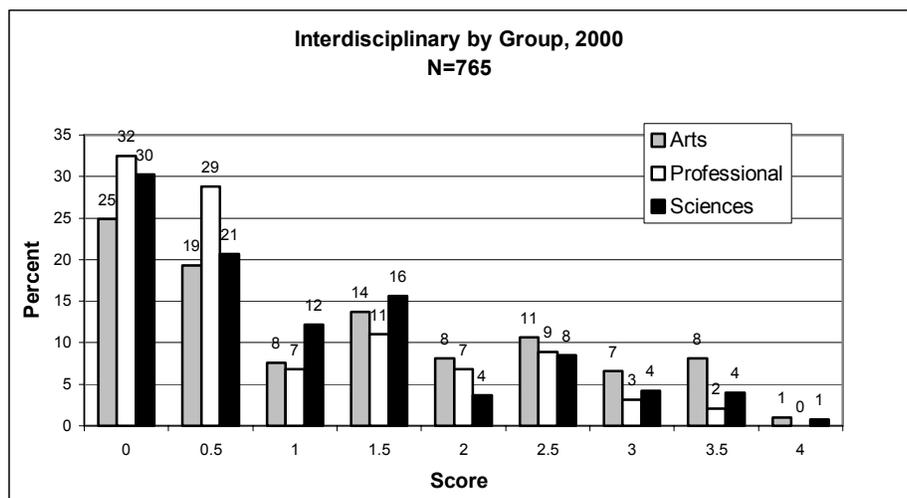

Interdisciplinary Thinking, 1998-2000

the final score. The percentage of splits is a measure of the reliability of the evaluation process. In 2000, 20% of the submissions received split scores. This percentage equals the split rate of two years ago but is higher than the 16% rate achieved last year. (For comparison, random scoring with the five level scale used here would result in a 48% split rate.)

The histogram below shows the results for "interdisciplinary thinking" in 2000 with the results for 1998 and 1999.

Year after year, faculty readers express disappointment at the dearth of good interdisciplinary thinking found in the portfolios. It is worth noting that the seniors submitting portfolios in 2000 have all completed their degrees under the old Liberal Arts and Sciences core curriculum, which contains no explicitly programmed interdisciplinary experience. The students often express frustration in their cover sheets for this category reporting that they have never been assigned any interdisciplinary work, and that the item they have chosen for submission is a poor example but the best they could provide. The new Liberal Studies Program requires all students to take a junior-year interdisciplinary course. Readers anticipate finding more good examples of interdisciplinary thinking as students begin taking and submitting work from the junior interdisciplinary seminar.

In comparing the data from 1998 to 2000, there seems to be a slow trend toward better scores. Although the percentage of zeroes increased by 3% from 1999 to 2000 after falling 7% from 1998 to 1999, the percent scoring 0.5 through 2 all decreased a little while scores of 2.5 through 3.5 all increased. We continue to find only a very small number of students receiving scores of 4 ("strong competence") from both of the faculty readers. The improving trend is best seen through examining the mean scores: 0.90 in 1998, 1.03 in 1999, and 1.13 in 2000. This trend might reflect a greater awareness on the part of faculty and students of the value of interdisciplinarity in a liberal arts culture, resulting from the ongoing discussions and the implementation of the Liberal Studies Program.

The data sorted by major group is summarized below. Students from "Arts/Humanities" disciplines submitted significantly fewer items with little or no interdisciplinary thinking than did students with "Professional" or "Science/Math" majors. Fully 61% of "Professional" students' and 51% of Science students' submissions were scored a zero by at least one reader. Only 44% of "Arts/Humanities" students' submissions were scored 0 or 0.5.

Interdisciplinary by Group, 2000
N=765

The interdisciplinary items were selected by seniors from 35 academic disciplines. There is a noticeable trend for students to choose more of their interdisciplinary items from work they do in liberal arts courses and less from their major courses. This year, for the first time, liberal arts core classes accounted for more submissions than major courses. Core courses accounted for 41% of the submissions (38% in 1999 and 34% in 1998). Major courses were the source of 39% of submissions (44% in 1999 and 63% in 1998), and elective courses accounted for 12%. Sources for the remaining 8% of items included minor requirements, study abroad experiences, papers from the Sophomore Writing Experience and the Undergraduate Research Symposium, a videotape of The Lakeside Review, and a personal journal. One hundred seventy four entries (23%) were generated in 42 English classes with 86 items (11%) coming from English Composition II (ENG 314). BSAD courses were the next most frequent source of interdisciplinary submissions with 61 items followed by HIST courses accounting for 51 items.

INTERDISCIPLINARY SOURCES			
Top Ten Courses		**Top Ten Disciplines**	
Eng 314	86	ENG	174
Eng 100	18	BSAD	61
Chem 121	13	HIST	51
Hist 328	12	COMM	43
Bsad 349	11	PHRE	43
Comm 170	11	BIOL	30
Bsad 325	10	CHEM	28
Bsad 460	10	ES	24
Phre 188	10	ART	22
Phre 186	9	PSYC	22

Most of the work reflected in the interdisciplinary submissions was accomplished by students in their junior and senior years (36% and 35%, respectively). Twenty percent came from the sophomore year and 9% from the freshman year. Eight percent of the items were the result of collaborative work. All of these percentages are similar to last year's findings.

Portfolio readers keep a tally in each category of items dealing with race, class, gender, and international issues. In the interdisciplinary category 14% of submissions dealt in some way with international issues, 10% with race, 9% with gender, and 7% dealt with issues of class.

Quantitative/Mathematical Reasoning

Examples of student work demonstrating an ability to reason quantitatively/mathematically were elicited with the following prompt:

> *Please include a work in which you applied mathematical skills and techniques in discovering new knowledge through quantitative or mathematical reasoning. Be sure that your entry goes beyond mere computation. If you choose to submit an exam or a homework assignment, be sure your selection is one in which the mathematics is accompanied by written explanations and interpretations. Your submission should provide evidence of your ability to apply mathematical tools in order to reach a more general and relevant conclusion about some broader question.*

This prompt represents a fairly significant revision over last year's prompt in this category (refer to Volume II of the 1999 Assessment Almanac for the previous prompt). The changes were intended to reduce the number of submitted works showing computation without explicit reasoning – submissions that are typically scored low. This year, for the first time,

faculty readers were permitted to read and consider student commentary in this category if, because of the nature of the assignment or because of the high level of mathematics involved, the quantitative/mathematical reasoning was not clearly evident.

In 2000, 13% of participating seniors did not submit an item demonstrating "quantitative/mathematical reasoning". Over the last three years the percentage of students omitting a work showing quantitative/mathematical reasoning has increased from 6% in 1998 to 9% in 1999 to the 13% found this year. In contrast, the percentage of "self-reports" fell from 7% in the previous two years to 3% in 2000. Readers did not attempt to evaluate self-reports.

Altogether 715 submissions were each evaluated by two faculty readers who read the works "holistically" while keeping in mind the following descriptors:

Some Descriptors of Competence in Quantitative/Mathematical Reasoning

3 Strong Competence
Strong demonstration of quantitative reasoning includes some, but not necessarily all of these features. The submission may:
❖ Show strong inferential or deductive skills
❖ Show a strong ability to explain concepts
❖ Show an appreciation of concepts
❖ Show an ability to ascertain a pattern and relationships
❖ Show an ability to use data or calculations to explore further or expand the scope of the problem or issue
❖ Interpret the meaning of quantitative results
❖ Explain why quantitative techniques are applied

2 Competence
Competent demonstration of quantitative reasoning submissions:
❖ Have a level of inferential or deductive skills
❖ Show an appreciation of concepts
❖ Interpret the meaning of the quantitative results
❖ Explain why quantitative techniques are applied
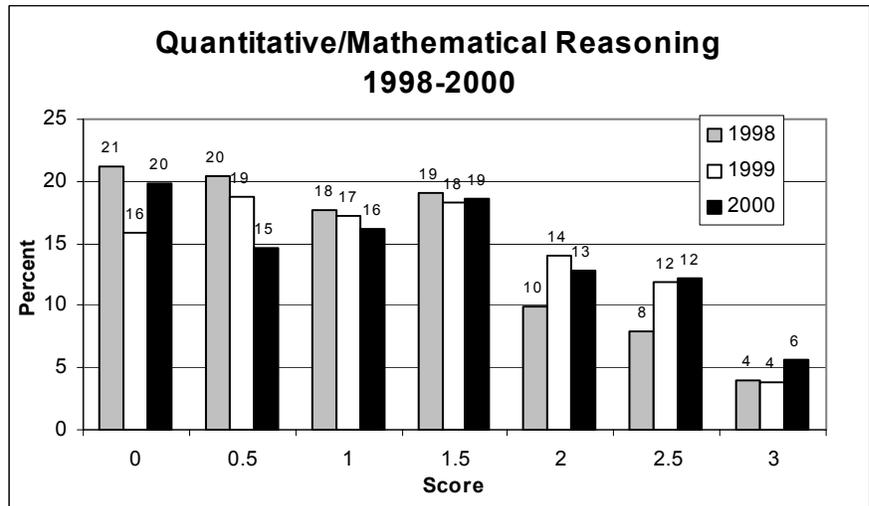
1 Minimal Competence
Minimally competent demonstration of quantitative reasoning
offers a minimal explanation of the meaning of data or calculations used.

0 No Competence
The submission has calculations without explanations; it manipulates numbers without conclusions or discussion, or it makes meaning without mathematics or quantitation.
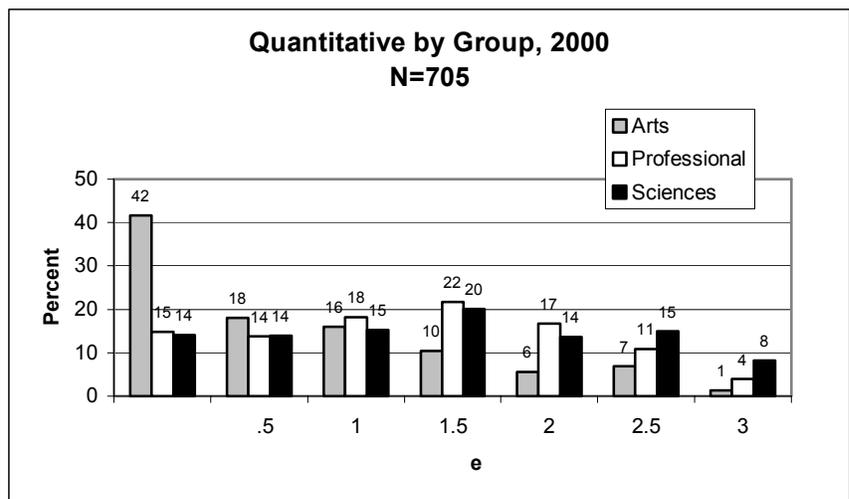
With each item read by two different evaluators, the overall score on a 0 to 3-point scale is the average of the two individual scores as long as these differ by no more than one point. Differences of two or more points are "splits", and items receiving split scores are evaluated a third time by an experienced reader to determine the final score. The percentage of splits is a measure of the reliability of the evaluation process. In 2000, 10% of the submissions received split scores. This value one percentage point lower than the split rate of 1999. (For comparison, random scoring with the four-level scale used here would result in a 38% split rate.)

There is a trend in the results towards higher scores. Although scores of zero are back up in 2000 after falling by 5% between 1998 and 1999, the percentage of scores of 0.5 and 1.0 are both down, and the percentage of scores of 2.5 and 3 are both up. The percentage "strong" scores increased by 2%. The increasing trend is most easily seen when considering mean scores, which have risen steadily over the past three years from 1.09 in 1998 to 1.12 in 1999 to 1.31 in 2000.

When the data are sorted according to the major groupings, C. P. Snow's "two cultures[2]" are clearly evident. While 57% of math and science majors are judged "competent" or strong by at least one reader (i.e., scores 1.5 or greater), only 24% of the arts and humanities majors received scores at or above 1.5. Furthermore, 42% from the "Arts/Humanities" group submitted items with no evidence of quantitative/mathematical reasoning (up from 30% in 1999), while only 14% of the "Science/Math" group were scored zeroes. Students in professional disciplines, which may be largely quantitative (such as Accounting) or less so, fall somewhere in between.

Once again in 2000, we attempted to characterize

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[2] Snow, C. P. The Two Cultures. Cambridge University Press, reissue edition (1993). [Snow's controversial Rede lecture of 1959 identifies a cultural split between the humanities and the sciences.]

the kind of math used in each submission. Readers found basic statistics (averages, percentages, standard deviations, stem and leaf plots, etc.) as the most common mathematics evident in student submissions. Thirty-eight percent of the submissions used basic statistics. Twenty-four percent of submissions used advanced statistics (correlations, t-tests, ANOVA's, etc.), and another 20% used precalculus (basic algebra and trigonometry). Nine percent used basic arithmetic skills. The use of calculus was found in only 7% of submissions.

Not surprisingly, the disciplines from which students chose work for this category most frequently were Statistics and Math. One hundred nineteen items were produced in Statistics courses and 76 came from Math courses. Biology and Business courses accounted for 63 and 58 submissions respectively. The number of submissions from Psychology courses dropped from 64 in 1999 to only 29 this year. Basic Statistics (STAT 190) was again the most common individual class from which items were submitted to demonstrate quantitative/mathematical reasoning, followed by Advanced Statistics (STAT 375) with 27 submissions.

QUANTITATIVE/MATHEMATICAL SOURCES			
Top Ten Courses		Top Ten Disciplines	
Stat 190	66	STAT	119
Stat 375	27	MATH	76
Bsad 406	17	BIO	63
Es 447	16	BSAD	58
Phys 186	16	PHYS	51
Bio 100	14	CHEM	50
Econ 303	13	ES	46
Es 343	13	ECON	42
Stat 376	13	PSYC	29
Bio 301	12	ACCT	25

Thirty six percent of the submissions were produced in the senior year, 35% in the junior year, 21% in the sophomore year and 9% in the freshman year. This distribution is comparable to last years' findings.

Sixty four percent of the items submitted were the result of work in major courses, 25% were assignments in courses used to fulfill LAS core requirements, and 7% were from elective courses and 4% were produced in classes taken to fulfill minor requirements.

Of the 715 portfolios read for quantitative/mathematical reasoning, 4% dealt with issues of gender, 3% with international perspectives, 2% with issues of race, and 1% with class issues. Twenty-nine percent of the items submitted were collaborative works, with many of these science laboratory reports and term papers from business classes.

Readers still find it difficult to evaluate the "meaning" reflected in the works submitted in this category. Despite rewriting the prompt, we still found many students submitting exams from a Statistics course, for example, that displayed considerable mathematical skill applied to some problem, but with the "meaning" inferable only from the statement of the problem. On the one hand, readers feel compelled to reward the display of mathematical skills yet are reluctant to reward a submission in which the application of math tools "in order to reach a more general and relevant conclusion about some broader question", as the prompt requires, is not accompanied by explicit interpretations and conclusions composed by the student. Other students submit work from advanced math classes that are highly abstract and largely inaccessible to most faculty readers. One might presume that such work makes mathematical "meaning" and reflects the highest mathematical reasoning amongst our students, but beyond such presumption it is impossible to evaluate a work if the reader cannot understand it. Although students were invited

this year to describe the reasoning implied in their submission, and faculty readers were permitted to read the students' commentaries, few students responded in a way that would make the evaluation process any easier. Perhaps we need to make it more clear to students what we look for when evaluating items in this category.
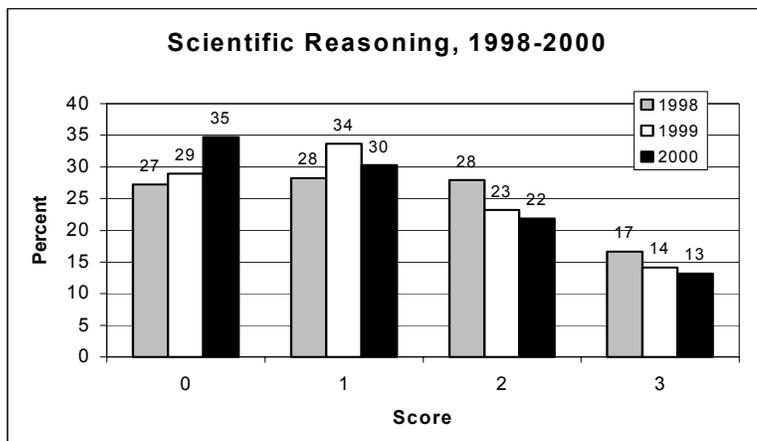

Scientific Reasoning

Examples of student work demonstrating an ability to reason scientifically were elicited with the following prompt:

Please include a work that shows your ability to reason scientifically. You might include a laboratory or research report in which you tested a scientific theory or reached new conclusions about the behavior of humans or other aspects of the natural world. Alternatively, you might have derived testable predictions about the behavior of Nature or of persons developing some theory to a logical and relevant consequence.

In 2000, 10% of seniors did not submit materials to demonstrate "an ability to reason scientifically". This percentage is more than the non-submission rate of 8% found 1n 2000 and equal to the 1998 rate. Most seniors who did not submit an item showing scientific reasoning explained on their cover sheets that they had not saved work from their core science classes. Three percent of seniors submitted self-reports of work they recalled doing. This percentage is about half what it was a year ago. Self-reported work was not evaluated by faculty readers.

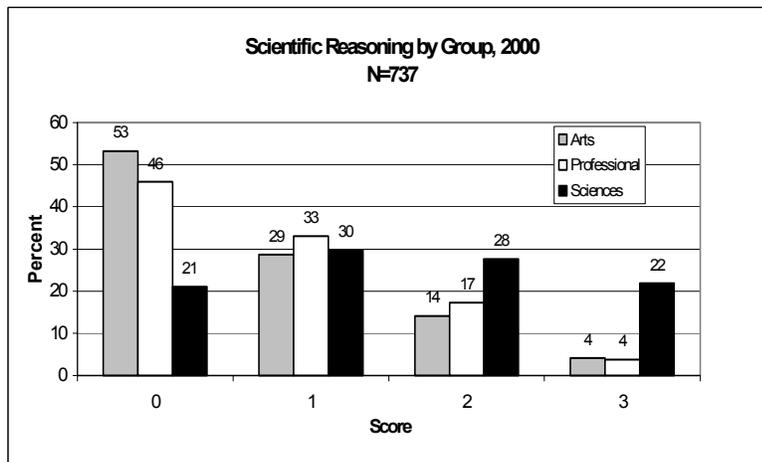| Scientific Reasoning at a Glance	
• Number of submissions:	**737**
• Percent of "no submissions":	**10**
• Mean score (on a 0-3 scale):	**1.13**
• Highest scoring "group":	**Math/Science**
• Lowest scoring "group":	**Arts/Humanities**
• Most frequent source (course):	**BIOL 100**
• Most frequent Source: (discipline):	**Biology**
• Three year trend:	**Toward lower scores**

Readers evaluated 737 submissions one time, assessing the competence of scientific reasoning as evidenced in the submission. Each item was assigned a score from zero to three with zero representing "no competence", one representing "minimal competence", two representing "competence" and three representing "strong competence". When readers had questions about the quality of the submission, they consulted with colleagues from the sciences and social sciences.

Scientific Reasoning, 1998-2000

In 2000 the most common finding was "not competent", while "strong competence" was found least often. This is the first

time in three years that submissions evaluated as "not competent" outnumbered submissions judged "minimally competent". When examined longitudinally over a three-year interval, a disturbing trend toward lower scores is observed. Mean scores have fallen from 1.35 in 1998 to 1.13 in 2000.

The major group data in 2000 are similar to the 1999 findings in that they show that seniors in math and science majors account for most of the higher scores, while most of the items judged "not competent" came from seniors majoring in arts and humanities disciplines. One noticeable difference is that students in professional majors produced a shift from "minimally competent" (48% to 33% from 1999 to 2000) to "not competent" (31% to 46% from 1999 to 2000).

Scientific Reasoning by Group, 2000
N=737

Not surprisingly, the four disciplines in the division of science were the sources of many of the submissions. Courses in the Biology discipline accounted for 237 of the submissions, followed by Chemistry (114), Agricultural Science (65), Psychology (63), and Physics (54). The top individual classes were BIOL 100, AGSC 143, CHEM 100, BIOL 304, and BIOL 107.

SCIENCE SOURCES			
Top Ten Courses		**Top Ten Disciplines**	
Biol 100	85	BIOL	237
Agsc 143	64	CHEM	114
Chem 100	47	AGSC	65
Biol 304	34	PSYC	63
Biol 107	30	PHYS	54
Phys 100	17	ENG	27
Psyc 360	17	ES	27
Biol 300	16	ECON	19
Chem 121	16	BSAD	17
Chem 120	15	COMM	15

Thirty percent of the submissions were produced by students in their senior year, 29% in the junior year, 27% in the sophomore year, and 14% were generated by freshman students. Forty eight percent of the submissions were generated by students satisfying requirements of their majors, 39% were from LSP courses and 8% were produced by students in elective courses.

Three percent of the submissions for scientific reasoning dealt with issues of gender. Two percent of science submissions had an international perspective. Less than one percent dealt with issues of race or class.

Fully 29% of submissions were the results of collaborative work. This is largely because group work in the science lab is a common practice.

Aesthetic Analysis and Evaluation

Examples of student work demonstrating aesthetic analysis and/or evaluation were elicited with the following prompt:

Please include something that demonstrates you making an aesthetic analysis and/or evaluation of some artwork or creative work. (Examples might be critiques, research or reviews of painting, sculpture, film, theatre, music and other performances.) If you include work you have created or a description of a personal aesthetic experience, you can write your analysis and evaluation on this sheet if you have not yet formalized that analysis and evaluation.
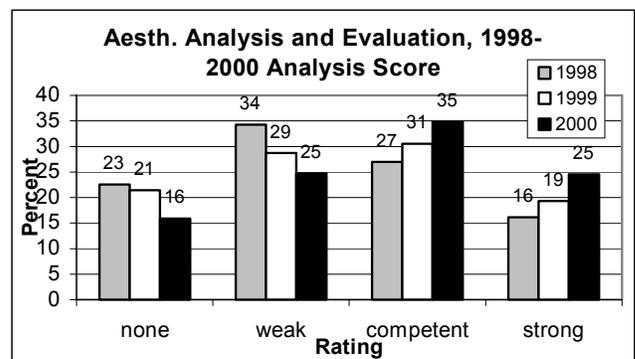
The Art faculty requested the prompt for "aesthetic analysis and evaluation" after the 1993 Portfolio Assessment. The data have been used to review and redesign courses offered under the Humanities section of the old core and now under the Fine Arts mode of inquiry in the new LSP. Eight percent of seniors did not submit an item to demonstrate "aesthetic analysis and evaluation", up from 5% in 1999. Another 3% (5% in 1999) submitted self-reports in which they described occasions when they participated in some aesthetic analysis or evaluation. Without artifacts or texts to evaluate with these self-reports, faculty readers could not assess the quality of the aesthetic reasoning.

Most of the 762 submissions evaluated were written papers, but some seniors submitted original artwork they created, URL's for artwork posted on a web site, and videotapes of theater performances. When students submit their own creative work, the prompt directs them to analyze and evaluate that work and include it with the submission. In this instance faculty readers consider student commentary written expressly for the Portfolio in their evaluative capacities.
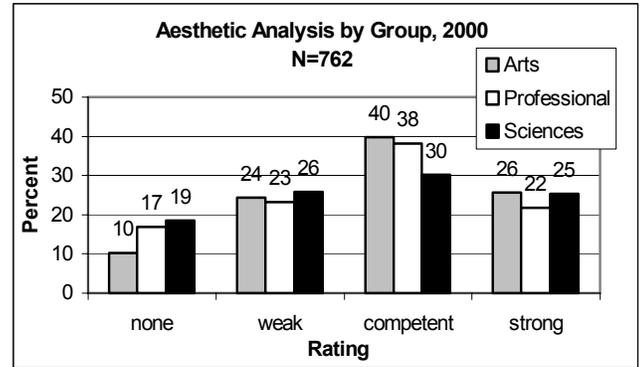
Aesthetic Analysis and Evaluation at a Glance	
• Number of submissions:	**762**
• Percent of "no submissions":	**8**
• Mean score for "analysis" (on a 0-3 scale):	**1.70**
• Mean score for "evaluation" (on a 0-3 scale):	**1.34**
• Highest scoring "group" - analysis:	**Arts/Humanities**
• Lowest scoring "group" – analysis:	**Math/Science**
• Highest scoring "group" - evaluation:	**Arts/Humanities**
• Lowest scoring "group" – evaluation:	**Professional**
• Most frequent source (course):	**MUSI 204**
• Most frequent Source: (discipline):	**ART**
• Three year trends:	**Toward better analysis**
	Toward better evaluation
	Better analysis than evaluation

In the recent past years, readers made three judgements about the quality of thinking demonstrated. They made a holistic assessment of the aesthetic reasoning in the submission, and then they made separate independent judgements about the aesthetic analysis and the aesthetic evaluation evident in the item. Faculty readers expressed difficulty in making three judgements: one holistic, one on analysis, and one on evaluation. They felt that with careful assessments of a student's ability to analyze and to evaluate aesthetically, that a holistic judgement seemed superfluous. Thus, in 2000 we abandoned the holistic scoring and only assessed the submission for the quality of the aesthetic <u>analysis</u>, and separately assessed it for the quality of aesthetic <u>evaluation</u>. Readers use the scoring categories of "no competence", "weak competence", "competent" and "strong competence" for each assessment.

When assessing aesthetic analysis, faculty readers were looking for students dealing with the constituent parts of a work of art;

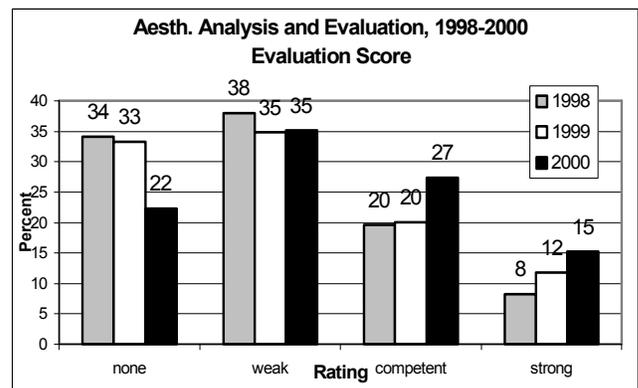Aesth. Analysis and Evaluation, 1998-2000 Analysis Score

distinguishing and describing the parts and discussing how they interrelate and work together in forming the whole. The results show Truman students' ability to analyze aesthetically continues to improve. Ratings of "competent" and "strong competence" have increased by 10% over last years' results and by 17% over the 1998 results. The mean aesthetic analysis score has risen from 1.36 in 1998 to 1.48 in 1999 to 1.70 in 2000 (where "none" = 0 and "strong" = 3).

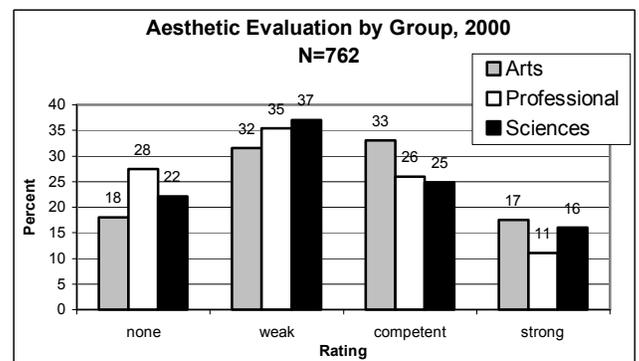**Aesthetic Analysis by Group, 2000**
N=762

When the data are sorted by major group, we see only small variations with students majoring in Arts and Humanities receiving more ratings of "competent" and fewer of "none" as compared to the other groups, and Math/ Science majors receiving more ratings of "none" and fewer ratings of "competent". However the gap between the Arts/Humanities group and the other two groups is much narrower than in past years.

When assessing aesthetic evaluation, faculty readers were looking for students making supported judgments about a work of art; criticizing, explaining and interpreting the work while displaying understanding of genre and historical context. As with the assessment of aesthetic analysis, the results for aesthetic evaluation show an improving trend. Ratings of "competent" and "strong competence" have increased by 10% over last years' results and by 14% over the 1998 results. The mean aesthetic

Aesth. Analysis and Evaluation, 1998-2000
Evaluation Score

evaluation score has risen from 1.02 in 1998 to 1.11 in 1999 to 1.34 in 2000 (where "none" = 0 and "strong" = 3).

The group ratings show that students with Professional majors received the most low ratings and the fewest judgements of strong competence in aesthetic evaluation. As one might expect, students with Arts and Humanities majors were judged as relatively stronger at aesthetic evaluation than were students in the other two groups.

Historically, the portfolio entries demonstrate more aesthetic analysis than aesthetic evaluation. Each year, the assignment sheets that seniors append to entries and the students' descriptions of their assignments focus more on analytical thinking and less on evaluative thinking. The same difference is noted this year. The mean score for aesthetic analysis is 1.70, below but close

Aesthetic Evaluation by Group, 2000
N=762

to a rating of "competent". The mean score for aesthetic evaluation is 1.34, above but close to a rating of "weak competence". Sixty percent of submissions were judged as "competent" or

"strong" examples of aesthetic analysis while only 41% were judged as "competent" or "strong" examples of aesthetic evaluation. Conversely 22% had no evidence of aesthetic evaluation while only 16% were found lacking analysis.

AESTHETIC SOURCES			
Top Ten Courses		Top Ten Disciplines	
Musi 204	112	ART	169
Art 203	91	ENG	159
Thea 275	75	MUSI	130
Aest 200	60	THEA	87
Eng 314	51	AEST	77
Eng 100	26	PHRE	20
Art 223	20	HIST	18
Aest 300	16	COMM	16
Art 222	13	PSYC	8
Phre 185	12	ES	6

Last year, we were surprised to find more items for this category coming from English courses than from any single Fine Arts discipline. This year ART courses surpassed ENG courses by ten (169 and 159 items respectively). Music courses were the next most common source accounting for 130 submissions. The most common courses from which submissions for aesthetic reasoning were drawn were the old Music Appreciation (MUSI 204) accounting for 112 submissions, Intro to Visual Arts (ART 203) accounting for 91 items, Theater Appreciation (THEA 275) with 79 submissions, and the old Basic Approach to the Arts (AEST 200) accounting for 60 items. English Composition I (ENG 100) and II (ENG 314) together accounted for 77 submissions for aesthetic reasoning. These were the same top six sources as last year, although the order was slightly different last year.

The greatest percentage of items submitted for aesthetic analysis and evaluation, 31%, were produced by students in their freshman year. Sophomore work accounted for 25% of the submissions. Twenty percent of the submissions were produced in the junior year, and the remaining 24% were produced by seniors. It is worth noting for comparison that in 1999 senior work accounted for only 18% of submissions

Seventy five percent of the submissions were created by students for classes used to fulfill core requirements (69% in 1999), 14% were from major courses (17% in 1999), and 14% were from courses used to fulfill minor requirements or were elective courses.

Eleven percent of submissions dealt with international perspectives (up from 3% in 1999), 5% with gender issues 2% in 1999), 4% with race issues (the same percentage as last year), and 2% with class issues (1% in 1999).

Three percent of submissions were the result of collaborative work.

Most Satisfying Work or Experience

Students are asked to submit an item or a description of a most personally satisfying experience with the following prompt:

> *Please include something (a work from a class, a work from an extracurricular activity, an account of an experience, objects which are symbolic to you, etc.) that you consider representative of the most personally satisfying results of your experience at Truman. If you don't have an "artifact" which*

would represent or demonstrate the experience, write about it on the form. This is space for something you feel represents an important aspect, experience or event of your college experience.

This portfolio category was recommended to the University Portfolio Committee in 1992 by students in capstone classes seeking a site where they could share experiences or work at Truman which made them proud or most satisfied them.

Why was it satisfying?	#	%
personal growth	234	29.4%
personal best	148	18.6%
achieved goals	98	12.3%
modeled working professionally	97	12.2%
challenging	82	10.3%
collaborative	44	5.5%
miscellaneous	38	4.8%
enjoyment	21	2.6%
creativity	13	1.6%
friendships	9	1.1%
cathartic	7	0.9%
culminating	5	0.6%

Faculty readers do not evaluate the quality of the materials submitted in any way. Rather they review and describe what it is that a student found to be "most personally satisfying". Over time repeated motifs have been identified. Readers use a checklist to record the context of the experience and the reason it was especially satisfying to the student.

Five percent (compare with 3% in 1999) of the portfolios did not contain an item or a description representing a "most satisfying experience", and several students submitted multiple items writing that they had so many satisfying experiences they could not identify a single one to submit. In all, the faculty readers reviewed 805 submissions.

Twenty-nine percent explained that their satisfaction was the result of having achieved "personal growth", 19% cited having achieved a "personal best". Twelve percent claimed to have met personal goals through the experience, another 12% said the experience was satisfying because it modeled working in the real world, and 10% said their satisfaction was the result of the special challenge represented by the task. A variety of other reasons accounts for the remaining 18% of submissions, such as "I was creating rather than tearing someone else's creation down", "it was fun", "it was gratifying", "it allowed me to be expressive", "it provided an opportunity for personal reflection", and "I enjoyed the class/prof". Others mentioned family and friends. The distribution of reasons shown in the table is similar to what was found in 1999.

It is difficult to group the kinds of experiences students cite as especially satisfying. Many students submit academic work of which they are especially

Context	#	%
major	296	36.0%
LAS	137	16.7%
elective	72	8.8%
study abroad	36	4.4%
varstiy athletics	31	3.8%
other organization	30	3.6%
minor	30	3.6%
social fraternity	24	2.9%
social sorority	23	2.8%
research/scholarship	20	2.4%
internship	13	1.6%
service organization	11	1.3%
personal activities	10	1.2%
employment	9	1.1%
capstone	9	1.1%
honor society	9	1.1%
campus media	9	1.1%
campus event	7	0.9%
residence life	6	0.7%
other athletics	6	0.7%
miscellaneous	6	0.7%
college expeience	4	0.5%
social life/friends	4	0.5%
personal growth	3	0.4%
volunteer work	3	0.4%
extra-curricular	3	0.4%
grad school application	3	0.4%
religious activities	3	0.4%
home/family	2	0.2%
McNair program	1	0.1%
resume	1	0.1%
SWE	1	0.1%

proud. Others talk about friends, family, religion, the whole college experience, campus organizations, particular campus events in which the student played a role, and a wide variety of other things. The table on the next page attempts to organize the contexts of students' most personally satisfying experiences into groups. These findings are similar to those from the 1999 Portfolio.

The great majority of submitted artifacts were papers, essays, projects, and lab reports generated in classes. It is interesting, even with the great diversity of citations in this category, that so many students are most proud of some artifact of their academic experience. This is a finding that we have seen repeatedly over at least the last three years, and one that elicits expressions of surprise and gratification from the faculty readers.

Practically every aspect of campus culture was cited as a satisfying experience by at least one student. Participation in sports, involvement with fraternities and sororities, working on SAB projects, involvement with the campus media (Index, Detours, Echo, KTRM, Monitor, etc.), participation in theater performances and musical organizations, ROTC, CCF, and volunteer work, are but a few examples.

Forty two percent of the "most satisfying experiences" occurred in the senior year, 33% in the junior year, 11% in the sophomore year, and 8% in the freshman year. The remaining 6% occurred over times spanning more than a year. These results are very close to last year's findings.

Six percent of most personally satisfying experiences dealt with international perspectives (4% in 1999). Many of these were study abroad experiences. Three percent dealt with issues of race (3% in 1999), 1% with gender issues (3% in 1999), and 4% dealt with issues of class (1% in 1999).

Reflective Cover Letters

Finally, the portfolio asks students to compose a cover letter addressed to the Liberal Arts and Science Portfolio Task Force. During the weeks of portfolio assessment and evaluation, the student letters are reserved for the last day. They provide faculty readers with a more intimate and direct engagement with student ideas and attitudes as compared with what can be inferred from reading students' academic works. Through the students' letters, readers capture a fuller sense of individual students, their achievements and aspirations, even as they are collecting information that leads to a larger picture of student attitudes. While reading student letters, faculty readers are instructed to reserve several student letters to share with the group, and thus the week of portfolio evaluations ends with an airing of student concerns, criticisms, recommendations, and/or kudos that seniors feel compelled to express. Giving voice to the students provides a sense of perspective and "closure" for the faculty readers that parallels the kind of closure that the entire portfolio is envisioned to give students with respect to their undergraduate academic careers.

In past portfolio packets, the request for a cover letter was included only in the prompt-packet's introductory sheet. Acknowledging that many students may quickly scan the

introductory sheet and focus primarily on the individual prompts, it was suggested that this might have resulted in the low submission rates for student cover letters (82% in 1998 and 88% in 1999). The year 2000 portfolio packets contained a separate sheet, like the individual prompts, soliciting the cover letter from students, which resulted in a 95% submission rate this year.

Students are asked in their cover letters to reflect on and write about several specific items:

- The process used and time spent in compiling their portfolio.
- What they learned about themselves through the process.
- Their attitudes toward portfolio assessment (and assessment at Truman in general).
- Their attitudes about their education at Truman.
- Their ideas, reactions, and suggestions regarding the undergraduate experience at Truman.
- Their immediate plans upon leaving Truman.

Faculty readers look for self-reflection in the letters. They characterize students' attitudes about the portfolio and about their education in ways described below. Finally, they mark parts of letters containing relevant insights, or specific suggestions, which the faculty readers feel should be given a broader airing. Some of these insights and suggestions are shared openly with the other readers as described above. The portfolio director reads all of them, and many are used as the examples reprinted below.

Because of an expressed concern that portfolio assessment could be too intrusive in student and faculty lives, the prompt for the cover letters asks seniors to report the time involved in compiling and submitting their portfolio. The average time reported to assemble a portfolio in 2000 was about 4.5 hours. (This average includes all *reasonable* responses – some students did not address the time they spent on this task, and others gave responses like "It took me four hard years of work to generate the material for this portfolio.")

It is heartening to find that fewer students than in past years express surprise upon being assigned the portfolio project in their senior capstone course. When they describe the process they used in compiling the portfolio, most students say they have been expecting and preparing for the assignment throughout their undergraduate careers. Here is a typical description of the portfolio process from a Communications major:

> *As a freshman, in my freshman week class, I was instructed that at the end of my career at Truman, I would be required to compile a portfolio of various assignments from the last four years. Being the diligent freshman I was I immediately bought folders and a filing crate to keep all my work in. Little did I know one year of classes at Truman filled all those folders and more. So, from the past four years, I have a full filing cabinet of items reserved specifically for my portfolio. On one hand this preparation made it easier for me to compile my portfolio. Having all the material in one place was very helpful. But, I had a lot of material to go through. After receiving the portfolio packet from my senior seminar instructor, I went home that evening and spent two hours weeding through notes and handouts to [locate] the actual work I did in my classes. I picked about 20 to 30 pieces that I thought could be used for various parts of the portfolio. After*
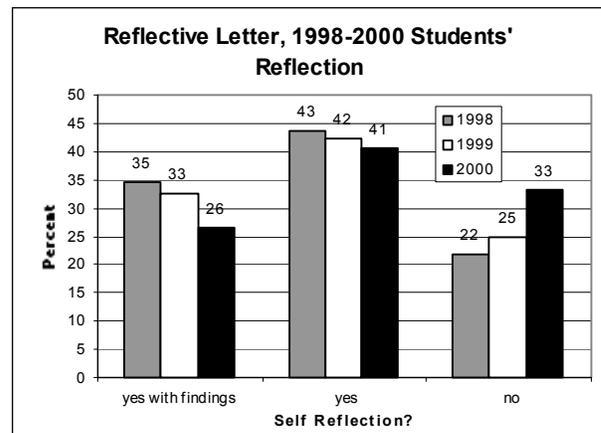
that process was complete, the rest fell into place. I spent approximately a half-hour on each part of the portfolio, minus the cover letter. All in all I probably spent five to seven hours completing my portfolio.

Unfortunately, a number of letters from transfer students complained that they were never informed that they would likely be required to compile portfolios. Many said they hadn't saved much of their work, and consequently their experience in attempting to meet the portfolio requirements was frustrating, difficult and unrewarding. This is a problem that needs to be addressed immediately.

REFLECTION IN COVER LETTERS

The first LAS Portfolio Assessment Report concluded with a paragraph stating the consensus of the University Portfolio Committee members that, however useful might be the information acquired about the delivery and efficacy of the University's curriculum, the senior portfolio would be valuable even if only for the student self-assessment which occurred. The value of reflection and metacognition to all learners is a constant motif of campus conversations about student learning. Self-assessment and reflection are considered key components in the Sophomore Writing Experience. Portfolios, whether they are placement portfolios, developmental portfolios for classes or majors, professional portfolios, or the Liberal Arts and Sciences portfolios, encourage individuals to reflect, to self-assess, to acquire new perspectives, and to set goals for future growth. The year 2000 reflective cover letters continue to demonstrate an increasing awareness by seniors of the value of self-assessment and reflection.

Cover letters often provide personal and thick description as seniors "sum up" their experiences at Truman. Some writers are specific and laconic. Others expand on their attitudes toward their education at Truman, their personal growth and academic achievement, and their opinions and recommendations about the curriculum, the Liberal Arts culture, and the assessment culture. Many refer to experiences and learning outcomes that best represent them but were not elicited by the other portfolio prompts.

Reflective Letter, 1998-2000 Students' Reflection

Faculty readers report whether cover letters contain reflection. They check "yes" for reflection presented only as generalizations and "yes, with findings" when the writer presents specific and well-developed insight. The 2000 data reflect a decrease in insightful reflection. Sixty seven percent of the letters contained some reflection, down from 75% in 1999 and only 26% (33% in 1999) of them "with findings". The 33% (25% in 1999) without reflection were mostly letters explaining the contents of their portfolio and the process they used in assembling it.

The data by group show Arts and Sciences students to be more likely to include findings in their self-assessment than are the students in Professional studies. This distribution over groups is similar to last year's findings.

Seniors engage in a broad range of reflections in the portfolio cover letters. Some focus on the challenges they faced and the achievements they accomplished in the major. Others wrote about the value of the liberal arts to them. Still others attempt an holistic assessment of personal development over their Truman tenure. Each cover letter excerpted in this almanac was recommended by faculty readers for sharing with the university community.
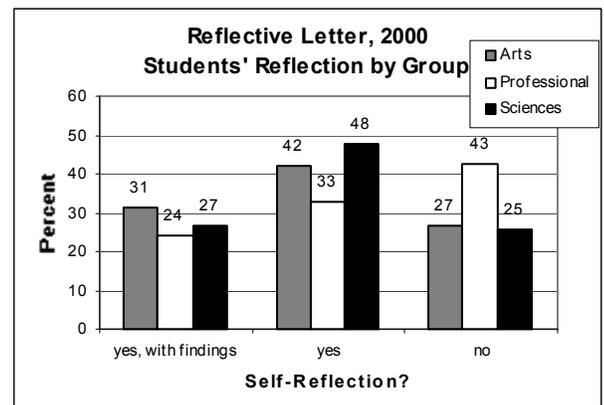
This reflective letter was written by an English major and is reprinted in its entirety:

Creating a portfolio brought me to one conclusion: the packets aren't large enough. Oh, they're fine for stacking a few papers or assignments, but there's been a great deal more that won't fit. My Liberal Arts experience has been great, and I know that I can't stuff the portfolio with all my ticket stubs to plays and concerts, or place

pictures of all the friends I have made, or name off all the speakers and professors who have irrevocably changed my life. My portfolio has a few papers and some thoughts; they're not all my best works, and I'm sure they're not all my best thoughts. I've got a lot more stored up inside – the portfolio is just a small sample.

Reflective Letter, 2000 Students' Reflection by Group

The portfolio makes one explicitly aware of personal growth. It's not something I've been consciously tracing, but through my wanderings through my old classes and memories, I get an odd feeling. It's a mix of satisfaction and curiosity: satisfaction that I've matured in my skills and confidence, curiosity in my potential.

This potential keeps me assured that the future isn't that scary; I've been prepared to face it, but not through the classes I've taken and not through the papers I've written or the assignments I've done. It's the people I've met, the ideas I've embraced, the ability to look at the world with a more open view. The portfolio stressed the aspect of critical thinking ... Liberal Arts has allowed me to see more than one solution to a problem, more than one side to a case. I find myself no longer jumping to a conclusion, but rather, I analyze things from more than one perspective. I can't say this has been a traceable change – it's an evolution in thinking for me that has taken a course of four years to finally be noticed in a routine portfolio.

I say routine because everyone has to make one, and at first, I viewed the portfolio as just another necessary assignment. I guess it is at face value, but I wanted it to be more. It is supposed to be a base representation of my Liberal Arts education. It's very weak. The portfolio fails to encompass the cultural and social aspects which the setting of the university provided. These are the riches that I remember, moreso than my classes, which although thought provoking, were dependent on limited time spans and the power of the professor. I confess that I found many of my professors to be dull, redundant and ineffective. On the other hand, there are many professors who have been some of the

most challenging and inspiring people in my college life. I never say it to them; I don't write it on a course evaluation. I take it home with me, contemplate, and let their words and actions help me grow as a critical thinker. I've been satisfied with my experience, and although I cannot express this nearly enough in my portfolio, I just want to say thanks to the university.

In this excerpt, another English major writes of learning to appreciate the unexpected and unconventional:

> *I suppose it could be said that this portfolio, in some respects, isn't very conventional. However, I don't think that this is a particularly bad thing in this case. The reason I believe this is that this aspect of my portfolio is reflective of one of the more important lessons my experiences at Truman State have taught me. This lesson was a simple one, in retrospect; it's okay to not be conventional. And truthfully speaking, when I remember my years here, it's the unconventional, down right weird moments that stick out in my mind. Weird conversations, people, situations whatever it might have been, all of these thing have taught me that life doesn't always fit into nice, organized patterns we'd like it to, but in fact, these are often the best moments of our lives, the moments that aren't pre-scripted.*

This History major discovered a personal transformation that occurred while at Truman:

> *I have yet to regret the choice [to attend Truman], although the road to this degree was a long and arduous one. There were many times when I was angered by the amount of work that I had to do or the problems I had managing work, school, and the more intangible things in my life into a coherent whole. The reality of college life failed to gel with what I thought I was supposed to learn in my college years. All my expectations were shattered and reformed in ways that I never even conceived of. Now I can honestly say that I am a fundamentally different person for having studied here and an infinitely more enriched person because of the changes that happened in the last four years.*
>
> *In the process of compiling things for this portfolio, I enjoyed the chance to look on just how my expectations were shattered and reassembled. It was interesting to see the cycle of learning taking place; to see how and where I stopped learning and really began thinking. I always laughed at the emphasis placed on critical thinking and the value of liberal studies. Until I found myself using those very things to deal with my life and the world around me directly. I shocked myself when I realized that the ability to think and the learning that I had gained here [was] bringing me out ahead of the rest of the people that I knew. I was essentially a grown up human being and my life was now my own to control. That is a frightening and wonderful feeling all at the same time.*

And later in the same letter:

> *...Most of all I hope you get a sense of a person in transition, not a finished product because I think that we never cease to learn because if we do we cease to truly live.*
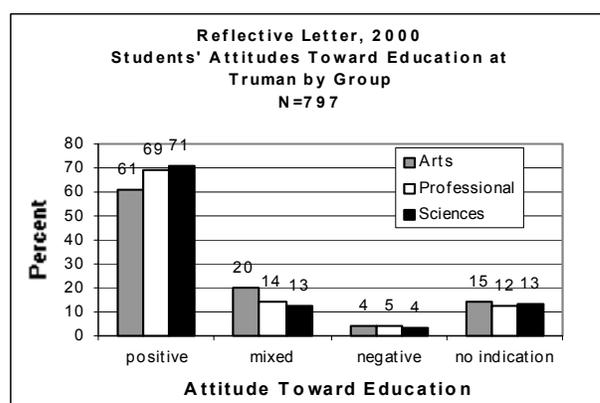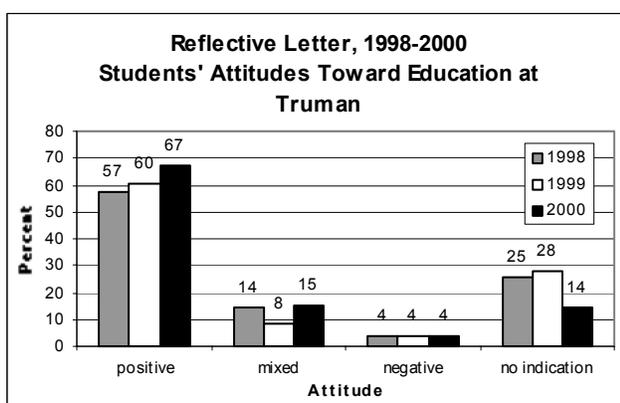
Finally, from another History major:

> *While at Truman, I have encountered many friends, peers and professors who have helped me grow as a person and as a student. The good and the bad experiences*

shaped acceptance of myself and life, while I have realized there is still always room for improvement. As a history major, I have learned to view the facts in general, but also to follow them with questions, to constitute my own perceptions, and to acknowledge that there will always be other perspectives to change my previous understandings.

ATTITUDE TOWARD EDUCATION AT TRUMAN

In 14% of the cover letters seniors did not discuss their attitudes toward their education. In 1999 twice as many students (28%) chose not to share their attitudes about their education. Sixty seven percent of the letters expressed a positive attitude about their education, 15% expressed mixed feelings and, 4% were negative. Overall, the general pattern of a large positive attitude and a small negative attitude towards a Truman education has been demonstrated each year and appears generally constant across disciplines.

Reflective Letter, 1998-2000 Students' Attitudes Toward Education at Truman

Reflective Letter, 2000 Students' Attitudes Toward Education at Truman by Group N=797

Students expressing negative or mixed feelings about their Truman experience frequently complain about the university's administration, which they perceive as being overly concerned with the university's "image" to outside constituencies and prospective students, and too little interested in the needs of the current students. They say that this attitude is engendered by university policy, by the allocation of resources, and by the obsession with university assessment. They claim forcefully that the administration is not concerned with student opinions on crucial campus issues and cite as examples the lack of solicitation of student input regarding the decision to arm campus security, the perpetual problem with student parking, and the archaic registration system. Following is one such excerpt from an unsatisfied Exercise Science major:

> *The bottom line is that the university and the students lack rapport and concern for each other's welfare. The university seems too concerned with outrageously expensive chairs, green grass, and even more expensive monuments in front of each building bearing its name. Many times, students cannot even use a computer without waiting in line while other computer labs remain locked and unavailable to its own students. A severe parking problem exists that even the university's own professors have trouble finding a spot. Registration holds back students by the semester. The residential dining halls cannot accommodate guests or individual eating times. Most of these problems can easily be erased, but they are not. I know that these problems are being addressed too, but the university does not publicize that. The effect is that the school looks as if it is doing nothing, and with such a slow course of action, it is.*

This English major sees Truman's commitment to assessment as a drawback to the Truman experience:

> *In putting together this portfolio I once again affirmed my ability to do a shoddy job on a Truman self-assessment exercise. I took the sophomore writing experience as a second semester senior, I filled in pretty designs on the junior test, and I'm taking Comp. II as my final college course over the summer. With this portfolio, I complete my cycle of ignoring the programs at Truman which are supposedly in place to improve education, but seem to me more like devices used to prove how great Truman already is, and therefore ensure more good ratings in next year's batch of college rankings in the magazines. Instead of busying themselves studying reports and tests, the administration here might try actually talking with students and professors about how they would improve education.*

Finally, this excerpt from a transfer student, graduating with a degree in Political Science:

> *A major disappointment to me was the lack of attention to mid-academic year transfer students. When I arrived at Truman in January to begin my studies, hardly anything was done to prepare the new students for Truman. There is an entire Freshman Week for freshman in the fall semester. But there was nothing remotely similar by way of help to new students in January … I am better off having met the people I had an opportunity to meet but not necessarily better off academically. It will have suited me just as well to attend another university almost anywhere in the country. I have come to the realization that Truman is too focused on assessment and the almighty dollar from the assessments they do. The students take a backseat to green pictures of Benjamin Franklin and former presidents of the United States. For instance, I was required to take the Junior Test having no Freshman Test to compare my scores to. This to me is a monument to inefficiency and wastefulness at its best. But Truman got some money because I took that test for no reason at all. Students' voices are not heard and will continue to be ignored in the future. I hope the school remembers that the reason for its existence is to educate the students, which the school does, but I think the school is losing sight of the main objective to a university.*

The four excerpts that follow serve as examples of students who are leaving Truman with more positive attitudes about their education here.

First, from a Business Administration major,

> *My experiences at Truman have been second to none. When I came to college I came with the attitude that college was going to be "what I made of it " Truman did an excellent job of providing me with ample opportunities for involvement and leadership. I had the good fortune of being a four-year varsity letter winner, a President of two organizations, and a participant in two different volunteer programs at Ray Miller Elementary and Kirksville Junior High. Much of who I am, who I want to be, and what I want to do, has come as a result of these extracurricular activities.*
> *On an academic note, I feel my education has been outstanding. While challenging and difficult most of the time, my coursework has made me grow analytically. The focus on the written and spoken aspects of communication in nearly*

every class has definitely accelerated my communication skills. I really feel like a well-rounded individual with the skills to be successful in whatever career path I pursue.

Next, this reflection from a Health Science major,

I feel that the completion of this portfolio was a great experience. I was able to look through past work and remind myself of everything that I have completed through the years. I have been attending Truman for five years and I just recently realized the amount of work actually completed during those years. I have completed a massive number of projects and learned an enormous amount of material. I did also recall the anxiety and stress that each brought but now feel that it was well worth it. I feel that I gained a well-rounded education at Truman and I am proud that I attended this school. Through the years, I have slowly gained an appreciation for learning. I now know that I will strive to learn for the rest of my life because there is always knowledge to gain. Truman has prepared me for lifelong learning.

Another Business Administration major took the opportunity to praise her teachers,
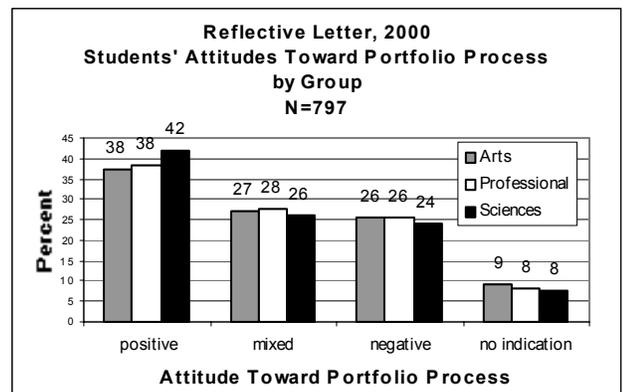
Overall, I would say that my experiences at Truman were wonderful. I know people always harp on their hard classes and how they can't find a place to park, and how they can't ever find a computer, but I see things differently. Of course, I agree with those complaints, but I also see the good side. We are getting an excellent education at a bargain price. Our teachers know who we are, and more importantly, care what happens to us. You cannot find this at very many schools. And if you do, the teachers are usually being paid oodles of money. I think this means that our teachers are doing such a good job because they really want to. That, I think is the best incentive of all. Whenever a prospective student asks me on a tour "What is your favorite thing about Truman?" I always answer, "the people."

Finally, this Economics major ended his letter with the following paragraph,

To conclude, I would like to say thank you to the social science division for all of the applied theory you have helped to develop within me. I promise to go out into the world and make it a better place for both you and I to live. Furthermore, I would like to congratulate you in successfully planting one more intelligent mind into a world where intelligence is not always the top priority.
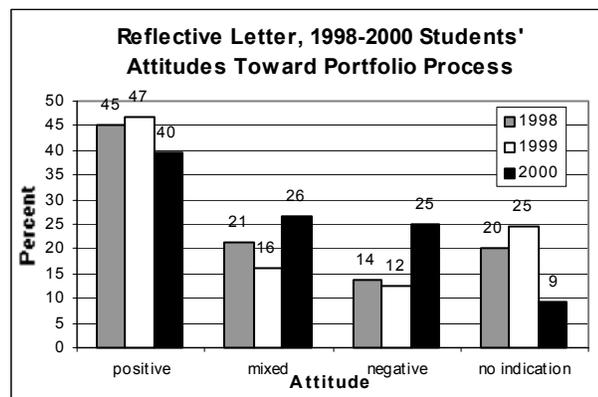
ATTITUDE TOWARD THE PORTFOLIO PROCESS

Reflective Letter, 2000
Students' Attitudes Toward Portfolio Process by Group
N=797

Although seniors continue to express more positive than negative attitudes about the portfolio process, in 2000 faculty readers found fewer positive and more negative expressions than they did in recent past years. In 2000, only 9% of seniors withheld their opinion as opposed to 25% in 1999. Forty percent of seniors were positive about their experience with the portfolio, down 7% from last year's findings. Expressions of negative attitudes regarding the portfolio more than doubled from 12% in 1999 to 25% in 2000. Twenty-six percent offered mixed opinions. When

the findings are sorted by group, seniors in the sciences are slightly more positive about portfolio assessment than are students in the other two groups.

Reflective Letter, 1998-2000 Students' Attitudes Toward Portfolio Process

A great many students admitted that they spent little time on their portfolios. Some expressed anger that they were required to complete this project, which is ungraded, at a time when they are busy completing projects for courses, preparing for crucial exams, and working out their future lives. Many are dubious about the usefulness of assessment in general and the portfolio in particular, especially when, as some students claim, few of their colleagues take the assignment seriously. Other students acknowledge the potential benefits of portfolio assessment (to the university and to themselves), and are apologetic about having procrastinated resulting in a less than satisfying portfolio.

The following excerpts serve as examples of some of the negative attitudes students expressed toward the portfolio process and in several cases toward assessment in general:

This writer is an English major with a History minor:
> *Unfortunately, I have not spent a great deal of time assembling this portfolio. This may or may not be something I am happy with myself for when it is sent back to me in ten years. However, at the present time, I am struggling with a tough semester coming to a close and trying to work enough hours to pay the bills. I am extremely worn out with the hoops I must jump through in order to graduate and at this moment, am not happy with this one. So, I present the final product as finished, but far from satisfactory.*

This excerpt is from a Biology major:
> *It is painfully obvious that I did not spend a lot of time putting together this portfolio. I think I did it all in about four hours – most of which was spent looking for assignments. I just do not have the time, as a soon to be graduating, soon to be jobless student, to spend to put together a decent portfolio. I do know that a lot of students agree with me in thinking that it's a waste of time. I think it should be an optional assignment. Maybe you can give some incentive for students to take this seriously, as I can see some benefits, though not many, from it.*

A Computer Science major wrote the following:
> *What I would like to say, is that after four years at this school the number of hoops I was required to jump through for Truman's self-assessment was unreasonable. And I say this bearing in mind that I am <u>still</u> not done with the school's required sequence: the senior test and the exit questionnaire are yet to be taken. As you must surely know my sentiments on Truman self-assessment testing are held by quite a large majority of the student body. Can something not be done about this?*
> *Apart from taking a walk down Memory Lane, putting this portfolio together has not given me any particular revelations or insights into myself that I had not already noticed on my own over the past four years. Some of the components of the portfolio were particularly hard for me to come by since none of my work seemed to meet what was*

being asked for. Among these were the Interdisciplinary Thinking and Growth as a Thinker components.

This brief statement was found in a letter from a Communications major (English minor):

The only thing that I really learned from this whole experience is that I no longer have any patience toward projects deemed by the bureaucracy to be beneficial for myself and the university in general. I also learned that portfolios in general are utterly useless.

And finally, from a Business Administration major:

Here is my portfolio. I put about 10 minutes into this as you will be able to see. The reason that I put only 10 minutes into this is because I really do not care. I am graduating this May and really do not give two hoots about how you assess my writing skills. This portfolio is as useless as the SWE and the standardized tests they make us take here at Truman. This is just another way for Truman to pat itself on the back. The only reason I am doing this is because I have to. You can save the postage and not send this to me in 10 years because it is not going to affect me in any way shape or form. Thank you for your time and I hope this has been useful to you.

Students who complete the portfolio with positive feelings are often surprised but what they learned about themselves. Consider, for example, the personal transformation described in this letter from a Business Administration major:

During the process of putting together this senior portfolio I learned a great deal about myself. When I first started putting the portfolio together I thought that it was just something else for me to do before graduation, and I also thought that it would end up being a big waste of time. Then I began reading some of the papers that I have written while here at Truman and I began to see the point. I began to see just how much that I have changed in the last four years. I have always told myself that I don't really think that Truman has changed me much, but after comparing works that I wrote in the past to works I have recently written I see that I have developed a more critical thinking process. In the past it seems as though I did assignments just to get them done. Whereas now, I look at assignments more critically, and have questions that I use to gain as much as possible from each assignment given to me: 1) What is being asked of me? 2) How can I relate this assignment to the real world? 3) What skills am I developing while completing this assignment? and 4) What is my overall benefit after completion of the assignment?

This Exercise Science major found enjoyable memories of her earlier college years in reviewing works for her portfolio:

I was able to go back and look at some of my earlier works and kind of laugh about them and reflect on them. I think the biggest thing I got out of putting this portfolio together was that it sparked memories of my earlier years in college. Also, I was able to see the growth and maturity that had taken place within myself. It was very interesting.

I think it is a good idea to have portfolio assessments. They enable both the student and the faculty to gain a better understanding of themselves and of their curriculum.

Another Business Administration major expresses hope that the portfolio will be useful in making the university a better institution:

> When I took my senior capstone class, I knew that the portfolio was a requirement for graduation. And like many other seniors, I was a bit apprehensive about it. I knew that it was going to be time and effort, that I would in the end not even get a grade on. It seemed like doing something for nothing. What I did not realize was that it would be rewarding. If for no other reason, the portfolio process is a good one, because it lets graduating students know how far we have come. Yes, it is a pain, in a time when we are being stretched to the limits. It brings up feelings and thoughts that have long since left us. But, more than that, it tells us who we are. And it gives us the chance to leave a little legacy. By turning in the portfolio we are helping future Truman students. Hopefully something we say, or submit will help make the university better. That is what I hope at least.

One faculty reader thought this excerpt from a proud Psychology major was worth sharing:

> I definitely feel that this was a worthwhile activity. In addition to helping me assess my overall education, as mentioned earlier, this portfolio instilled in me a sense of pride – the pride of a hard working student, which often seems to fall by the wayside during senior year when motivation has dwindled. I was reminded of all that I have accomplished, and of my own potential for learning.
>
> My experience at Truman over the last three and one half years has been memorable and invaluable. I truly feel that I have received a top quality education, both within my major and beyond. The professors have continued to amaze and inspire me with their concern for students and vast knowledge. The courses have been challenging, but enjoyable and motivating at the same time. The knowledge gained and relationships formed here will stay with me forever.

And finally, from an English major:

> I think the portfolio assessment is valuable to students if for no other reason than for them to see how far they've come and how much they've learned. While looking for papers to submit, I was overwhelmed with the amount of writing I have done. I know it has all served to further my understanding and encourage my thirst for knowledge. Looking through all my old papers made me think and reminisce about the classes I took and what else was going on at that point of my college career. I feel wonderful about having been given the opportunity to get such a good education in a place where I have always felt comfortable.

Comments about portfolio assessment scattered through all the cover letters indicate an uneven acculturation of students to the personal benefits of collecting artifacts in a portfolio, whether digital, cardboard, or milk crate. More important, encouragement of reflection and self-assessment using the portfolio is uneven from instructor to instructor, advisor to advisor. Ironically, the potential to use LAS portfolio to personalize Truman's planning theme of "deepening an enhanced, self-reflective Liberal Arts Culture" and to demonstrate how it cares for and assists student development as they are here is not being fully realized.

Recommendations for LAS Portfolio Assessment

Both students and faculty readers have offered recommendations about the process of portfolio assessment. To maximize the benefits to students, faculty and the university community of maintaining and sharing Liberal Arts and Sciences Portfolios and to keep step with changes occurring within the university, the portfolio process must be assessed and amended each year.

ACCULTURING THE COMMUNITY

In 2000, as in past years, new faculty readers expressed strong opinions about the value of the portfolio assessment process. First time faculty readers tell us that coming into the process, they had little idea what the LAS portfolio is, how it is evaluated, and what value it has for the university, for the seniors who assemble the portfolio, and for the faculty who read and evaluate the portfolios. By the end of the week of reading, faculty participants are transformed. They can articulate many ways the LAS portfolio is valuable to all constituents, they express a deeper understanding of the value of reflection and self-assessment as integral aspects of the university's culture, and they leave, after a week of reading, with new ideas for their classes and for their advising inspired by their experiences reading portfolios.

Unfortunately, the LAS portfolio, and the process used to extract useful data from them remains a mystery to too many faculty and students at Truman. Faculty readers believe that the more that is known about the LAS portfolio and the portfolio evaluation process, the less cynicism there will be about portfolio assessment campus-wide.

It is anticipated that in requiring a portfolio from all graduating seniors, beginning with the Class of 2003, faculty and students will grow to perceive the portfolio project as a more important aspect of the Truman culture than it is perceived currently. It will underline the value of reflection and self-assessment articulated in the recent master plan and equalize the opportunity for all seniors. It should afford all students the opportunity to engage in self-reflection and even out what students have told us they perceive as inconsistency and unfairness in their graduation requirements. It should provide the university with a more complete picture of the curriculum as experienced by all majors.

Truman's enhanced "residential college program" and the "extended freshman experience" both provide important opportunities to acculturate students to the benefits of reflection and self-assessment available through the development of a personal portfolio. Programming in these two aspects of the Truman culture should ensure that no student reach the senior year without expecting to compile and submit a portfolio of their works.

The most effective means for acculturating faculty about the benefits of portfolio assessment is through the reading sessions. There is no substitute for the deep engagement with student work product and for the intensive cross-disciplinary discussion about student learning that faculty experience during those sessions. In 2000, as in past years, faculty readers endorsed the process of recruiting readers from all disciplines and ranks and recommended that new faculty be encouraged early in their careers to participate.

Faculty members who administer portfolios in the capstone classes need better guidance in order to minimize the burden that the portfolio represents to many students. It seems clear from reading student commentary that encouraging students to spread the portfolio process throughout the semester would remove the frustration felt by those who find themselves beginning it during the last weeks when so much else is expected. Furthermore, providing a set of guidelines for portfolio administrators might help them to be better able to answer students' questions that frequently arise. Ideally, all portfolio administers would volunteer as portfolio readers at some time.

In the spring of 2000 a workshop was organized through Faculty Development to expose new faculty to the process used in evaluating senior portfolio. Only a handful of the new faculty chose to participate, but all of them subsequently participated in the real readings in May. Similar workshops should be organized in the future.

As the Junior Interdisciplinary Seminar classes swing into full gear, some of the faculty readers suggested that printing and distributing examples of portfolio papers judged as strongly interdisciplinary would be beneficial in modeling good interdisciplinary thinking. Faculty readers from arts disciplines suggested revising the "Aesthetic Analysis and Evaluation" prompt to bring it in line with the Liberal Studies Program's "Aesthetic Mode of Inquiry", which emphasizes "formalism and referentialism" rather than "analysis and evaluation".

FUTURE PORTFOLIOS

As the portfolio project enters its eleventh year, it has accumulated a history of continuous evolution. Some portfolio "categories" have remained constant, others were tried for a year or two and discontinued, and still others were added after the first year of the project and continue as a valuable component of the portfolio. Responding to the kinds of works students choose to submit for a particular portfolio "category", the prompts used to elicit submissions from seniors are regularly edited to enhance clarity.

The annual portfolio cycle demands new portfolio packets be available for students in the fall. The fall 2001 portfolio will contain the same categories as the year 2000 portfolio. Suggestions from faculty readers will result in a variety of changes in the wording of several of the prompts.

The implementation of the new LSP is accompanied by a need to assess the outcomes of the various modes of inquiry. The "Scientific Mode", the "Aesthetic Mode", and the proposed "Mathematical Mode" are already assessed with categories in the current LAS Portfolio. The "Historical Mode", the "Social Scientific Mode", and the "Philosophical/Religious Mode" will be monitored through portfolio assessment in the future. In fall of 2000, work will begin on a prompt eliciting student works showing their ability to use a "historical mode of inquiry". A committee of faculty members who teach history course will be convened to write a new portfolio prompt, to identify range finders, and to begin developing guidelines for evaluating student submissions in this category. Hopefully, their work will progress at a pace that will make it possible to include a "historical mode" prompt in the spring 2001 portfolio packets.

In response to students' complaints that they receive no feedback regarding their portfolios, the university promised to return portfolios to students with current addresses on file after ten years. As the portfolio enters its second decade, the time has come to return the portfolios of the first group of students participating in the portfolio project. This will be completed in the fall of 2000. It has been suggested that, as we begin returning portfolios to students, it may be time to begin developing some systematic longitudinal studies of portfolio findings over the years. Already plans are being made to look at changes in student attitudes as expressed in their portfolio cover letters since the beginning of the portfolio project a decade ago.

When the portfolio becomes a graduation requirement, the number of portfolios submitted in a year will grow from the current 900 to as many as 1200. Careful thought must be given to how the future portfolios will be evaluated in a timely and cost-effective way without reducing the benefits that the current process affords to the university and to the faculty readers. Furthermore, the promise to return portfolios to their authors after ten years represents an additional burden that will grow every year as the number of student participants in the early years of the portfolio project grew significantly through the years. Administering all facets of the portfolio process may, in the near future, become too large a project for one "director" to handle.

Reliability measures in assessing LAS Portfolios have been developing systematically. Historically, enhancing reliability has been approached by first forming a subcommittee to focus on a particular portfolio category. These faculty members read numerous submissions to that category from past portfolios and engage in intensive discussions regarding what kinds of thinking should be expected from liberally educated Truman students. They consider amending the prompt, they identify range-finding samples, and they develop a list of descriptors to aid the faculty readers in scoring the submissions. During the portfolio readings, subcommittee members serve as "table leaders" overseeing the work of a small group of the faculty readers. Ultimately, reliability is measured by counting "splits" (scores differing by more than one point) for submissions that are scored by two different evaluators. "Interdisciplinary Thinking" was the first portfolio category developed in this way in 1995. "Quantitative Reasoning" was so developed for the 1998 portfolio assessment. With a dramatic increase in the number of portfolio readers from the fine arts (and especially from Music) and with the inception of the dual-facetted "Aesthetic Mode of Inquiry" in the LSP, the time has come to focus on the "aesthetic reasoning" aspect of the LAS portfolios and to enhance and monitor the reliability of its evaluation.

SHARING PORTFOLIO ASSESSMENT FINDINGS

The portfolio assessment generates richer data than any annual report in the **Assessment Almanac** can accommodate. Raw data from the 2000 assessment, which is saved as an *Excel* spreadsheet computer file, will be copied to a computer in the office of the staff assistant for assessment within the offices of the Vice President for Academic Affairs. Here it will be available to interested parties even after the tenure of the current portfolio director has expired.

Starting in 1998, portfolio findings have been sorted by student major and the results for each major have been disseminated to the corresponding disciplines through their division heads. The disciplines are encouraged to study how their majors' portfolios were evaluated and to consider those findings as they engage in program review and curriculum development.

Starting in 1999 disciplines also receive data showing which classes in their disciplines served as sources for portfolio entries and how those works were scored. Again, this information is intended to stimulate discussion in the disciplines regarding their curriculum and to provide data for disciplines considering reforms.

The summer planning workshop and faculty development luncheons have been traditional venues for sharing and discussing portfolio results, and these should continue to be utilized. The Faculty Development Committee should consider designing other workshop experiences where portfolio findings are shared and the portfolio process is explained. Publication of pertinent findings within the university's web pages, in **Truman Today**, and in **The Index** would not only serve to inform the faculty, but would also help students learn to appreciate the value of reflective thought and self-assessment and to anticipate benefits from their participation in creating and maintaining a personal portfolio.