Chapter XIII: PORTFOLIO ASSESSMENT

Who takes it?
All students matriculating in or after the fall of 1999 are expected to develop and submit portfolios as a requirement for graduation. In May of 2004, 994, or 89.2% of the graduating class turned in portfolios.

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 four to five hours.

What office administers it?
Each discipline/program administers it, in conjunction with the director of the portfolio project.

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 the 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 2003-2004 academic year, a portfolio included a work demonstrating *critical thinking*, a work demonstrating *interdisciplinary thinking*, a work reflecting *historical analysis*, a work showing *scientific reasoning*, an item demonstrating *aesthetic analysis*, 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.

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

Are the results available by division or discipline?
Traditionally, 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 Higher Learning Commission 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 reaccredidation of their programs. Portfolio findings have also affected the assignments and syllabi of faculty that have participated as portfolio readers.

Are the results comparable to data of other universities?
No. While some universities are using portfolios for assessment of general education or liberal studies, most do not use similar prompts or submission categories.

2004 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 2003-2004 academic year portfolio assessment findings, concluding with a discussion about changes to the portfolio project and about the use of the data for improving teaching and learning.

In May and June 2004, portfolios from 994, or 89% of the 1114 students who graduated in fiscal year 2004, were read and evaluated by faculty readers. This percentage has increased significantly since 2002, when the participation rate was 67%. Twenty-nine disciplines participated in the portfolio project, administering the portfolio to its majors, compared to twenty-seven disciplines that participated last year.

Forty-five faculty members read and evaluated the portfolios, representing all ranks and twenty-one academic disciplines from every division except Education. Seven of the faculty participants (three fewer than last year) were new readers. Two staff members also participated as readers. For a variety of reasons, the total number of faculty participating this year was lower. In order to ensure that the reading process was completed, several faculty volunteered to read more than one week. The readings progressed in a timely fashion and faculty gained fresh perspective on the dynamics of group interaction. The portfolio director, who is 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. Newer readers were encouraged to seek advice of those with more experience when confronted with difficulties. Furthermore, two student employees assisted with data entry and sorting. Their help was critical to the success of this large assessment process.

PORTFOLIOS BY MAJOR	
Accounting	50
Agriculture	13
Art	27
Biology	96
Business Administration	182
Chemistry	25
Classics	8
Communication	52
Communication Disorders	29
Computer Science	31
Economics	7
English	90
Exercise Science	56
French	9
German	1
Health Science	31
History	33
Justice Systems	17
Mathematics	22
Music	27
Nursing	35
Philosophy and Religion	14
Physics	15
Political Science	5
Psychology	85
Russian	1
Sociology/Anthropology	15
Spanish	6
Theatre	12

Reading sessions were scheduled over the three weeks from May 17 to June 3, 2004. Approximately one third of the readers participated during each week, gathering daily at 8:00 AM and ending at 4:30 PM (7:45 AM to 5:30 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 2004 portfolio were the same as in 2003. Portfolio submissions were elicited by prompts for demonstrating "critical thinking", "interdisciplinary thinking", "scientific reasoning", "historical analysis" and "aesthetic analysis", focusing 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.

> **The 2004 Portfolio**
> - Critical Thinking
> - Interdisciplinary Thinking
> - Scientific Reasoning
> - Historical Analysis
> - Aesthetic Analysis
> - Most Personally Satisfying Experience
> - Reflective Cover Letter

2004 Portfolio Findings

The findings of the 2004 Portfolio Project 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. The accompanying table shows how the various disciplines are characterized in this scheme.

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

Major Groups		
Arts/Humanities	Science/Math	Professional
Art	Agriculture	Accounting
Classics	Biology	Business Administration
Communication	Chemistry	Communication Disorders
English	Computer Science	Justice Systems
French	Economics	Nursing
German	Exercise Science	
History	Health Science	
Music	Mathematics	
Philosophy and Religion	Physics	
Russian	Political Science	
Sociology/Anthropology	Psychology	
Spanish		
Theatre		
295 Portfolios	386 Portfolios	313 Portfolios

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 prompts 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 across the campus.

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. Additionally, we have kept track of the sources of items selected by seniors for their portfolios. We characterize that data by indicating several of the most common sources (disciplines and courses) for each category. Finally, we report findings regarding the occurrences of submissions dealing with issues of race, class, gender or international perspectives.

Critical Thinking

Seniors submit works to demonstrate their abilities as critical thinkers. In 2004, items were elicited with the following prompt:

Please include a work reflecting your best <u>critical thinking</u> from your academic career. Strong critical thinking is more than a display of knowledge; it involves such intellectual processes as analyzing, evaluating and synthesizing ideas and concepts. To help you understand this concept, please consider the descriptions on the following sheet.

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.

As you consider this category, you may find that a submission from another category demonstrates strong critical thinking. If so, feel free to use that item for this category as well.

In past years, a copy of Bloom's[1] taxonomy of critical thinking was included with the portfolio packet, to assist students as they reflected back on their thinking skills. Based on discussions with faculty readers, Bloom's taxonomy was replaced with a page that included several definitions of critical thinking. Faculty members believed that students tended to simply use the language of Bloom, without engaging in metacognition. The new page provides alternative perspectives, without presenting an apparent hierarchical scale.

This year, critical thinking submissions were read within the context of a new analytical writing assessment. After a lengthy exploration of various alternatives, the writing assessment committee concluded that portfolio entries might provide an appropriate forum to conduct a summative evaluation of student writing. After consulting with the portfolio project director, a pilot of the review occurred this year, using critical thinking submissions. Though students had not submitted these works to represent their best writing, the link between sound critical thinking and good writing made this selection a logical choice.[2] This report begins by discussing the results for critical thinking. Data and discussion for the writing assessment are presented in the subsequent section.

Critical Thinking at a Glance	
• Number of submissions:	**973**
• Percent of "no submissions":	**.9%**
• Mean critical thinking score (on a 0 – 3 scale):	**1.87**
• Highest scoring "group":	**Arts/Humanities**
• Lowest scoring "group":	**Professional**
• Most frequent source (course):	**ENG 190**
• Most frequent source (discipline):	**ENG**
Trend:	**Improved critical thinking scores**

Out of the 994 portfolios collected, 973 (98%) submitted examples of critical thinking. The others did not include a submission for this category (n=9), provided a "self-report" (described but did not include an assignment, n=8), or failed to attach prompts to their submissions for any categories (n=4).

Faculty readers evaluated the works for the quality of critical thinking evidenced, and rated the thinking as "strong", "competent", "weak", or "none". In conjunction with the writing assessment project, a scoring rubric was developed that included descriptors for evidence of critical thinking. The following table presents the phrases used for evaluating critical thinking.
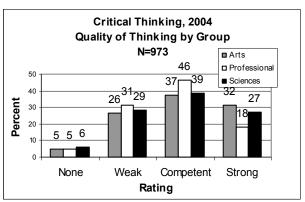
Critical Thinking Scoring Rubric

0 No Evidence	1 Weak Competence	2 Competence	3 Strong Competence
displays no real development of ideas	develops ideas superficially or inconsistently	develops ideas with some consistency and depth	displays insight and thorough development of ideas
lacks convincing support	provides weak support	develops adequate support	develops consistently strong support
exhibits no attempt to make connections between ideas	begins to make connections between ideas	makes some good connections between ideas	reveals mature and thoughtful connections between ideas
includes no real analysis, or synthesis, or interpretation, or …	begins to analyze, or synthesize, or interpret, or …	shows some analysis, or synthesis, or interpretation, or …	shows sophistication in analysis, or synthesis, or interpretation, or …
demonstrates no real integration of ideas (the author's or those of others) to make meaning	begins to integrate ideas (the author's or those of others) to make meaning	displays some skill at integrating ideas (the author's or those of others) to make meaning	is adept at integrating ideas (the authors or those of others) to make meaning

---

[1] Bloom, B.S. (Ed). Taxonomy of Educational Objectives Handbook 1: Cognitive Domain. New York: Longman, Green & Co. (1956).

[2] For further discussion of the changes in writing assessment, review the full report in Chapter VII of this Almanac.

In 2004, 25.6% of seniors submitted material judged as demonstrating "strong" thinking; 40.5% submitted material with thinking judged as "competent"; 28.8% submitted material judged as showing "weak" thinking; and 5.1% 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 or showing strong competence increased from 2003 (66.1% vs. 57.9%). This was almost 8% higher than the scores in 2002. These factors combine to account for an marked increase in the mean score from 1.67 in 2003 to 1.87 in 2004 (where a score of 0 = "none" and 3 = "strong").

When the data is sorted according to major groups, Arts/Humanities majors demonstrated stronger critical thinking skills than those with Science/Math or Professional majors. Thirty two percent of Arts/Humanities students were found to be "strong" critical thinkers, while 27% of Math/Science majors and only 18% of Professional Studies students were considered "strong" in their thinking. When the two highest categories are combined, the differences are not as great. Sixty nine percent of Arts/Humanities majors' submissions were judged as either competent or demonstrating strong competence, while 64% of Professional majors' submissions were scored this way. Sixty six percent of Science/Math submissions received one of the two highest scores.

Critical Thinking, 2004
Quality of Thinking by Group
N=973

Critical Thinking			
Top Ten Courses		**Top Ten Disciplines**	
ENG 190	113	ENG	209
PHRE 186	28	PHRE	119
PHRE 185	24	JINS	111
BSAD 460	22	BSAD	71
PHRE 188	18	COMM	43
ED 389	15	PSYC	37
NU 375	14	POL	33
POL 161	14	BIOL	31
PSYC 466	13	HIST	31
ENG 209	12	ES	28

As with previous years, the majority of works chosen by seniors for this category were generated in the last two years of study. Thirty seven percent of the submissions were examples of work done as a senior, 31.3% were from the junior year, 17.3% came from the sophomore year and 14% were produced during the freshman year. The fact that approximately 30% of the submissions came from the first two years of study is perplexing, and follows the pattern of last year. Furthermore, this is significantly higher than the 20% reported in 2002. When one examines the courses used for submissions, it appears that many students recall ENG 190 ("Writing as Critical Thinking") and assume that this is the appropriate source.

The large number of submissions from other 100-level courses is also of interest. Students may feel that those courses placed particular emphasis upon critical thinking or that they provided opportunities to think and write in ways that called for personal judgments.

Fifty two percent of the submissions fulfilled assignments for classes in the major, 37% were generated in Liberal Studies Program classes, and the rest were products of elective courses, minor requirements or other sources.

English classes were the most common sources of student submissions (n = 209). Philosophy and Religion courses provided 119 submissions, and JINS classes provided 111 submissions.

Of the items submitted, 3.1% dealt with issues of class (up from 1.5% in 2003), 6.4% dealt with issues of race (up from 4.3% in 2003), and another 9.3% had international/intercultural perspectives (up from 5.1% in 2003). More than 9 percent of the submissions dealt with issues of gender (up from 4% last year). The percentage of collaborative submissions was 7.9%, down from 8.4% in 2003.

Analytical Writing Assessment Pilot

In addition to reading submissions for critical thinking, faculty readers assessed them for the writing assessment pilot. Readers were trained by a member of the Writing Assessment Committee, with the assistance of the Portfolio Project Director. As with other categories where works are scored, a group of student-produced writing samples were used to assist faculty in identifying relevant factors. A scoring rubric, first drafted by members of the Writing Assessment Committee, was used in conjunction with the assessment. Unlike other categories, readers were trained to conduct an analytical assessment, reviewing and scoring each submission in terms of organization, style, and mechanics. The descriptors for these categories are presented in the following rubric:
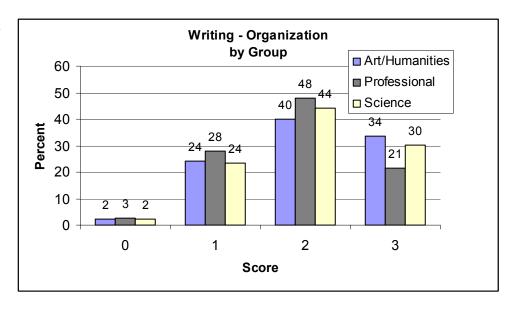
Rubric for Analytical Writing Assessment

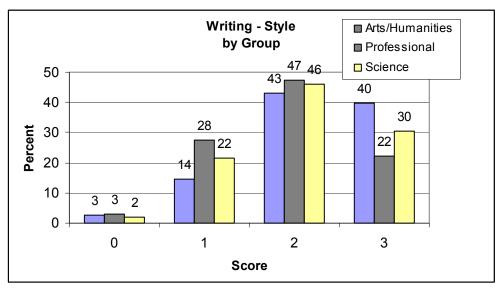|	0	1	2	3
Organization	lacks introduction	includes weak introduction	includes adequate introduction	includes strong introduction
	lacks controlling idea	displays controlling idea	displays adequately developed controlling idea	displays clear, well-developed controlling idea
	lacks clarity	exhibits weak clarity	exhibits adequate clarity	exhibits excellent clarity
	lacks logical structure	exhibits weak logical structure	exhibits adequate logical structure	exhibits strong logical structure
	lacks conclusion	includes weak conclusion	includes adequate conclusion	includes well-supported conclusion
Style	tone or voice is off-putting	contains inconsistent tone or voice	contains occasional lapses in tone or voice	maintains a consistent tone and voice
	seems to have no audience in mind	shows little audience awareness	shows audience awareness	shows consistent audience awareness
	frequently chooses inappropriate words	sometimes chooses inappropriate words	chooses appropriate words	exhibits skill in word choice
	exhibits frequent inappropriate sentence structure	exhibits occasional inappropriate sentence structure	exhibits appropriate sentence structure	exhibits sophisticated sentence structure
	uses no appropriate stylistic conventions	uses few appropriate stylistic conventions	uses appropriate stylistic conventions	skillfully uses appropriate stylistic conventions
Mechanics	lacks command of mechanical conventions: grammar, punctuation, or spelling	demonstrates weak command of mechanical conventions: grammar, punctuation, or spelling	demonstrates adequate command of mechanical conventions: grammar, punctuation, or spelling	demonstrates excellent command of mechanical conventions: grammar, punctuation, and spelling
	errors present major distraction to readers	errors are occasionally distracting to readers	errors are minimally distracting to readers	small errors do not distract readers

The scoring rubric was adjusted slightly during the final week to reflect terms that better fit the concepts in the minds of the readers. There were no substantive changes; rather, readers made various suggestions that were incorporated in the final rubric that clarified the distinctions between scores for certain areas. In the end, the readers were satisfied with the language of the rubric and felt that it adequately reflected the concepts under review.

Based on this scoring rubric, the 973 critical thinking submissions averaged 1.99 for organization, 2.04 for style, and 2.19 for mechanics. Thus, readers found that students are generally competent in all three aspects of writing for which they were evaluated. When scores are broken down by groups, similar patterns emerge. The charts presented here detail group scores for each category.
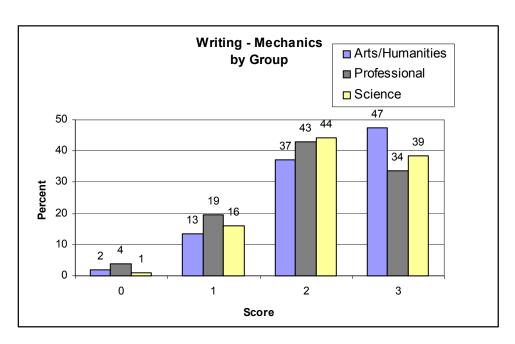
Scores for organization show that 74% of submissions from Arts/Humanities and Science/Math majors were judged as competent or strongly competent. By comparison, 69% of Professional majors' submissions were scored in the two highest categories.

Judgments of writing style revealed that 83% of Arts/Humanities submissions were scored in the two highest categories. This compared to 76% of Science/Math submissions and 69% of Professional majors' submissions.

The final element, mechanics, demonstrates similar patterns to the other categories. Again, Arts/Humanities majors' submissions were slightly stronger, with 83% of them rated as competent or strongly competent. Seventy six percent of Science/Math submissions were scored this way, and 69% of Professional majors' works received these scores.

Writing - Mechanics by Group

Score	Arts/Humanities	Professional	Science
0	2	4	1
1	13	19	16
2	37	43	44
3	47	34	39

Feedback from the readers regarding the process was quite favorable. They welcomed the opportunity to participate in the pilot and felt that it was a valuable assessment activity. Prior to beginning the review, there was concern that readers would have difficulty shifting from holistic to analytical scoring. However, this category was assessed after the other categories where a score is obtained. This enabled readers to return to a more traditional "grading mode", where they are more likely to consider various aspects of writing. Readers did not have significant difficulty in making the adjustment and were able to review all the submissions, despite the additional scoring responsibilities.

During the second week of readings, the University Assessment Specialist conducted a generalizability study in conjunction with the writing assessment pilot project. A discussion of the rationale, methodology, and findings of that study will be presented in the Fall 2005 *Almanac*.

While the advantages of using one of the categories of the portfolio for additional assessment seemed clear in advance, the encouraging feedback from the readers indicated that this was a viable method for assessing student writing. These observations led to the revision of the critical thinking prompt and category to explicitly serve the dual purpose of assessment. Thus, for the fall of 2004, the category was renamed "Critical Thinking and Writing" and began using a newly crafted student prompt.

Interdisciplinary Thinking

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

> *Please include a work demonstrating that you have engaged in interdisciplinary thinking. "Interdisciplinary Thinking" means using the perspectives, methodologies or modes of inquiry of two or more disciplines in exploring problems, issues, and ideas as you make meaning or gain understanding. You work in an interdisciplinary way when you integrate or synthesize ideas, materials, or processes across traditional disciplinary boundaries. 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, perspectives and ideas in only 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. Another student found significant meaning in the changing architecture of school buildings in America by exploring a parallel evolution in pedagogical methods and philosophies. 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 as part of your studies of 20ᵗʰ century history.

In 2004, 2.6% of participating seniors did not submit an entry demonstrating "interdisciplinary thinking", which is slightly higher than 2003 (2.3%). Less than one percent provided "self-reports" of interdisciplinary work they remembered but no longer possessed (this is similar to the percentage reported in 2003). Because faculty readers did not have direct evidence of interdisciplinary thinking, self-reports were not evaluated. Altogether 957 submissions were evaluated by a single faculty reader who read the works "holistically" while keeping in mind the following descriptors:

Interdisciplinary Thinking at a Glance	
• Number of submissions:	**957**
• Percent of "no submissions":	**2.6**
• Mean score (on a 0-4 scale):	**1.52**
• Highest scoring "group":	**Arts/Humanities**
• Lowest scoring "group":	**Professional**
• Most frequent source (course):	**JINS 341**
• Most frequent source (discipline):	**JINS**
• Trends:	**Stable Scores**
	Majority of submissions
	coming from JINS courses

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 Some 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
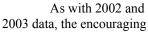- ❖ No evidence of comprehension of interdisciplinarity

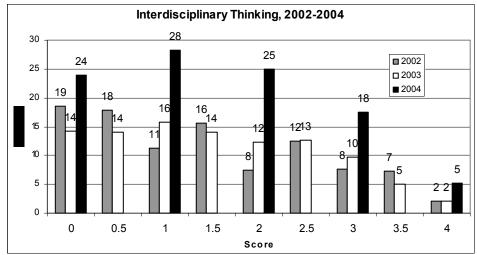**0 No demonstration of competence as an interdisciplinary thinker**
- ❖ Only one discipline represented
- ❖ No evidence of multiple disciplines, of making connections among disciplines, or of some comprehension of interdisciplinarity
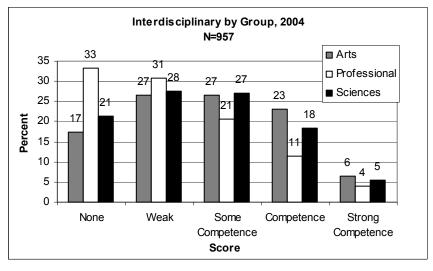
In years past, all submissions were read by two readers, and those evoking a scoring "split" (difference greater than one score on the five point scale) were read a third time to resolve the split. This practice was discontinued in 2004, due to several factors: the ever increasing number of portfolios submitted, the general reduction in no submissions for all categories, the need to provide time for the analytical writing assessment, and the evidence that readers have become more comfortable recognizing sound interdisciplinary thinking than several years ago. As a reader reliability check, a random sample of 127 submissions were read by a second reader. There was no statistically significant difference in the two scores for this sample, providing additional support for this decision.

The histogram shows the results for "interdisciplinary thinking" in 2004 with the results for 2002 and 2003. Because of the change from double reading all submissions, the 2004 scores are whole numbers only. While this makes direct comparison less straightforward, summary conclusions can be drawn. Most importantly, the total percent of submissions receiving a score of 2 or better increased significantly in 2004. In 2002, 36.8% of submissions received a score of 2 or higher. In 2003, this increased to 41.8%. However, in 2004, 47.7% of the submissions were judged to demonstrate some competence. The mean score for interdisciplinary thinking this year was 1.52 Though slightly less than the 2003 mean of 1.55, it continues the pattern of increased scores over the past three years.

Interdisciplinary Thinking, 2002-2004

Interdisciplinary by Group, 2004
N=957

As with 2002 and 2003 data, the encouraging results are related to the continued growth in JINS submissions. This year, 63% of the submissions came from JINS courses, up from 56% in 2003. Furthermore, these submissions had a mean score of 1.75, while all other submissions had a mean score of 1.12. This data provides additional evidence that the adoption of the JINS course in the Liberal Studies Program is having the desired effect: better comprehension and demonstration of interdisciplinary thinking by students.

The data sorted by major group is summarized in the following chart. Students from Arts/Humanities and Science/Math disciplines submitted fewer items with little or no interdisciplinary thinking than did students with

Professional majors. In fact, 64% of Professional majors' submissions scored a 0 or a 1, compared to 44% of Arts/Humanities submissions and 49% of submissions from Science/Math majors.

The interdisciplinary items were selected by seniors from 37 academic disciplines, as well as independent research projects. The remainder were transfer credits or were not identified by the student. As was the case last year, the use of JINS submissions outstripped all others combined. In fact, of the top 30 courses used for submissions in this category, only two were not JINS courses. Concomitantly, 75% of submissions came from LSP courses, while 17% were drawn from the major. The rest were drawn from electives (5%), academic minor requirements (3%), and other miscellaneous sources (less than 1%). In addition to the 599 JINS entries, 58 came from English classes. BSAD courses were the next most frequent source of interdisciplinary submissions with 35 items followed by PHRE courses accounting for 34 items.

Most of the work reflected in the interdisciplinary submissions was accomplished by students in their junior and senior years (60% and 25%, respectively). Ten percent came from the sophomore year and 6% from the freshman year. Nine percent of the items were the result of collaborative work.

Portfolio readers keep a tally in each category of items dealing with race, class, gender, and international issues. In the interdisciplinary category, 18.8% of submissions dealt in some way with international issues, 12.8% with race, 11.9% with gender, and 8.7% dealt with class.

Interdisciplinary Thinking			
Top Ten Courses		**Top Ten Disciplines**	
JINS 341	35	JINS	599
JINS 301	30	ENG	58
JINS 325	30	BSAD	35
JINS 324	26	PHRE	34
JINS 311	23	HIST	27
JINS 335	21	COMM	16
JINS 350	21	BIOL	15
JINS 304	20	ART	14
JINS 351	19	MUSI	14
JINS 315	18	PSYC	13

Historical Analysis

The "Historical Analysis" category was developed in the fall of 2000, and implemented in the spring of 2001. The prompt for this category is provided below.

Please include a work that shows your ability to think historically. This involves analyzing connections between events or developments, demonstrating change over time, and showing the relevance of historical context to the topic you are discussing, whether the focus be individuals, social groups, cultural developments, or particular events. Historical thinking critically evaluates historical sources, which could be written, visual, aural, archaeological, scientific, etc., and it pays attention to the reliability and objectivity of the historical record.

This year, 4.9% of participating seniors did not submit a work for this category, which is higher than last year (2.9% in 2003). Less than one percent provided "self-reports" (n=8), which were not evaluated by faculty readers. A total of 933 submissions were evaluated and scored, using the following descriptors, which were revised this year by history faculty:

Historical Analysis at a Glance	
• Number of submissions:	**933**
• Percent of "no submissions":	**4.9**
• Mean score (on a 0-3 scale):	**1.47**
• Highest scoring "group":	**Arts/Humanities**
• Lowest scoring "group":	**Professional**
• Most frequent source (course):	**HIST 105**
• Most frequent Source: (discipline):	**History**
• Trends:	**Improved scoring**

Some Descriptors of Competence in Historical Analysis

3 Strong Competence
   Strong demonstration of historical analysis includes one or more of these features. The submission may:
   ❖ Evaluate historical resources.
   ❖ Actively engage historical context and chronology.
   ❖ Use good analytical thinking in making an argument.
   ❖ Show clear awareness of causation in examining changes over time.

2 Competence
   Submissions that demonstrate competent historical analysis may:
   ❖ Employ historical resources.
   ❖ Show some awareness of historical context and chronology.
   ❖ Be uneven in supporting arguments.
   ❖ Demonstrate some awareness of causation in examining changes over time.

1 Minimal Competence
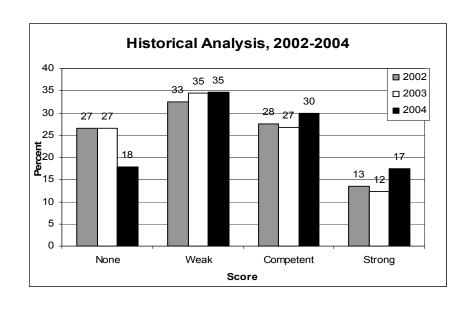   Minimally competent submissions may:
   ❖ Merely list historical resources.
   ❖ Have limited or confused use of historical context and chronology.
   ❖ Make an unsupported thesis or argument
   ❖ Show minimal awareness of causation in examining changes over time.
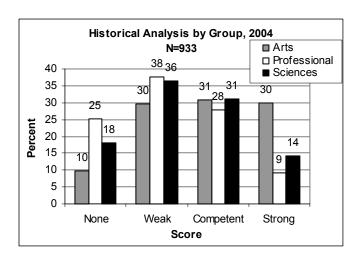   ❖ Simply report historical facts

0 No Competence
   ❖ Ignore historical context
   ❖ No thesis, argument, or analysis
   ❖ Neglects changes over time
   ❖ Demonstrates lack of knowledge regarding basic historical facts

The table at right compares the data for the past three years. Results show decreases in the number of submissions demonstrating no competence and a corresponding increase in those rated as competent or strongly competent. The mean score of 1.47 for 2004 is a marked improvement from the 2003 average of 1.25 and the 2002 average of 1.28.

Historical Analysis, 2002-2004

Score	2002	2003	2004
None	27	27	18
Weak	33	35	35
Competent	28	27	30
Strong	13	12	17

When the data are sorted according to the major groupings, students majoring in the Arts/Humanities disciplines had a mean score of 1.81, compared to Science/Math majors' average of 1.42 and Professional majors' average of 1.21. Thirty percent of students in the Arts/Humanities group submitted items judged as demonstrating strong competence, compared with only 14% of the items from the Science/Math group and 9% of the items submitted from the Professional major group. While 61% of Arts/Humanities students scored at least "competent' (i.e., scores of 2 or 3), only 45% of Science/Math students, and 37% of Professional students were judged competent or better in historical analysis.

Not surprisingly, the discipline from which students chose work for this category most frequently was History. Almost 35% of the items came from history courses (n=322). JINS courses accounted for 16.5% of the submissions (n=154) and English courses accounted for 9% of the submissions (n=84). The U.S. History sequence, HIST 104 and 105 were the two most common courses used as sources for items in this category, together accounting for almost 16% of the total number. World Civilizations since 1700 (HIST 133) was the next most common item (n=30), followed by Writing as Critical Thinking (ENG 190) with 25 items.

Approximately 23% of the submissions were produced in the senior year, over 37% in the junior year, 22% in the sophomore year and 18% in the freshman year.

Historical Analysis by Group, 2004
N=933

HISTORICAL SOURCES			
Top Ten Courses		**Top Ten Disciplines**	
HIST 105	92	HIST	322
HIST 104	63	JINS	154
HIST 133	30	ENG	84
ENG 190	25	PHRE	46
HIST 131	22	ART	43
PHRE 185	18	POL	30
POL 161	18	COMM	25
PSYC 429	17	PSYC	22
ART 222	15	MUSI	21
HIST 132	13	BSAD	20

Over 62 percent of the items submitted were the result of work in LSP classes, 27% were assignments in major courses, 6% were from elective courses and 4% were produced in classes taken to fulfill minor requirements.

Of the 933 submissions read for historical analysis, 25% dealt with international perspectives, 18.5% with race, 11% with issues of gender, and 7.6% with class issues. In this category, 3.8% of the items submitted were collaborative works.

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 <u>reason</u> scientifically. You might include a laboratory or research report in which you justified or validated 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.*

This year, 7.7% of seniors did not submit materials to demonstrate "an ability to reason scientifically". This percentage is lower than the non-submission rate of 8.5% in 2003, but higher than the rate of 6.7% in 2002. Less than one percent of seniors submitted self-reports of work they recalled doing (1.7% in 2003). Self-reported work was not evaluated by faculty readers.

Readers evaluated 904 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 evidence", one representing "minimal competence", two representing "competence" and three representing "strong competence". For the first time, readers were assisted by a set of descriptors for scientific reasoning, compiled by a group of faculty from the natural science and professional disciplines. This set of descriptors is included below. Additionally, readers with questions about the quality of a submission consulted with colleagues from the sciences and social sciences.

Scientific Reasoning at a Glance	
• Number of submissions:	**904**
• Percent of "no submissions":	**7.7**
• Mean score (on a 0-3 scale):	**1.21**
• Highest scoring "group":	**Science/Math**
• Lowest scoring "group":	**Professional**
• Most frequent source (course):	**BIOL 100**
• Most frequent Source: (discipline):	**Biology**
• Trends:	**Slightly lower scores**

SOME DESCRIPTORS OF COMPETENCE IN SCIENTIFIC REASONING

3 Strong Competence
The item may have some, many, or all of these features:
- ❖ Explicit discussion of research hypothesis or question
- ❖ Clear understanding of research design, including the method's limitations and strengths
- ❖ Clear understanding of cause and effect appropriate to research level and design
- ❖ Clear indication of inductive or deductive reasoning underlying hypothesis
- ❖ Critical evaluation of results, including alternative explanations of results
- ❖ Meaningful discussion of experiment's limitations
- ❖ Examines results in light of current state of knowledge

2 Competence
The item may have some, many, or all of these features:
- ❖ Attempts to generate and test a hypothesis or answer a research question
- ❖ Examines appropriateness of research design
- ❖ Considers reasoning underlying hypothesis
- ❖ Some interpretation and analysis of results, may consider alternative explanations of results
- ❖ Attempts to deal with experiment's limitations
- ❖ Examines results in light of current state of knowledge

1 Minimal Competence
The item may have some, many, or all of these features:
- ❖ Recognition of problem/hypothesis, but not of derivation of testable hypothesis
- ❖ Description of methodology without thought on appropriateness of methods used
- ❖ Data analysis with minimal discussion or interpretation of results
- ❖ Little or no consideration of alternative explanations of results
- ❖ Ignores experimental limitations
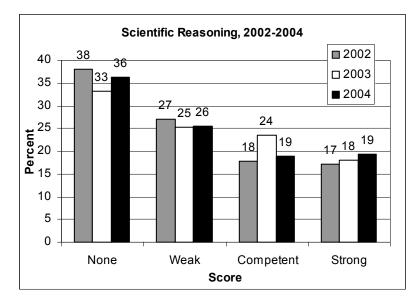- ❖ Fails to examine results with regard to current state of knowledge

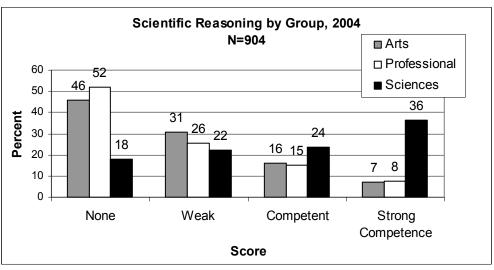### 0 No demonstration of competence in scientific reasoning
- ❖ No discussion of problem/hypothesis
- ❖ No consideration of methodology for experiment
- ❖ Presents results without interpretation
- ❖ Neglects differences between expected (literature) values and experiment
- ❖ Demonstrates scientific knowledge, but without interpretation or analysis

As in past years, the most common finding was "no evidence", while "strong competence" was found least often. This is the fifth consecutive year that submissions scored a zero outnumbered submissions judged "minimally competent". Over the past three years, scores have been relatively stable. Mean scores have increased slightly, moving from 1.14 in 2002 to 1.25 in 2003, and 1.21 this year.

Scientific Reasoning, 2002-2004

Score	2002	2003	2004
None	38	33	36
Weak	27	25	26
Competent	18	24	19
Strong	17	18	19

As was the case in previous years, seniors in Science/Math majors account for most of the higher scores. Seniors majoring in the Professional disciplines had the lowest mean score (.78), followed by Arts/Humanities majors (.85). Slightly under 78% of the submissions from Professional majors were scored zero or one, while almost 77% of the Arts/Humanities majors' submissions received the two lowest scores. Conversely, 60% of the submissions from Science/Math majors were considered competent or strongly competent.

Scientific Reasoning by Group, 2004
N=904

Score	Arts	Professional	Sciences
None	46	52	18
Weak	31	26	22
Competent	16	15	24
Strong Competence	7	8	36

While Biology and Chemistry remained the most popular source disciplines, Psychology and JINS were third and fourth, respectively. This follows the pattern in 2003. However, Exercise Science, Physics and Agricultural Science were relatively more frequently used this year than last. The top five individual classes remained the same as last year: BIOL 100, CHEM 100, PSYC 466, AGSC 100, and BIOL 107.

Twenty-nine percent of the submissions were produced by students in their senior year, over 31% in the junior year, 24% in the sophomore year, and almost 15% were generated by freshman students. Forty seven percent of the submissions were generated by students satisfying requirements of their majors, 41% were from LSP courses, while minor and elective courses accounted for 5% and 6%, respectively.

Scientific Reasoning Sources			
Top Ten Courses		**Top Ten Disciplines**	
BIOL 100	103	BIOL	249
CHEM 100	53	CHEM	108
PSYC 466	38	PSYC	98
AGSC 100	26	JINS	56
BIOL 107	21	ES	43
BIOL 304	19	PHYS	40
BIOL 200	18	AGSC	35
BIOL 301	18	ENG	31
CHEM 421	15	COMM	29
PHYS 388	15	BSAD	24

Slightly less than three percent of the submissions for scientific reasoning dealt with issues of gender. International perspectives were observed in 1.6% of the submissions; 1.9% of science submissions examined issues of race, and 1% touched upon issues of class. As was the case last year, almost 32% of submissions were the results of collaborative work.

Aesthetic Analysis

Following the requests of faculty members in Fine Arts and Language and Literature, this category was significantly revised in 2002, so as to more appropriately assess the outcome statements for the Aesthetic Mode of Inquiry (both Fine Arts and Literature). The new prompt was introduced in the spring 2002 packets, and has been used since then. It reads as follows:

> *Please submit an analysis of a creative work or works, using aesthetic criteria. The subject of your analysis may be from a wide variety of genres: visual arts (such as painting, sculpture, collage, film, or costume), performing arts (such as music, theatre, dance, or dressage), or written arts (such as poetry, fiction, or nonfiction). Your submission should demonstrate your ability to analyze the work's form, structure, and contexts; ultimately, it should interpret the work in some way. Please do not submit an original creative piece of your own.*

This year, 6% of the portfolios failed to submit an item for this category. This is above the 4.4% non-submission rate in 2003. The mean score for the 913 submissions was 1.49, which is equivalent to last year's mean of 1.48. Just over 50% of the submissions were judged to demonstrate competence or strong competence, compared to 49% in 2003.

Aesthetic Analysis at a Glance	
• Number of submissions:	**913**
• Percent of "no submissions":	**6%**
• Mean score (on a 0-3 scale):	**1.49**
• Highest scoring "group":	**Arts/Humanities**
• Lowest scoring "group":	**Professional**
• Most frequent source (course):	**ART 203**
• Most frequent Source: (discipline):	**ENG**

During the course of readings, relevant faculty members crafted a tentative set of descriptors for the category, since no scoring rubric had been used in the past. The original set was modified slightly for clarity, based on additional feedback. Readers found the descriptors to be very helpful, particularly those who are not accustomed to assessing aesthetic analysis. The final set of descriptors are included below.

SOME DESCRIPTORS OF COMPETENCE IN AESTHETIC ANALYSIS

3 Strong Competence
    The item may have some, many, or all of these features:
    ❖ Reflective interpretation of the cultural artifact or production
    ❖ Sophisticated discussion of the significance or meaning of the artifact or production, incorporating the language of appropriate critical or theoretical discourse/perspective
    ❖ Connection of the artifact or production to its context, with discussion of its significance
    ❖ Analysis of the artifact or production's features and their significance
    ❖ Analysis of the artifact or production's form and its significance

2 Competence
    The item may have some, many, or all of these features:
    ❖ Interpretive engagement with the cultural artifact or production
    ❖ Explanation of the significance or meaning of the artifact or production, including some language of appropriate critical or theoretical discourse/perspective
    ❖ Connection of the artifact or production to its context, with some discussion of its significance

- ❖ Discussion of the artifact or production's features and their significance
- ❖ Discussion of the artifact or production's form and its significance

1 Minimal Competence
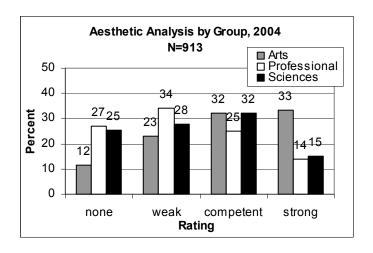The item may have some, many, or all of these features:
- ❖ Minimal evidence of engagement with the cultural artifact or production (creative works in visual art, music, literature, theatre, film, dance. . .)
- ❖ Placement of the artifact or production within a context (historical, cultural, period, aesthetic movement. . .)
- ❖ Description of the artifact or production's features (plot, musical elements, colors, lines. . .) without discussion of their significance
- ❖ Description of the artifact or production's form (genre, type. . .) without discussion of its significance

0 No demonstration of competence in aesthetic analysis
The item may have some, many, or all of these features:
- ❖ No evidence of engagement with the cultural artifact or production
- ❖ Analysis of the artifact or production on some basis other than aesthetic
- ❖ No explanation of the work's context, form, structure or significance

Since the guidelines for this category changed in the spring of 2002, trend data is not presented. When comparing the groups, Arts and Humanities majors scored significantly better than either Science/Math or Professional majors, averaging 1.87, versus 1.37 (for Science/Math) and 1.26 (for Professional). Again this year, the difference is most obvious when examining the submissions demonstrating strong competence. Thirty three percent of Arts and Humanities majors' items received the highest score, while the other two groups achieved this score less than half as often (Sciences = 15%, Professional = 14%).

Aesthetic Analysis by Group, 2004
N=913

As one might expect, entries for this category came primarily from English, Music, and Art. JINS courses also were used by 114 students, followed by Theatre, Communication, and Philosophy and Religion. ART 203 was the most popular course in this category, followed by MUSI 205, MUSI 204, ENG 265, ENG 225, and THEA 275.

Of the 864 submissions where the year produced was identified, 18.2% were created during the senior year. Another 30.9% were produced during the junior year, while 25.2% were from the sophomore year and 25.5% from the freshman year.

Roughly 65% of the submissions came from LSP courses, while 23.8% were from major courses. Almost 7% were from electives, and 4.3% from courses in the minor. Collaborative efforts comprised 3.2% of the submissions.

In this group, 10.6% dealt with international perspectives, 3.1% considered issues of class, 5.7% involved gender issues, and 6.8% examined issues of race.

Aesthetic Analysis Sources			
Top Ten Courses		**Top Ten Disciplines**	
ART 203	66	ENG	223
MUSI 205	55	MUSI	152
MUSI 204	46	ART	145
ENG 265	32	JINS	114
ENG 225	30	THEA	45
THEA 275	30	COMM	38
ENG 190	29	PHRE	36
ART 223	26	HIST	28
ENG 209	21	NU	16
PHRE 185	16	SPAN	14

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 experiences at Truman. If you don't have an "artifact", which would represent or demonstrate the experience, write about it on this sheet. 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 that made them proud or most satisfied them.

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.

This year, less than one percent of the portfolios did not contain an item or a description representing a "most satisfying experience" (compared with less than 1% in 2003 and 3% in 2002). In all, the faculty readers reviewed 964 submissions (994 in 2003).

The accompanying table presents the reasons why a submission was most satisfying. Items were included that received ten or more responses. Though students are asked for a single reason for the item's inclusion, many identified several reasons. Thus, the total percentages exceed 100%.

Why Was It Satisfying?	Number	%
Achieved Significant Personal Growth	348	36.1%
Especially Challenging	247	25.6%
Achieved Personal Goals	191	19.8%
Personal Best	185	19.2%
Working As A Professional	148	15.4%
No Indication	100	10.4%
Collaborative Effort	85	8.8%
Other	57	5.9%
Enjoyable Educational Experience	34	3.5%

Over 36% explained that their satisfaction was the result of having achieved "significant personal growth", 25.6% found the experience "especially challenging", 19.8% "achieved personal goals", and 19.2% considered it a "personal best". "Working as a professional" was mentioned in 15.4% of the submissions, while 8.8% noted that it was a "collaborative effort" and 3.5% found it to be an "enjoyable educational experience". Almost 6% described some other reason for the submission, but no single reason was mentioned more than three times. Finally, 10.4% gave no indication.

Students point to a wide variety of settings for their most personally satisfying experiences. Many students submit academic work of which they are especially proud. Others talk about friends, family, religion, getting married or engaged, campus organizations, particular campus events in which the student played a role, and a wide variety of other things. The accompanying table attempts to organize the contexts of students' most personally satisfying experiences into groups.

Context	Frequency	%
Major Class	300	31.7%
LSP	173	18.3%
Other	58	6.1%
Elective	41	4.3%
Social Fraternity/Sorority	41	4.3%
Research	34	3.6%
Study Abroad	31	3.3%
Minor Class	28	3.0%
Internship	28	3.0%
Relationships / Friendships	28	3.0%
Varsity Athletics	27	2.9%
No Indication	19	2.0%
Public Performance / Recital	18	1.9%
Religious Organization	17	1.8%
Campus Media	16	1.7%
Capstone	15	1.6%
Other Organization	15	1.6%
Other Creative Effort	13	1.4%
Service Organization	12	1.3%
Other Athletics	8	0.8%
Honor Society	5	0.5%
Campus Employment	5	0.5%
Residence Life	4	0.4%

As in past years, 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.

Many aspects of campus culture were cited as a satisfying experience by students. Participation in sports (both varsity and club), involvement with fraternities and sororities, working on SAB projects, participation in theater performances and musical groups, and volunteer work, are but a few examples.

Almost 43% of the "most satisfying experiences" occurred in the senior year (39% in 2003), 33% in the junior year (32% in 2003), 11.9% in the sophomore year (11.4% last year), and 6.7% in the freshman year (down from 7.5% in 2003). The remaining 5.3% occurred over times spanning more than a year (9.6% last year).

Over six percent of most personally satisfying experiences dealt with international perspectives (up from 4% in 2002 and 5% in 2003). Many of these were study abroad experiences and reflects the increasing role of this activity for Truman students. Roughly three percent dealt with issues of gender (same as last year), 2.5% with race issues (2.4% in 2003), and 1.6% dealt with issues of class. Less than one percent of the submissions considered class in 2003.

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 generally 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 that parallels the kind of closure that the entire portfolio is envisioned to give students with respect to their undergraduate academic careers.

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 2004 was 3.4 hours, down from 3.8 hours in 2003. (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.")

Continuing the trend of recent years, fewer students express surprise upon being assigned the portfolio project in their senior capstone course. More students say they have been expecting and preparing for the assignment throughout their undergraduate careers. However, a number of students still remark that they were not reminded of the portfolio at any time between their freshman year and the capstone course.

Additionally, a large proportion of students are maintaining documents electronically. As in past years, this has also created problems in retrieving documents due to various computer failures. However, students also appear to be better prepared for such issues by using networked drives and maintaining paper copies as well as digital documents. The following letter from a Business Administration major presents an example of this kind of preparation for assembling the portfolio:

The process I used for putting this portfolio [together] was quite simple. I had collected nearly every paper throughout my college career on various disks and my personal computer. This made the assembly of portfolio relatively easy. I simply looked through the various papers in accordance to the prompt that was required. The total time for constructing this portfolio took about 4 hours altogether including the writing on these responses.

Again this year, several students discussed the assistance they received from faculty members in their capstone courses. These students spoke of the active role taken by the instructors, generally requiring or encouraging submission of items throughout the semester, rather than as a single collection at the end of the semester. Each of these students commented on the advantages of this procedure and suggested its adoption by other capstone faculty members. This letter from a Computer Science major typifies those comments:
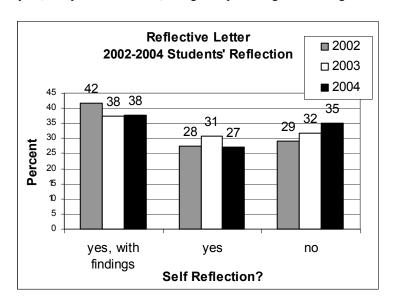
For Computer Science majors, the processes of assembling a senior portfolio is completed throughout the Fall senior seminar course. Each week or so we were assigned a new work. This is a great way to have seniors complete their portfolio because it prevents students from procrastinating and throwing everything together at the deadline. After choosing an example that fit the week's assignment, I would spend about half an hour reflecting and writing on how the work fit the criteria. The biggest revelation I had throughout this reflection process was how much I have grown intellectually throughout my time at Truman. Looking through old papers, programs, and assignments allows you to really see how much you have developed as a person.

REFLECTION IN COVER LETTERS

It is clear that self-assessment and reflection is valued across the University community as an integral component to student learning. The portfolio process has always been considered a means to encourage students to engage in this task as they near graduation. This year, many students did so, though the percentage is down again.

Cover letters often provide personal and thick description as seniors "sum up" their experiences at Truman. Some writers are specific and brief. 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
2002-2004 Students' Reflection**

Legend: 2002, 2003, 2004

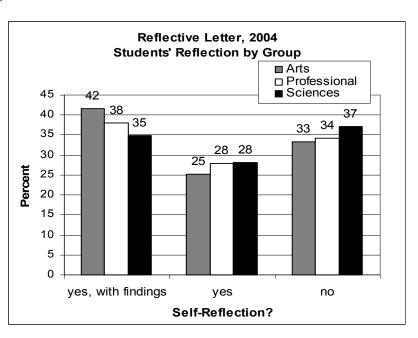| Self Reflection?	2002	2003	2004
yes, with findings	42	38	38
yes	28	31	27
no	29	32	35

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 2004 data shows a decline in the percentages of students providing some reflection, when compared to 2002 (65% in 2004, versus 69% in 2003 and 70% in 2002). As in the past, those 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/Humanities students to be more likely to include findings in their self-assessment than are the students in either Science or Professional majors. This continues the trend observed in previous years. Overall, 67% of Arts/Humanities majors provided reflection, compared to 66% of Professional majors and 63% of Science/Math majors.

Seniors engage in a broad range of reflections in the portfolio cover letters. Some discussed academic and personal challenges they faced and the achievements they accomplished in various settings. Others wrote about the value of being liberally educated or presented 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.

**Reflective Letter, 2004
Students' Reflection by Group**

Legend: Arts, Professional, Sciences

Self-Reflection?	Arts	Professional	Sciences
yes, with findings	42	38	35
yes	25	28	28
no	33	34	37

This Business Administration major focuses on growth in critical thinking:

> *When looking from my freshman to my senior year, I noticed that my ability to critically evaluate a topic or theory exponentially increased. I believe that the input from both peers and professors contributed to my intellectual growth. The exposure to new ideas and new ways of thinking about topics were fostered here in the Truman State University environment.*

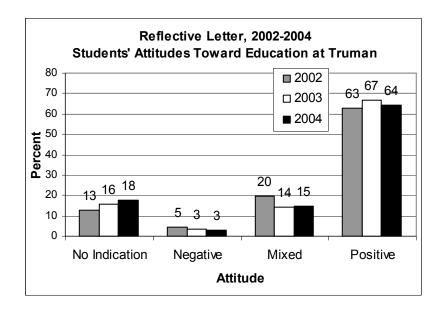A Philosophy and Religion major points to growth in various areas:

> *Looking back over the past four years, I am amazed at how much I have grown. My degree in Philosophy/Religion has focused on critical thinking skills, teaching me to probe ever-deeper into the question at hand, and giving me greater discernment. Much has happened outside my major as well; I used my time at Truman as an opportunity to explore a variety of fields, from the history of science and mathematics to the history and philosophy of art and aesthetics. I also took risks. Studio art and Colorguard were two things in which I had always been interested but had lacked the time or courage to try; at Truman, I did both.*

Another Business Administration student attributed intellectual growth to experiences in various settings:

> *My experiences and education at Truman have taught me that you never know what you can do until you try. I've accomplished so much personally and have learned a great deal. I may not recall many facts or specific information that my professors attempted to impress upon me, but I have become a decision maker, a problem solver, and a critical thinker. I owe that to my in- and out-of-classroom experiences. For that, I am forever indebted to this University.*
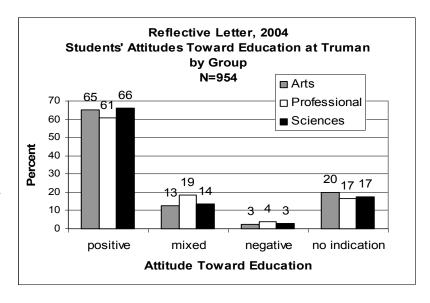
ATTITUDE TOWARD EDUCATION AT TRUMAN

Student attitudes regarding their education at Truman continue to be positive, though the 'positive' attitudes decreased 3% from last year, approaching the level in 2002. Slightly more students expressed mixed attitudes (15% versus 14%), and more students did not discuss their attitudes in this area (18% versus 16%). Sixty four percent of the letters expressed a positive attitude about their education, 15% expressed mixed feelings, and 3% 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, 2002-2004
Students' Attitudes Toward Education at Truman

As a group, professional students were less likely to express positive attitudes than science and mathematics or arts/humanities majors. Furthermore, professional students were somewhat more likely to have mixed attitudes about their education.

Students expressing negative or mixed feelings about their Truman experience commented on a range of things, including time constraints imposed due to study expectations, faculty attitudes, and a sense that the university is simply "too hard" or expects far too much from its students. A Psychology major pointed to problems with advising that compounded the challenging nature of the coursework:

**Reflective Letter, 2004
Students' Attitudes Toward Education at Truman
by Group
N=954**

Arts | Professional | Sciences

Attitude	Arts	Professional	Sciences
positive	65	61	66
mixed	13	19	14
negative	3	4	3
no indication	20	17	17

Attitude Toward Education

> *I feel that Truman could have aided me better in the correct academic directions. I have been through many advisors and not one has made an effort to guide me successfully in my future. I know this something I should do on my own; [a] majority of the steps I have made here at Truman have been on my own accord. My work and GPA reflect an average effort. This is due to the challenging classes and assignments. I feel that some advisors favor the more successful students rather than just the average. To me average is successful (especially at such a hard school), I have never been great at school. I have had a few advisors and teachers give me a feeling of stupidity and unimportance. Advisors should advise regardless of G.P.A. They should also want to help instead of making me feel like they don't have time. I could have gone to their office a little bit more, but after having an unproductive and pointless first or second meeting; there was no need for me to come back. After my last advisor, I turned to a teacher that was willing to help in any way he could. He has helped me tremendously; I just wish I could have asked him sooner. I don't know if advisors realize that they can make a positive difference in a student's life. I know my internship will teach me more than Truman ever will in terms of what I really want to do and what I really need to know. I know I will succeed in what I choose to do. Truman is a base for my achievement, but that is all it is.*

A Biology major comments on issues of diversity and racism:

> *My experiences at Truman have been very poor. The diversity on this campus is lacking, the college community is still quite ignorant, and the town in itself is quite dull. As a minority, I have had many encounters of racism and prejudice that have truly been detrimental to my career here at Truman. The only good thing that I got out of Truman was a fundamentally sound education.*

The following excerpt, from a Business Administration student, examines faculty enthusiasm, classroom practices, and practical application:

> *There have been several times a semester that I get frustrated with my time at Truman. I can hardly believe that I would complain about this topic, but there are several times that I feel that I have not done enough work in classes. It started when I was taking LSP. The classes are just basic classes that are taken as requirements for the liberal arts programs so I felt that in many instances (not all, I did have some very good teachers for LSP) the class was not as important to the professor because they had more important classes to teach in their area of focus. My feeling that my teachers had apathy towards the class extended into major classes as well though. Several times professors would cut material out of the syllabus because they would push assignments off and then run out of time to have students complete the work. I came to the institution to learn, not just get a piece of paper. I want to go out of a class knowing that I have learned something (which I tend to not feel often) since I have paid the money to attend the class. Another thing is that I wish there was a more practical application of the material. I know that you need to know theories before you can implement projects, but many times it seemed that we were not really required to put theory into practice in projects that would simulate real life happenings when we get to the work force.*

Finally, this Accounting major shares at length concerns regarding evaluation of faculty:

My experience here at Truman has been wonderful and terrible at the same time. I have met and learned from true teachers here who care about students as people, and who understand that although school is important, it is not the end all, be all of life. These are the same teachers who take the time out to attend sporting events and become involved with student life on the campus beyond the classroom. At the same time, I have learned even more (unfortunately) about teachers who think that their classroom is an open forum for them to preach about life. In one of my classes, I had a teacher spend hours talking AT us about what he thinks life is like, and where all the problems in this world come from. Although this may be interesting, the teacher did this in a way that not only made the students uncomfortable, it occasionally insulted some of them. Meanwhile, we were learning hardly anything about the topics supposedly covered in this class. This teacher is different, however, from the teachers that I have encountered that do not THINK they know everything, they KNOW they know everything. This makes for an interesting day when you do not understand something, and they make you feel like the smallest person in the world as they sigh because they are answering another one of your questions.

I did not write this paragraph to complain. On the contrary, from an overall perspective, I have enjoyed my experience here at Truman. What I seek to do is inform and correct. I want the school to know that they have not hired the best faculty in many positions. More importantly, I wish that for once in my life, I would be heard, and the students here would be heard. READ TEACHER EVAULATIONS EVERY SEMESTER. I have read the teacher evaluation paragraphs that say that the division head looks at them. However, I hope that they do not because if they have been ignoring me and hundreds of other students over the years, there is a much bigger problem. We are competent, smart, honest university students. I f there are several negative teacher recommendations in a particular teacher's file, there should be action taken to improve. However, over the last four years, I have not seen much change among the faculty possibly because of the ever popular line, "they have tenure".

The following excerpts came from students who are leaving Truman with more positive attitudes about their education here.

First, this excerpt from a Communication Disorders major describes faculty who made a difference outside the classroom:

I have really enjoyed attending Truman. The examples of works in this portfolio are just glimpses of all that I have learned during my four years here. I like the atmosphere at Truman. With very few exceptions, the professors are always willing to help you in any way they can. This was very evident last semester when my father died after several months of sickness. Throughout the time I was dealing with this, my professors could not have done more to help me. I was truly grateful for all of their support and understanding. I don't know if I would have received that much kindness and support in any other place. Besides the wonderful staff, I am grateful for the well-rounded education I received from attending a liberal arts and science college. It allowed me to explore many different other personal interests while still preparing for a career in my main interest.

The reoccurring theme of becoming "well-rounded" is also echoed in the following letter from another Communication Disorders major:

I would not trade my educational experience at Truman for anything. I think that Truman is a quality institution that prepares students for whatever path they choose to take after graduating. The courses are challenging, which prepares you academically, and there are many opportunities to get involved, which helps develop your leadership and interpersonal communication skills. I have been both a STAR and a Student Ambassador while at Truman because I actually enjoy telling people about Truman and my experiences here. I have definitely seen growth in myself in several areas. After leaving Truman, I will attend Penn State to pursue a master's degree in Speech-Language Pathology. Being at Truman has definitely made me more independent, more open-minded, and a more well-rounded individual. It has made me competitive for any future endeavors, whether in the work force or further education, because of the many opportunities for learning and leadership that I have had here at Truman.

On occasions, students remark negatively about the notion of Truman State University as the "Harvard of the Midwest." However, this Computer Science major offered a different perspective and provides evidence of the value of life-long learning:

> *I am positive Truman has prepared me for my upcoming workplace and my future ahead. I have worked for the US Department of Defense (DoD) every other semester since the summer of 2000. In this position I have worked next to students and graduates from such highly esteemed institutions as MIT, Yale, and Harvard. In no case has one of those students known more or been better prepared for the work we were presented with. I am of the opinion that undergraduate studies prepare you to learn more; they simply form a foundation. I believe that Truman has given me a solid base to build on.*

After discussing his choices regarding a major and a minor, he goes on to conclude the following:

> *In closing, I would like to thank you for the experience! During my senior year of high school, I applied to a variety of universities. Initially, I only heard of Truman through a single mailing that showed up relatively late in the process; I already had other applications out. I knew nothing of the university and only applied because of the free application. However, after additional research, a personal visit, and a scholarship offer, I decided to come to the "Harvard of the Midwest." I would not change my mind today. The LSP provided a true liberal arts and science education. I have had my eyes opened in multiple disciplines and discovered both personal and professional lessons. All of this has been completed in the small school setting Truman supplies, and the personal attention I received. It is only through the diligent work of the professors and their dedication to students that this is even possible. Thank you.*

Finally, this Business Administration major praises the role of professional organizations in student development and then discusses the valuable services provided by the Career Center. Thus, we are reminded of the important role played by the variety of experiences and offices in the lives of students:

> *Switching to a business major was one of the best experiences at Truman. The program has an assortment of professional organizations to join. These organizations not only create a social environment, but they also provide workshops and bring in speakers who can assist students in the journey to becoming a successful businessperson.*
>
> *Another enlightening experience is my interaction with the University Career Center. The students and directors utilize all of their resources, including alumni connections, to help students obtain their ideal job. The Career Expo they sponsor is especially useful; they recruit some of the top companies in the Midwest. This expo makes it easier for students to network and hopefully interview with company recruiters. For me, it was always pleasant to be able to get a company recruiter's office number, edit my resume numerous times, and practice my interviewing skills.*
>
> *With the quality education I have received and the skills I have developed from my experiences, I know I will be successful in the future…. I understand that my growth as a student is the product of a nurturing environment, dedicated professors, and helpful peers. I wish the staff, faculty, and current and future students of Truman the best.*
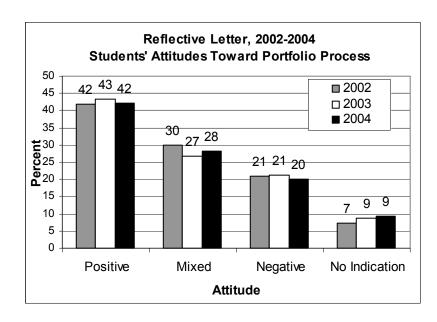
ATTITUDES TOWARD ASSESSMENT AT TRUMAN

This year, faculty readers noted where cover letters specifically discussed attitudes toward assessment activities in addition to the portfolio. Altogether, 197 students made such comments. Fifty eight were positive, 57 were mixed, and 82 were negative. Twenty two of the letters identified specific elements of the assessment program, with the Sophomore Writing Experience mentioned most frequently (n=15). Six of those comments were negative, six were mixed, and three were positive. Of the other assessment activities, junior testing received five negative comments and the National Survey of Student Engagement (NSSE) received one negative comment (no positive comments for either activity).
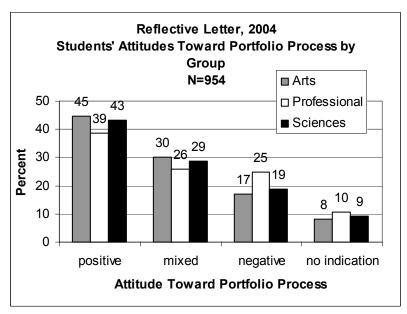
ATTITUDE TOWARD THE PORTFOLIO PROCESS

Overall, seniors express far more positive than negative attitudes about the portfolio process. This year, faculty readers found similar attitudes to those observed in 2003. This year, 9.3% of seniors provided no feedback, which is up slightly from the 8.7% in 2003. Forty two percent of seniors were positive about their experience with the portfolio, down one percent from last year's findings. Expressions of negative attitudes regarding the portfolio were down one percent. Twenty eight percent offered mixed opinions, which is up slightly from 2003. When sorted by group, seniors in the professional majors are more negative about portfolio assessment than are students in the other two groups.

As in previous years, many students admitted that they spent little time on their portfolios. A number of students indicated that they believed the task might have been personally beneficial if they had been able to devote more time to it. However, they often spoke of the flurry of other important activities that occur in conjunction with graduation or with coursework.

Some students expressed dismay at having to complete this requirement, feeling that it is just one more "assessment hoop" through which to jump.

Reflective Letter, 2002-2004
Students' Attitudes Toward Portfolio Process

Reflective Letter, 2004
Students' Attitudes Toward Portfolio Process by Group
N=954

The following excerpts serve as examples of some of the negative attitudes students expressed toward the portfolio process:

This passage is from a Business Administration major, who found the portfolio ill-timed and not personally productive:

The process I used in putting together this fine portfolio took around 25 minuets (sic) and included me reading my old papers and seeing which ones fit the requirements you presented. From doing this I have wasted time at the end of my semester I could have been using wisely and working on the four projects I have due by the end of the semester. Through the entire process I have not learned anything except that this was kind of dumb. I do think it is a good idea for the students to do this but on their own terms.

This excerpt is from a Communication Disorders major, who considers portfolios to be useful primarily to administration and faculty:

> *In general, I believe this portfolio assessment is more of a tool for the administration and faculty. I believe the students themselves know what they have gained or lacked in their education at Truman State. I believe that the portfolio should be optional. For those students who need to have a tangible academic Truman trail, the portfolio would be very helpful. There are others who assess their situations as they are in them and for those people, this portfolio could be viewed as frustration.*

Finally, this Chemistry major questions the value of portfolio results, in light of uneven student engagement with the process::

> *While I value what the portfolio project is trying to accomplish, I wonder how much it is succeeding. I was tempted on more than one occasion to just write something down so that I would have this finished rather than thoughtfully considering what I was writing. Although I did not end up doing that, I am sure there were other students who did. I don't think it is possible to get most students to take the portfolio project seriously without attaching some type of grade to it. If you could do this, I think you would get higher quality portfolios.*

On the other hand, many students find the portfolio process to be rewarding or see its value in improving student learning. Again this year, a number of students who anticipated that the process would be a waste of time were pleasantly surprised at what they discovered. The following excerpt from a Business Administration major points this out:

> *I have to admit that throughout my stay here at Truman I never really thought that putting together a portfolio would be a rewarding experience. After having put it together I can say most definitely that I was wrong. I truly enjoyed looking at some of the works that I have published during my time here. It was fun to be able to look at some of my works from when I was a freshman and compare them to some of the assignments that I have done this semester. It is easy for me to see that I have learned a lot during the last 4 years.*
>
> *I think the portfolio assessment is an excellent tool for Truman. It is important to see how students feel about there (sic) time spent on campus so that the University knows what needs to be changed. I really liked having the most rewarding personal experience prompt. This allowed me to be able to extend my assessment from simply the time spent in a classroom to my entire time spent at school.*

Many students point to the value of self-reflection and many others consider the portfolio in light of other assessment activities on campus. The following example is from an English major:

> *But for the time being, putting together this portfolio has given me an opportunity to look behind me, and in that sense I believe this type of assessment is beneficial. Instead of testing random, useless knowledge like a standardized test, this project forces a student to assess themselves. It's an excellent step on that road to adulthood and the "real world." And while its a little disturbing that so many hours of work and late nights can be slipped into an envelope to be read through and then stored away, I feel I have gained something from this project, if nothing more than putting the finishing touches on the collegiate portion of my road to self-discovery.*

Another English major also contrasts the portfolio with other assessment instruments and speaks about the implementation of electronic portfolios:

> *I feel that the assessment practices here at Truman can be a bit daunting. I feel that the portfolio is the best assessment we have here. I felt that the survey that we were given freshman week was given too soon. We had only been in college for a week and our answers to the survey would soon change. I am glad that the university cares enough to assess their programs. I was in one of the last groups to take the SWE and am very glad that it is no longer in place. I did not feel that it had much purpose. I feel that the Portfolio does much of the same assessment, but is much more general in purpose. I feel that the Portfolio is necessary and am glad to see that it has switched to the digital format.*

Finally, this Physics major points to a key benefit of the portfolio project – to make curricular changes that improve student learning:

> It is assuring to see that the University is actively engaged in evaluating the effectiveness of its mission to educate through liberal arts and sciences. In my time here, I can say that I have seen the University alter curriculum as a result, at least in part, of the portfolio. It is an assuring feeling to know that the educational process here at Truman is a dynamic and evolving one, always aiming to improve.

The Future of LAS Portfolio Assessment

To maximize the benefits to students, faculty and the university community, and to keep step with changes occurring within the university, the portfolio process must be assessed and amended each year. The following changes are envisioned as the project moves forward and are based on the recommendations of students, faculty readers, and administration.

ELECTRONIC PORTFOLIO IMPLEMENTATION

In the spring of 2004, a group of students participated in a pilot project by submitting their portfolio in digital form. The feedback from these students was overwhelmingly positive and provided the impetus to fully implement electronic portfolios in the fall of 2004. The pilot project used Blackboard as a means of providing the prompts and collecting the final portfolios. With the fall 2004 semester, the portfolio website was updated to provide all the information normally included in the packets, including the prompts (downloadable in Microsoft Word format), instructions for students, guidelines for faculty, an FAQ, and sample interdisciplinary papers (drawn from the "Book of Fours"). Students are expected to submit their completed portfolio via e-mail, CD, DVD, or diskette.

This shift in format will have a variety of effects upon students and faculty. As noted in the 2003 Assessment Almanac, digital format provides a number of significant benefits to students. Of course, students will now be expected to maintain artifacts in digital format, or to convert them for submission. This will create a challenge to some students who are less technologically-inclined and will require the assistance of ITS personnel and the portfolio director to insure that the challenge is met successfully. However, this shift also means that students are not limited to written documents and may submit alternative artifacts in their native format (i.e., Power Point presentations, web-based [html] materials, digital images, etc.).

Concomitantly, capstone faculty will likely have to make some adjustments in their methods of collecting and reviewing the portfolios as well. While some faculty may simply require students to print out the submissions for review, this change permits much greater flexibility. Though such changes cannot be predicted, it will be interesting to see what innovations occur in the future.

This shift will also have significant effects upon the annual reading process. The elimination of paper submissions means that faculty will read in new ways, primarily through the use of a personal computer. Participants in the 2004 readings were widely supportive of the shift in format and did not view the potential change in reading structure to be overly burdensome.

A final implication of this shift in format is the need to consider the best way to collect, store, and manage student submissions. Currently, the portfolio website is being used for student and faculty access to materials, at no additional cost to the University. However, the time requirements for data collection and management efforts are increasing significantly. One way of reducing the technical challenges for students and the administrative time requirements is to implement a web-based "e-portfolio." Students would not only learn about the expectations for their portfolio, but would submit their work directly to the website. Additionally, an on-line database system could update student progress and provide real-time data to administrators and the project director regarding submissions. Proprietary software is available from a variety of vendors at significant cost. Open source software (available without cost) is a viable alternative, though it would require significant technical support from ITS.

WRITING ASSESSMENT VIA PORTFOLIOS

Alongside the implementation of electronic portfolios, another significant change is the incorporation of the analytical writing assessment into the portfolio process. With the fall 2004 semester, students are asked to submit one work that demonstrates their best example of critical thinking and writing. This category was selected because it represents a natural link between two important skills. As such, this provides an important advantage to students, who are able to submit a "live" writing sample that they judge to be their best effort without adding significantly to their time requirements.

Of course, this also provides systematic data regarding the specific characteristics of student writing across the University. It is important to remember that it does not significantly increase the assessment workload of faculty or administrators and adds additional value to the portfolio project itself. Feedback from faculty readers and observations by the director will be used to ensure that the new assessment is both effective and efficient.

USING PORTFOLIO RESULTS MORE EFFECTIVELY

The portfolio assessment generates richer data than any annual report in the *Assessment Almanac* can accommodate. Since 2002, raw data has been saved in SPSS data file format, while data from 1998 through 2001 is saved in Excel spreadsheet format.

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 the weekly lunch series (sponsored by The Center for Teaching and Learning) have been traditional venues for sharing and discussing portfolio results, and these should continue to be utilized. The Faculty Development Committee and the Assessment Committee should consider other experiences where portfolio findings are shared and the portfolio process is explained.

Finally, efforts will continue to make the data and results available in electronic formats that can be easily accessed and analyzed. In-depth analysis of portfolio data, when coupled with information from other assessment instruments, can provide meaningful information that identifies key behaviors that will lead to improved student learning. Linking portfolio data with other assessment databases and student information is essential to this task, and should be considered an important next step in Truman's assessment program.