Chapter XVI: 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 academic year 2005-2006, 1104 students of the graduating class submitted portfolios.

When is it administered?
Students submit during their senior year. Most students complete the process as part of their capstone experience.

How long does it take for the student to compile the portfolio?
The average is three to four 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 late in the fall.

What type of information is sought?
Faculty evaluators and the Assessment Committee designate the types of works requested from students. Many of the requested items have remained constant. In the 2005-2006 academic year, a portfolio included works demonstrating *critical thinking and writing*, *interdisciplinary thinking*, *historical analysis*, *scientific reasoning*, and *aesthetic analysis*. The portfolio also included a work or experience the student considered *most personally satisfying*, and *a cover letter* in which students reflect on ways they have changed while at Truman and offers any other thoughts they care to express about their experiences. 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.

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. 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 reaccredidation 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.

2006 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 2005-2006 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 2006, portfolios from 1104 students were read and evaluated by faculty readers. Portfolio submission was strictly enforced as a graduation requirement for those who had matriculated after 1999. Therefore, the portfolios represent nearly 100% of graduates. The number of degrees conferred may not match the number of portfolios in any given year for two primary reasons. First, students who earn multiple degrees need only submit one portfolio. Second, many students submit as part of their capstone course rather than in their final semester. For example, some of the students submitted their portfolio in May 2006, but graduated in December 2006.

Forty-six faculty and staff members read and evaluated the portfolios, representing all ranks and twenty-two academic disciplines from every division except Business and Accountancy. Thirteen of the faculty participants were new readers. In order to ensure that the reading process was completed, several faculty volunteered to read more than one week. The portfolio director, who is a faculty member, organized the readings sessions, trained readers in holistic evaluation, and facilitated discussions. 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	51
Agricultural Science	13
Art	34
Art History	4
Biology	101
Business Administration	147
Chemistry	13
Communication	76
Communication Disorders	22
Computer Science	27
Economics	12
English	113
English: Linguistics	4
Exercise Science	65
French	6
German	5
Health Science	37
History	53
Justice Systems	27
Mathematics	20
Music	18
Nursing	40
Philosophy and Religion	16
Physics	9
Political Science	34
Psychology	104
Sociology/Anthropology	26
Spanish	15
Theatre	12

Reading sessions were scheduled over the three weeks from May 15 to June 2, 2006. Approximately one third of the readers participated during each week, gathering daily at 8:00 AM and ending at 4:00 PM (5:15 PM during the third week, shortened by one day due to the Memorial Day holiday) with an hour for lunch and a morning and afternoon break.

The 2006 Portfolio

- Critical Thinking and Writing
- Interdisciplinary Thinking
- Scientific Reasoning
- Historical Analysis
- Aesthetic Analysis
- Most Personally Satisfying Experience
- Reflective Cover Letter

Student works sought with the 2006 portfolio were elicited by prompts for demonstrating “critical thinking and writing”, “interdisciplinary thinking”, “scientific reasoning”, “historical analysis” and “aesthetic analysis”, focusing on students’ critical thinking across the liberal arts and sciences curriculum. A sixth prompt asked 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.

2006 Portfolio Findings

The findings of the 2006 Portfolio Project are presented for the entire group of participating seniors. For ease of comparison, the findings are reported using the same or similar language to that found in previous reports. The findings are also sorted and reported according to three large groupings based on students' majors: "Arts/Humanities," "Science/Math," and "Professional" studies. The groupings are not perfectly precise. For example, some SOAN majors may be better classified as Science rather than Humanities, but the groupings are kept consistent with previous years for ease of comparison. The accompanying table shows how the various disciplines are characterized in this scheme. When a student listed more than one major, grouping was based on the first major.

Major Groups		
Arts/Humanities	Science/Math	Professional
Art	Agriculture	Accounting
Art History	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	
Sociology/Anthropology	Political Science	
Spanish	Psychology	
Theatre		
382 Portfolios	435 Portfolios	287 Portfolios

Because this assessment relies on students to first keep and then select materials for inclusion in their portfolios, the resulting data are inherently "fuzzier" than data from a standardized, systematically controlled instrument. Students occasionally indicate that they are submitting work that is not their strongest demonstration because they did not keep or did not receive back the artifacts which best demonstrate their competence in the specified area. Other students report that they were never challenged to use the thinking skills or the mode of inquiry requested by individual prompts and, therefore, cannot submit material. Lack of motivation may inhibit the thoughtfulness of the selection process or engagement in self-assessment encouraged by the prompts for each portfolio category. In their reflective cover letters, students report a wide range of motivation levels and frequently are quite frank in stating that they compiled their portfolio quickly and with little thought because other 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 did not to submit materials in certain categories, 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 that are collaborative or dealing with issues of race, class, gender or international perspectives.

Critical Thinking and Writing

Seniors submit works to demonstrate their abilities as critical thinkers and writers. In 2006, items were elicited with the following prompt:

> *Please include an example of your best writing that demonstrates your critical thinking skills. As stated in Truman's LSP outcomes, good writing is a reflection of good thinking. Thus, as a result of an intellectual process that communicates meaning to a reader; good writing integrates ideas through analysis, evaluation, and the synthesis of ideas and concepts. Good writing also exhibits skill in language usage and clarity of expression through good organization.*

Faculty readers will evaluate your writing sample with attention to four areas:

1. *Thinking (developing ideas, making connections between ideas, integrating ideas to make meaning). For further information regarding the nature of critical thinking, review the prompt entitled "Critical Thinking Definitions."*
2. *Organization (communicating a purpose, writing clearly, making strong arguments, drawing conclusions).*
3. *Style (employing appropriate voice and tone, having an audience in mind, choosing appropriate words, using appropriate sentence structures).*
4. *Mechanics (adhering to the accepted conventions of grammar and punctuation, spelling words correctly).*

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

NOTE: Writing samples from ENG 190 ("Writing as Critical Thinking") are generally NOT the best examples of critical thinking.

This prompt emerged from the work of the ad hoc Writing Assessment Committee. The category was piloted in 2004 and fully implemented in 2005. 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

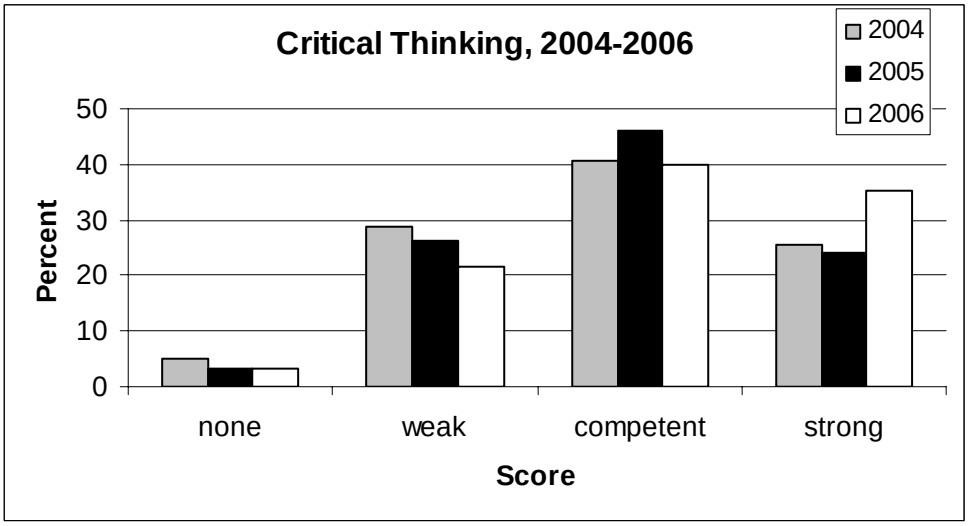
- Number of submissions: **1005**
- Percent of "no submissions": **9%**
- Median critical thinking (on a 0 – 3 scale): **2**
- Mean critical thinking score (on a 0 – 3 scale): **2.1**
- Highest scoring "group": **Arts/Humanities**
- Most frequent source (course): **ENG 190**
- Most frequent source (discipline): **JINS**
- Trend: **Slight increase**

Out of the 1104 portfolios collected, 1005 (91%) submitted readable examples of critical thinking. The others did not include a submission for this category, provided a "self-report" in which they described the work but did not provide a copy, or provided an electronic file which had been corrupted. Note, in previous years, self-reports were considered a separate category. This year they are added in to the "no submissions," making the percent of no submissions appear higher. 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.

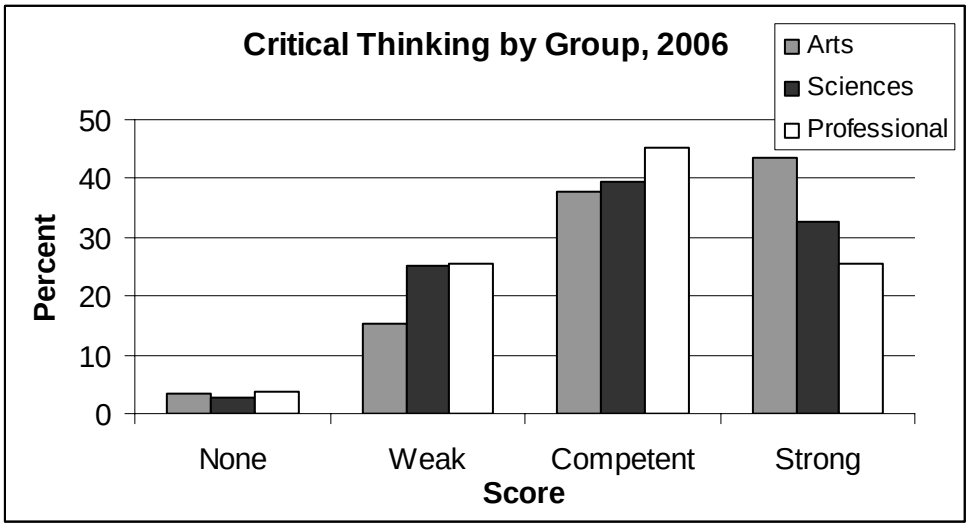
Critical Thinking Scoring Rubric

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

In 2006, over 75% of seniors submitted material judged as demonstrating "competence" or "strong competence." Only 3% 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 continues to show mild increases.



When the data are sorted according to major groups, Arts/Humanities majors demonstrate stronger critical thinking skills than those with Science/Math or Professional majors. A score of "strong competence" was the modal score among majors in the Arts and Humanities. In other terms, 43% of submissions from Arts and Humanities majors were rated as strongly competent and over 80% were rated at competent or above. For comparison, 72% of Science/Math majors and 70% of Professional majors were rated at "Competent" or above. No group had more than 4% of submission demonstrating no competence.



Despite the suggestion on the prompt, Writing as Critical Thinking (ENG) was the most common single source of submissions. Overall, however, more submissions came from JINS courses than from English courses. PHRE was also a significant source of submission, with Ethics (PHRE 188), Introduction to Philosophy (PHRE 186), and Exploring Religions (PHRE 185) all in the top ten most frequent sources.

As with previous years, the majority of works chosen by seniors for this category were generated in the last two years of study. Thirty-three percent of the submissions were examples of work done as a senior, 42%

Critical Thinking and Writing

Top Ten Courses		Top Ten Disciplines	
ENG 190	45	JINS	186
PHRE 188	29	ENG	182
ED 389	23	PHRE	96
BSAD 460	19	BSAD	75
CHEM 421	15	COMM	62
PHRE 186	15	HIST	47
PHRE 185	12	POL	43
BSAD 349	11	JUST	36
ENG 209	11	PSYC	30
JINS 311	11	ED	28

were from the junior year, 15% came from the sophomore year and 10% were produced during the first year. Forty-eight percent of the submissions fulfilled assignments for classes in the major, 38% were generated in Liberal Studies Program classes, and the rest were products of elective courses, minor requirements or other sources. Of the items submitted, 5% dealt with issues of class, 7% dealt with issues of race, and another 11% had international or intercultural perspectives. Almost 10% of the submissions dealt with issues of gender. Six percent were the product of collaborative effort.

Analytical Writing Assessment

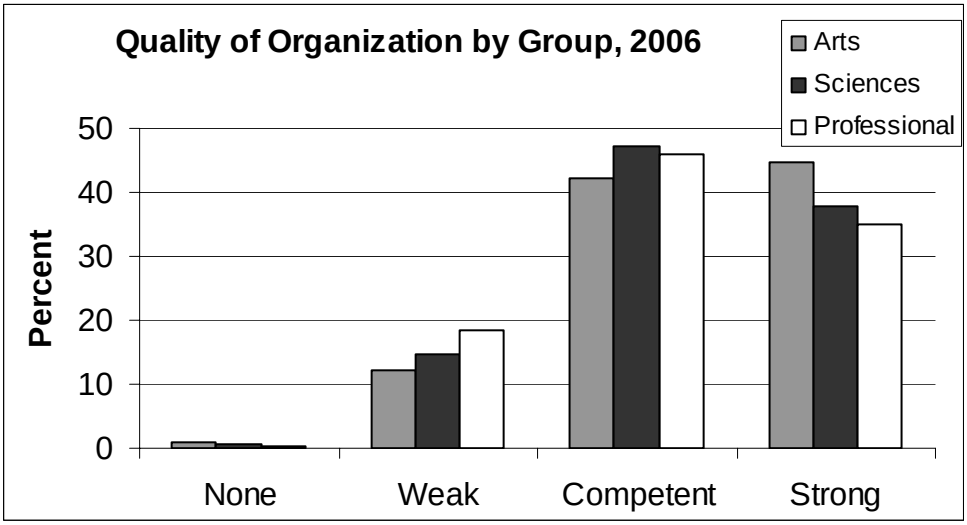
In addition to reading submissions for critical thinking, faculty readers assessed them for evidence of writing skills. Readers were trained by a member of the Writing Across the University Committee, with the assistance of the University Assessment Specialist and the Portfolio Project Director. As with 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:

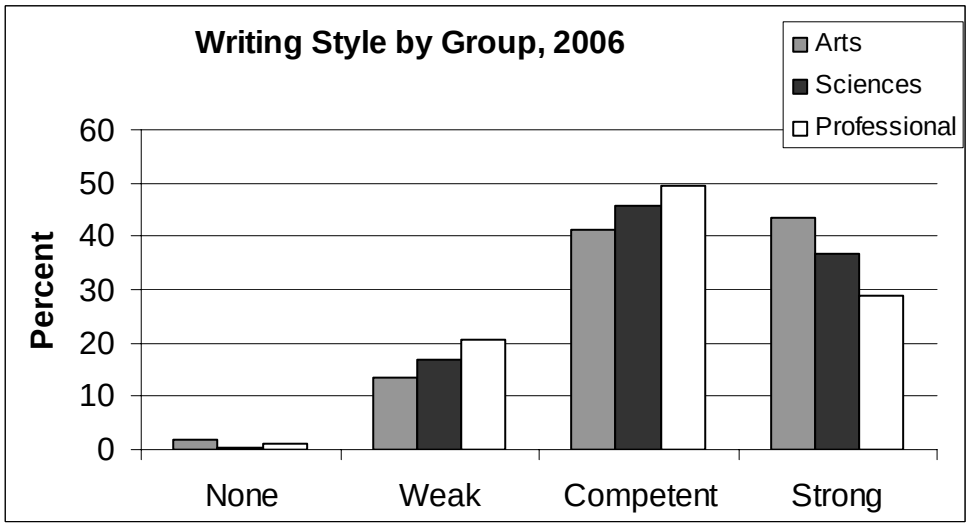
Rubric for Analytical Writing Assessment

	0	1	2	3
Organization	lacks introduction lacks controlling idea lacks clarity lacks logical structure lacks conclusion	includes weak introduction displays controlling idea exhibits weak clarity exhibits weak logical structure includes weak conclusion	includes adequate introduction displays adequately developed controlling idea exhibits adequate clarity exhibits adequate logical structure includes adequate conclusion	includes strong introduction displays clear, well-developed controlling idea exhibits excellent clarity exhibits strong logical structure includes well-supported conclusion
Style	tone or voice is off-putting seems to have no audience in mind frequently chooses inappropriate words exhibits frequent inappropriate sentence structure uses no appropriate stylistic conventions	contains inconsistent tone or voice shows little audience awareness sometimes chooses inappropriate words exhibits occasional inappropriate sentence structure uses few appropriate stylistic conventions	contains occasional lapses in tone or voice shows audience awareness chooses appropriate words exhibits appropriate sentence structure uses appropriate stylistic conventions	maintains a consistent tone and voice shows consistent audience awareness exhibits skill in word choice exhibits sophisticated sentence structure skillfully uses appropriate stylistic conventions

	0	1	2	3
Mechanics	lacks command of mechanical conventions: grammar, punctuation, or spelling errors present major distraction to readers	demonstrates weak command of mechanical conventions: grammar, punctuation, or spelling errors are occasionally distracting to readers	demonstrates adequate command of mechanical conventions: grammar, punctuation, or spelling errors are minimally distracting to readers	demonstrates excellent command of mechanical conventions: grammar, punctuation, and spelling small errors do not distract readers

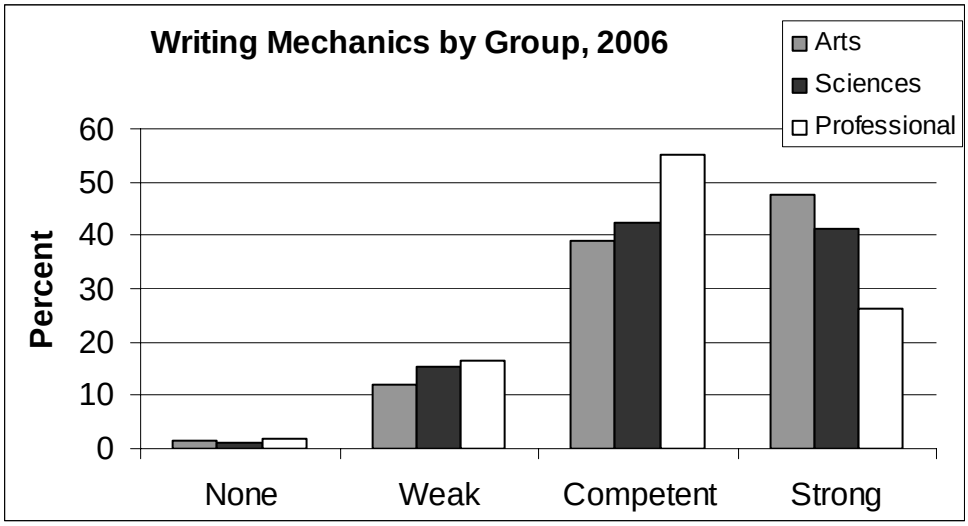
Based on this scoring rubric, the median score of the 1005 critical thinking submissions was "competent" (2) for each of three categories. The mean was 2.23 for organization (up from 2.13 in 2005), 2.18 for style (up from 2.07 in 2005), and 2.22 for mechanics (compared to 2.23 in 2005). Again this year, readers found that students are generally competent in all three aspects of writing for which they were evaluated. Furthermore, scores in each category are moderately correlated with other categories: the correlation between organization and critical thinking is .67, while the correlation between mechanics and critical thinking is .52. 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 45% of submissions from Arts/Humanities were judged as strongly competent. By comparison, 38 % of Science and Math majors' submission and 35% of Professional majors' submissions were scored in the highest categories.





Judgments of writing style revealed that the majority of submissions were rated as either competent or strongly competent. Forty-four percent of Arts/Humanities submissions were scored in the highest category. Thirty-seven percent of Science/Math submissions and 29% of Professional majors' submissions received the highest rating.

For the final element, mechanics, Arts/Humanities majors' submissions were slightly stronger: the modal score for them was 3, compared to 2 for each of the other groups. Furthermore, 48% of Arts and Humanities majors rated as strongly competent. Forty-one percent of Science/Math submissions were scored this way, and 26% of Professional majors' works received this score.



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.*
>
> *To illustrate interdisciplinary thinking, consider reviewing the examples from the "Book of Fours," which is available on the Portfolio Project website. These outstanding works were submitted by Truman students for this category and demonstrate a strong command of interdisciplinary thinking skills.*

In 2006, 6.2% of participating seniors did not submit an work demonstrating "interdisciplinary thinking". Approximately half of those provided "self-reports" of interdisciplinary work they remembered but no longer possessed. Because faculty readers did not have direct evidence of interdisciplinary thinking, self-reports were not evaluated. Altogether 1036 submissions were evaluated. To evaluate inter-rater reliability, 402 of the submissions were read a second time by a randomly selected faculty reader. In all cases the reader evaluated works "holistically" while keeping in mind the following descriptors:

Interdisciplinary Thinking at a Glance

- Number of submissions: **1036**
- Percent of "no submissions": **6.2**
- Mean score (on a 0-4 scale): **2.0**
- Median score (on a 0-4 scale): **2.0**
- Highest scoring "group": **Science/Math**
- Lowest scoring "group": **Professional**
- Most frequent source (course): **JINS 325**
- Most frequent source (discipline): **JINS**
- Trends in recent years: **Slight increase**

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

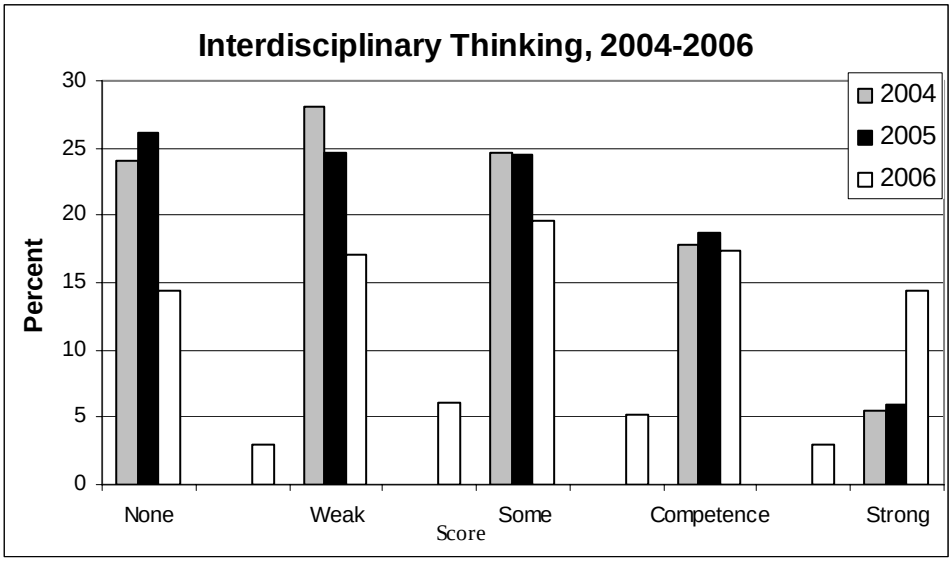
- A number of disciplines
- Minimal disparity of disciplines
- Minimal analysis using multiple disciplines
- Minimal evidence of comprehension of interdisciplinarity

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

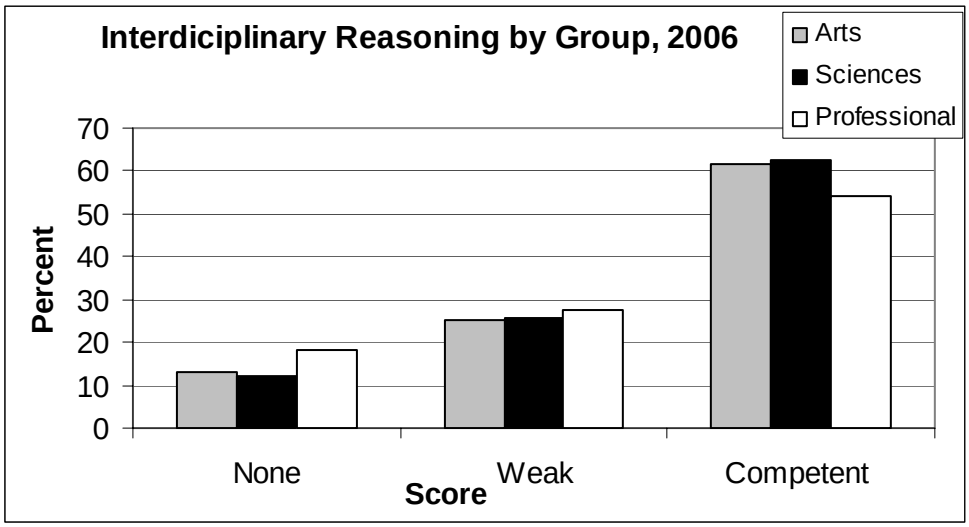
0 No demonstration of competence as an interdisciplinary thinker

- Only one discipline represented
- No evidence of multiple disciplines, of making connections among disciplines, or of some comprehension of interdisciplinarity



Overall, inter-rater reliability was poor, suggesting that the definition of interdisciplinary thinking was not entirely consistent across raters. Spearman correlation between raters was .48 and Kappa was .17. The most recent year in which submissions were double-read was 2003. At that time, reliability was assessed by the number of splits – differences between raters of 2 or more points. The split rate was 18% in 2003 and 24% in 2004 these are only slightly lower than the 25% split rate in 2006. (For comparison, random scoring with the five level scale used here would result in a 48% split rate.)

For those submissions read by two different evaluators, the overall score on a 0- to 4-point scale is the average of the two individual scores .The histogram shows the results for "interdisciplinary thinking" in 2006 with the results for 2004 and 2005. Because of the change to double reading of submissions, the 2006 scores include some half numbers. While this makes direct comparison less straightforward, summary conclusions can be drawn. For example, the total percent of submissions receiving a score of 2 or better was 59.5 %, compared to 48.4% in 2005 and 47.7% in 2004.



The data sorted by major group are summarized in the chart at left. Because some submissions were double-read and received half scores, scores between .5 and 1.5 are grouped into "Weak", and scores between 2 and 4 are "Competent." Students with Professional majors were slightly less likely to score in the competent range, slightly more likely to submit works that received a score of 0. However, overall differences among groups were relatively small.

The interdisciplinary items were selected by seniors from 34 academic disciplines, as well as independent research projects. The remainder were transfer credits or were not identified by the student. This year, 63.3% of the submissions came from JINS courses, up slightly from 58.6% in 2005. In fact, of the top 30 courses used for submissions in this category, only one was not a JINS course. Concomitantly, over 68% of submissions came from LSP courses, while 21% were drawn from the major. The rest were drawn from electives (6%), academic minor requirements (5%), and other miscellaneous sources (less than 1%). Furthermore, submissions from JINS courses had a mean score of 2.18, while all other submissions had a mean score of 1.71. These data continue to support the notion 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.

Most of the work reflected in the interdisciplinary submissions was accomplished by students in their junior and senior years (66% and 21%, respectively). Only 9% came from the sophomore year and 3% from the first year. Over 8% 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, 14.3% of submissions dealt in some way with international issues, 11.3% with race, 11.2% with gender, and 8.3% dealt with class.

Interdisciplinary Thinking

Top Ten Courses			Top Ten Disciplines	
JINS 325	44		JINS	656
JINS 301	32		ENG	48
JINS 322	31		BSAD	40
JINS 351	27		COMM	32
JINS 311	25		PHRE	30
JINS 353	23		HIST	29
JINS 347	22		PSYC	22
JINS 335	21		ART	20
JINS 306	21		JUST	15
JINS 345	20		ECON	14

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.

Historical Analysis at a Glance

• Number of submissions:	**989**
• Percent of "no submissions":	**9.0**
• Median score (on a 0-3 scale):	**1.0**
• Mean score (on a 0-3 scale):	**1.40**
• Highest scoring "group":	**Arts/Humanities**
• Lowest scoring "group":	**Professional**
• Most frequent source (course):	**HIST 105**
• Trend	**Stable Scores**

> *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, 9.0% of participating seniors did not submit a work for this category. Just over half of those provided "self-reports," which were not evaluated by faculty readers. A total of 989 submissions were evaluated and scored, using the following descriptors:

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

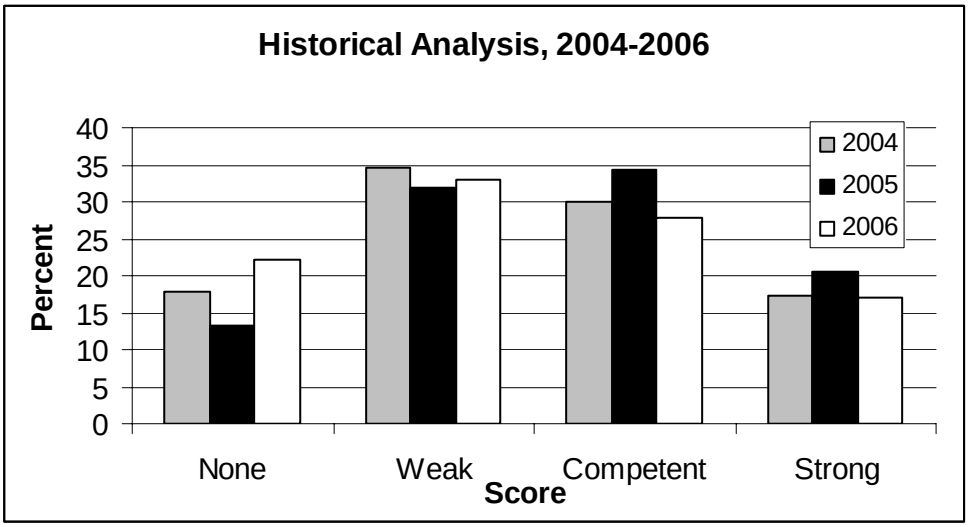
Minimally competent submissions may:

- ❖ 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.

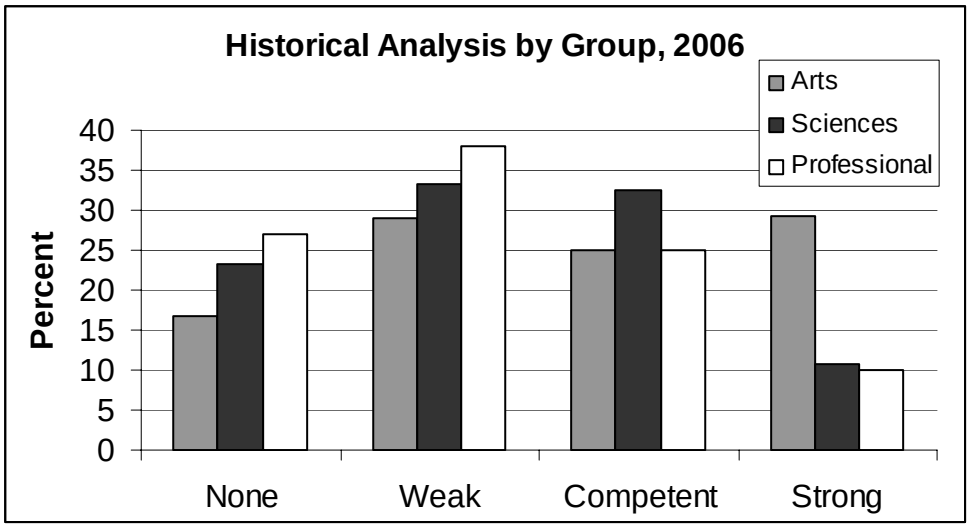
0 No Competence

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

The chart at right compares the data for Historical Analyses over the past three years. Until 2004, there had been continued decreases in the number of submissions demonstrating no competence. Data for 2006 suggest that trend may have stabilized. The median score of 1, and a mean score of 1.40 is slightly lower than the scores for 2005.



The chart below presents the data sorted according to the major groupings. In this category, the most frequently occurring score among students majoring in the Arts/Humanities disciplines was 2, while both Science/Math majors and Professional majors had a modal score of 1.



As expected, the discipline from which students chose work for this category most frequently was History. Slightly over 33% of the items came from history courses. JINS courses accounted for nearly 14% of the submissions and English courses accounted for 9% of the submissions. 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 over 15% of the total number.

HISTORICAL SOURCES

Top Ten Courses		Top Ten Disciplines	
HIST 105	95	HIST	331
HIST 104	56	JINS	138
ENG 190	27	ENG	92
HIST 131	27	PHRE	49
PSYC 429	27	POL	41
HIST 132	26	COMM	38
HIST 133	21	ART	37
PHRE 185	17	PSYC	34
ART 223	14	ECON	30
POL 161	14	SOAN	30

Approximately 18% of the submissions were produced in the senior year, over 21% in the junior year, 36% in the sophomore year and 24% in the first year. Over 51 percent of the items submitted were the result of work in LSP classes, 31% were assignments in major courses, 7% were from elective courses and 9% were produced in classes taken to fulfill minor requirements. Of the 989 submissions read for historical analysis, 17% dealt with international perspectives, 11% with race, 8% with issues of gender, and 4% with class issues. In this category, only 3% 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 reason 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, 10.4% of seniors did not submit materials to demonstrate "an ability to reason scientifically". This percentage is higher than the non-submission rate of 8.4% in 2004. As in other categories, students sometimes mistakenly believe that they may opt out of a portfolio component if they opted out of the related LSP mode of inquiry.

Scientific Reasoning at a Glance

- Number of submissions: **989**
- Percent of "no submissions": **10.4**
- Median score **1.0**
- Mean score (on a 0-3 scale): **1.28**
- Highest scoring "group": **Science/Math**
- Lowest scoring "group": **Professional**
- Most frequent source (course): **BIOL 100**
- Most frequent Source: (discipline): **Biology**
- Trends: **Stable scores**

Readers evaluated 989 submissions, 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". Readers were assisted by a set of descriptors, compiled by a group of faculty from the natural science and professional disciplines. This set of descriptors is below.

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

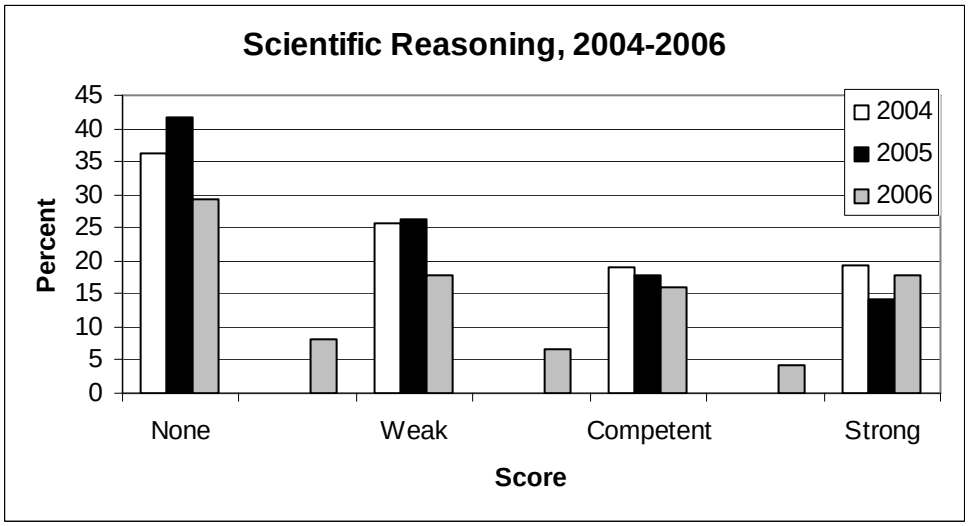
1 Minimal Competence

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

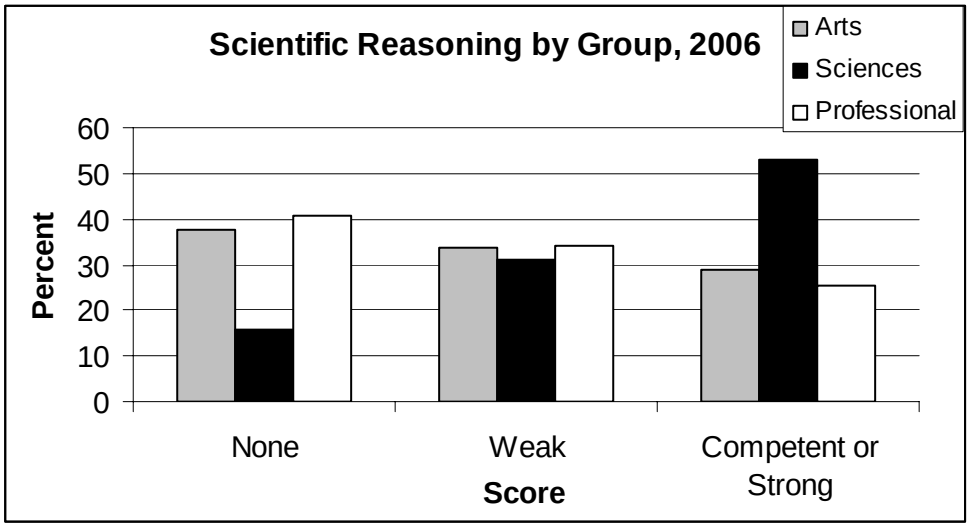
0 No demonstration of competence in scientific reasoning

- ❖ 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



Four hundred and sixty-eight of the submissions for Scientific Reasoning were read by a randomly selected second reader to assess inter-rater reliability. The spearman rho correlation between raters was .66, and the kappa coefficient was .35, indicating moderate levels of agreement. For items scored twice, the average of the two raters was used in subsequent analyses. Please note that the half scores in the chart above represent those averages of raters.

As in past years, the most common finding was "no evidence." This is the seventh consecutive year that submissions scored a zero outnumbered submissions judged "minimally competent." Scores over the past three years have been consistently low: 1.21 in 2004, 1.05 in 2005, and 1.28 in 2006.



The chart at the right shows scientific reasoning by group. Because some submissions were double-read and received half scores, scores between .5 and 1.5 are grouped into "Weak," and scores between 2 and 3 are "Competent or Strong." Again this year, Science/Math majors account for most of the higher scores. Over 53% of the submissions from Science and Mathematics majors scored a 2 or above, while only 29% of the Arts/Humanities received the two highest scores. Majors from the professional group had the lowest scores: only 25% of them scored in the competent and strong competence ranges.

While Biology remained by far the most popular source discipline, the disciplines in the top ten remained the same. The biggest change is that Physics produced mores submission and Political Science fewer than in 2005. The top ten courses were very similar to those from 2005 and 2004. Submissions from the senior year accounted for 29%, 35% came from the junior year, 21% from the sophomore year, and almost 12% were generated by first-year students. Forty-seven percent of the submissions were generated by students satisfying requirements of their majors, 35% were from LSP courses, while minor and elective courses accounted for 6% and 7%, respectively.

Slightly over 2% of the submissions for scientific reasoning dealt with international perspectives. Gender issues were observed in almost 3% of the submissions; 1% of science submissions examined issues of race, and about 1% touched upon issues of class. Nearly 35% of submissions were the results of collaborative work.

Scientific Reasoning Sources

Top Ten Courses			Top Ten Disciplines	
BIOL 100	113		BIOL	271
AGSC 100	38		PSYC	109
CHEM 100	36		CHEM	83
PSYC 466	34		JINS	74
BIOL 200	28		PHYS	48
BIOL 107	23		AGSC	46
BIOL 315	21		BSAD	39
BIOL 325	19		ENG	37
POL 300	14		POL	33
PSYC 266	14		STAT	33

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, 12% of the portfolios failed to submit a usable item for this category. Of those submitting, the median score was 2, indicating competence. The mean score for the 970 submissions was 1.5, which is similar to last year's mean of 1.4.

Aesthetic Analysis at a Glance

- Number of submissions: **970**
- Percent of "no submissions": **12%**
- Median score (on a 0-3 scale): **2**
- Mean score (on a 0-3 scale): **1.5**
- Highest scoring "group": **Arts/Humanities**
- Most frequent source (course): **THEA 275**
- Most frequent Source: (discipline): **ENG**
- Trend **Slight increase**

The following set of descriptors was created by relevant faculty members during the course of readings in 2004, and have been used since that time.

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:

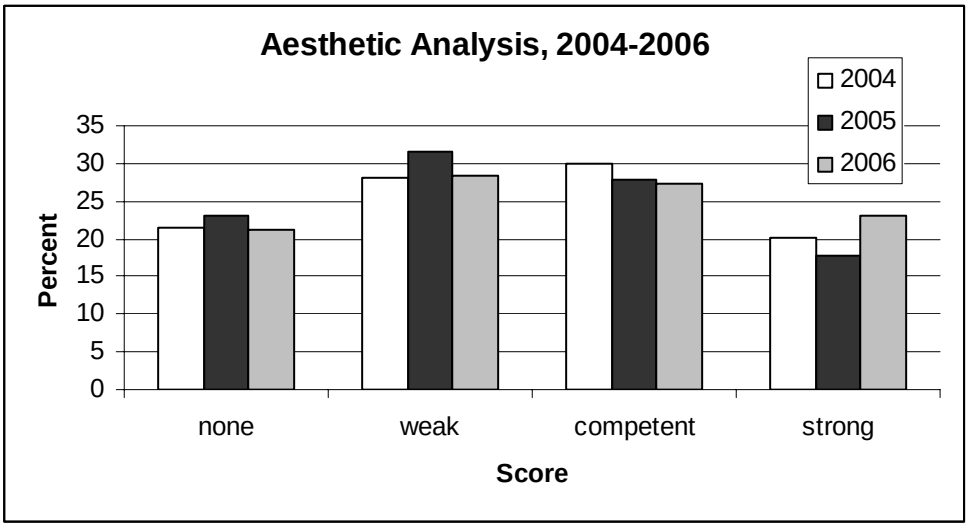
- Minimal evidence of engagement with the cultural artifact or production (creative works in visual art, music, literature, theatre, film, dance…)
- Placement of the artifact or production within a context (historical, cultural, period, aesthetic movement…)
- Description of the artifact or production's 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

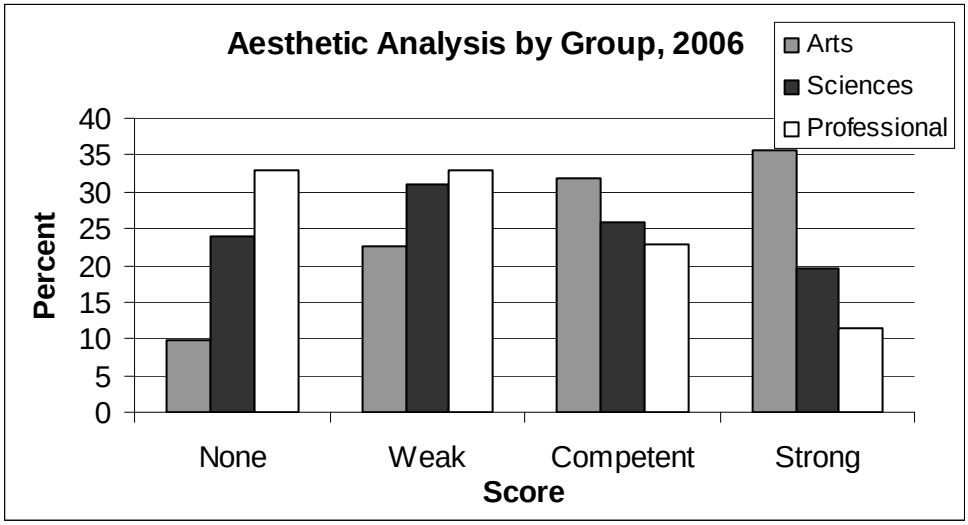
0 No demonstration of competence in aesthetic analysis

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

In 2006, 50% of Aesthetic Analysis submission received a score of competent or strongly competent. In 2005, it appeared that the proportion of submissions showing no evidence of competence was slowly rising. The proportion of submissions rated strongly competent was slightly lower in 2005 than surrounding years; however, the pattern of 2006 scores appear to be very similar to the pattern of scores from 2004.





When comparing groups, Arts and Humanities majors scored significantly better than either Science/Math or Professional majors. The median score was 2 for Arts and Humanities majors, and 1 for Science/Math and Professional majors. The differences among groups are more striking when considering most frequently occurring scores. For Arts majors, the modal score was 3 – strongly competent. By comparison, the mode for Science and Math majors was 1 and the mode for Professional majors was 0.

As one might expect, many entries for this category came from English, Theatre, Music, and Art. Interestingly, JINS courses were used by 149 students. Several students submitted aesthetic analyses of consumer products, pushing BSAD into the top ten disciplines of submission. THEA 275 was the most popular single course in this category.

Aesthetic Analysis Sources

Top Ten Courses		Top Ten Disciplines	
THEA 275	45	ENG	250
ART 223	43	JINS	149
MUSI 204	39	MUSI	133
MUSI 207	36	ART	102
ENG 265	31	THEA	60
MUSI 205	21	COMM	44
COMM 350	20	HIST	32
ENG 225	20	PHRE	32
ENG 209	19	SPAN	19
ENG 190	17	BSAD	15

Of the 944 submissions where the year produced was identified, 24% were created during the senior year. Another 32% were produced during the junior year, while 21% were from the sophomore year and 22% from the first year. Over 56% of the submissions came from LSP courses, while 26% were from major courses. Roughly 7% were from minor course, and 10% from elective courses. Collaborative efforts comprised only 4% of the submissions. In this group, 10% dealt with international perspectives, 3% considered issues of class, 7% involved gender issues, and 5% examined issues of race.

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, 13% of the portfolios did not contain an item or a description representing a "most satisfying experience" (compared with 5 % in 2005 and less than 1% in 2004). In all, the 961 submissions were reviewed. Based on submissions from the previous year, faculty readers were asked to examine whether the student found the experience personally satisfying because it 1)represented a personal best, 2) was especially challenging, 3) achieved personal goals 4) modeled working as a professional, 5) achieved significant personal growth, or 6) was a collaborative effort. If none of these was a good representation of the student's reasoning, a more detailed explanation was given.

Why Was It Satisfying?	Number
Achieved Significant Personal Growth	356
Personal Best	308
Especially Challenging	277
Achieved Personal Goals	211
Working as a Professional	206
Collaborative Effort	74
Enjoyable Educational Experience	33
Especially Creative	33
Friendships / Relationships	22
Self Reflection / Expression / Discovery	15
Philanthropic/ Helped Others	11

Of the 961 submissions, 43 students gave no explanation of why they found the experience satisfying. The accompanying table presents the reasons why a submission was most satisfying for the remaining submissions. 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 numbers represent more explanations than the number of submissions. Thirty-seven percent of submission explained that one of the reasons for satisfaction was the result of having achieved "significant personal growth," 32% considered it a "personal best," and 29% found the experience "especially challenging."

Context	Frequency	
Coursework in the major	430	45
Coursework in the LSP	186	19
Coursework in the minor	52	5
Elective Coursework	48	5
Study Abroad	41	4
Other Academic	24	2
Internship	21	2
Social Fraternity or Sorority	21	2
Research	19	2
Varsity Athletics	18	2
Other Creative effort	15	2
Service organization	12	1
Relationships/Friendships	8	1
Public Performance/ Recital	7	1
Intramurals	6	1
Campus Employment	6	1
Off-Campus job	5	1
Student organization - Other	5	1
Campus Media	4	0
Professional organization	4	0
Religious organization	3	0
Student Governance	3	0
Residence Life	2	0
Volunteer Work	2	0
Club Sports	2	0
Other	17	2

Students always point to a wide variety of settings for their most personally satisfying experiences. Many students submit academic work of which they are especially proud. This year, eight of the top ten most frequent settings are academic. Other seniors 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. As in past years, the great majority of submitted artifacts were papers, essays,

projects, and lab reports generated in classes or through independent research activities. It is possible that selecting academic works for other categories primes students to think of academic works that are personally satisfying, but it is interesting that so many students are most proud of some artifact of their academic experience.

Almost 45% of the "most satisfying experiences" occurred in the senior year, 30% in the junior year, 9% in the sophomore year, and 6% in the first year. The remaining submissions occurred over times spanning more than a year (5.3% last year). Nearly seven percent of most personally satisfying experiences dealt with international perspectives. Many of these were study abroad experiences and reflect the important role of this activity for Truman students. Issues of gender were considered in 3% of the submissions, while 3% dealt with race issues, and less than one percent dealt with issues of class. This is very similar to the pattern from 2005.

Reflective Cover Letters

Finally, the portfolio asks students to compose a cover letter addressed to the Liberal Arts and Science Portfolio Project Team. In 2006, 86% of seniors submitted a cover letter. While the academic works submitted in other categories provide direct insight into student achievement, the cover letters provide a more personal view of student attitudes and opinions. During the weeks of portfolio assessment and evaluation, the student letters are generally reserved for the last day. While reading student letters, faculty readers are instructed to reserve one or more 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 praise that seniors wish to express.

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

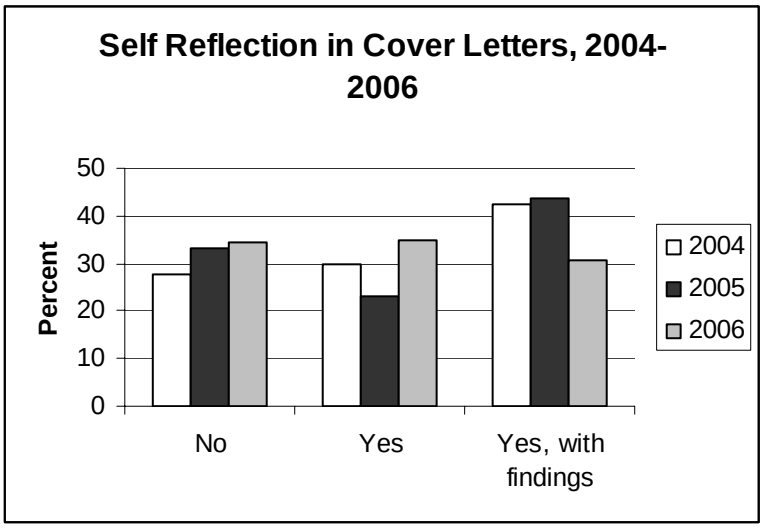
- The process used and time spent in compiling their portfolio.
- What they learned about themselves through the process.
- Their attitudes toward portfolio assessment (and assessment at Truman in general).
- Their attitudes about their education at Truman.
- Their ideas, reactions, and suggestions regarding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

Faculty readers track the number of hours devoted to the portfolio assemble, and look for self-reflection in the letters. When students express attitudes about the portfolio, about assessment and about their education, readers note whether they are positive, mixed, or negative. 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. Each cover letter excerpted in this report was recommended by faculty readers for sharing with the university community.

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 2006 was 3.7 hours, approximately the same as was reported in 2005. This average includes all responses that could be put into quantitative form – some students did not address the time they spent on this task, and others gave responses like “I spent a little bit each week for the whole semester.” Even as such, a small number of students reporting a very large amount of time makes this average a bit misleading. Fifty-five percent of students reported spending 3 or fewer hours on the portfolio. Eighty-seven percent reported 5 or fewer hours. One student reported spending 30 hours on the portfolio. The mean of 3 hours is probably the most representative average.

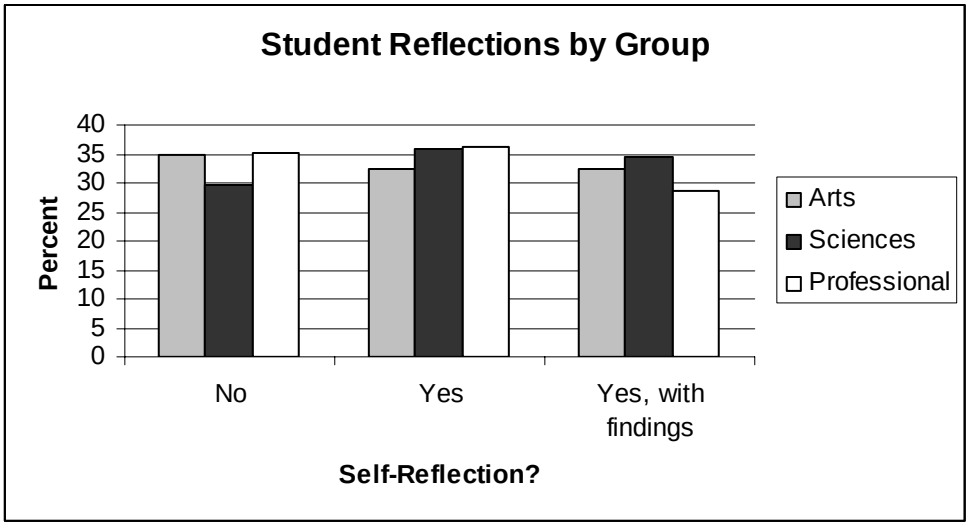
Students’ descriptions of the mechanics of portfolio assembly were strikingly similar. For example, an exercise science major reported the following:

> *Overall, I probably spent about 3 hours on this portfolio. One hour was spent deciding what I would use to submit with each analysis; 1 hour actually writing up the analysis; and another hour formatting, cutting and pasting, searching for the submission pieces, and any other maintenance associated with this assignment.*



Ideally, the portfolio serves as an opportunity for students to reflect on their experiences at the University. This year, many students did engage in self-assessment; however, the number of students who share that self-reflection declined relative to 2005. Faculty readers check "yes" for reflection presented only as generalizations and "yes, with findings" when the writer presents specific insights into their growth or lack of growth. The 2006 data show a decline in the percentages of students providing reflection with findings. 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 students in Professional majors to be less 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. However, this year, students in the sciences were at least as likely to include self-reflection as were students in the Arts and Humanities. In the past, students in the arts and humanities were noticeably more likely to include self-reflection and reflection with findings. Overall, 70% of seniors in the Sciences included some sort of reflection, as did 65% of students in Arts, Humanities, and Professional majors.



Self-reflection within cover letters includes a wide variety of comments. Some students say very little, others provide lengthy accounts of personal experiences. Students discuss their growth due to experiences in the curriculum, in the co-curriculum, and as members of the Kirksville community. Many students commented specifically on the change in their writing. For example, a Computer Science major stated

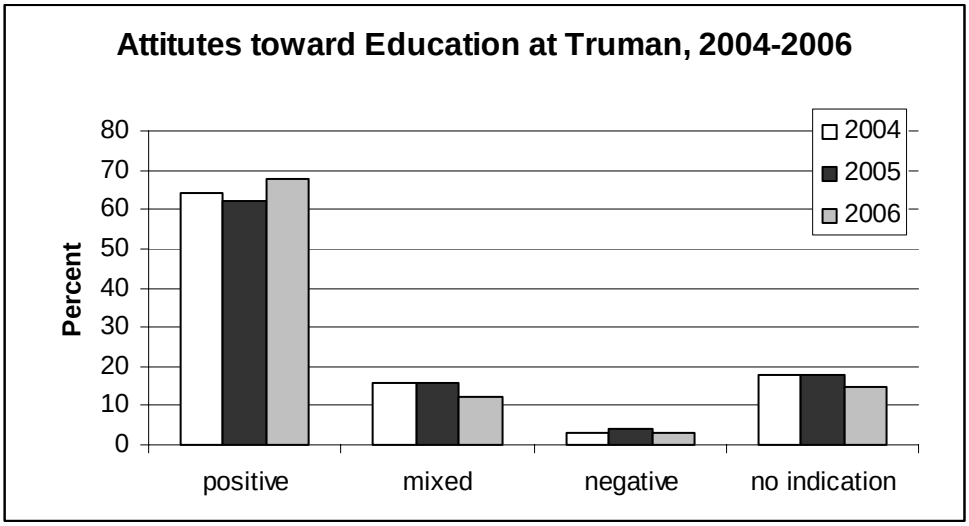
> *I read through some of the papers I had written as a freshman, compared them to more recent papers and was able to show I had made a great deal of progress. I can now not only write better structured and grammatically correct papers, but the content itself has improved.*

Others, such as this Psychology major and this Linguistics major, focused on the breadth of their intellectual growth:

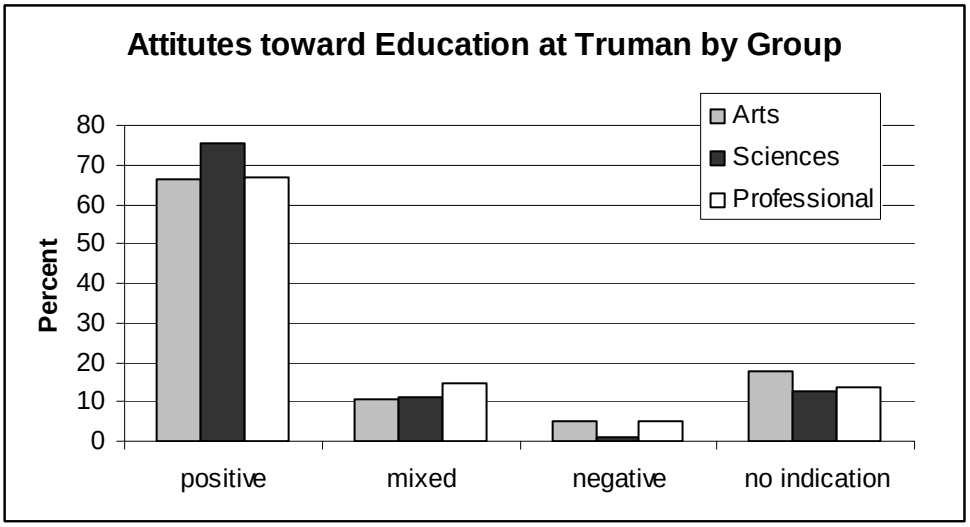
> *In completing the Portfolio Project I realized that I have explored many topics and questioned various ideas while at Truman. Some of my opinions have changed and others have become more elaborate. Being at Truman I have gained a broadened view of how things relate and connect. I am able to look at things form multiple perspectives and more fully appreciate the interconnecting of various disciplines.*
>
> *Reading through my papers confirmed that I can maintain a scholarly tone in my academic writing and adequately support my claims. I was pleasantly surprised to see how multidisciplinary and interdisciplinary many of my pieces were . . . I have also learned that education is most effective when students are proactive. I believe I have a more mature understanding of the world in which we live, and when I do not understand, I have the skills I need to investigate.*

ATTITUDE TOWARD EDUCATION AT TRUMAN

Student attitudes regarding their education at Truman continue to be primarily positive. Sixty eight percent of the letters expressed a positive attitude about their education, 12% expressed mixed feelings, and 3% were negative. Overall, the general pattern of a large percentage of positive attitudes and a small percentage of negative attitudes towards a Truman education has been demonstrated each year.



This pattern of mostly positive attitudes toward Truman is also true across disciplines and majors. As a group, science and math majors were slightly more likely to express positive attitudes, and professional majors were slightly more likely to express negative attitudes, but these differences were small. Students expressing negative or mixed feelings about their Truman experience commented on a range of things, including lack of opportunities for real intellectual growth and faculty who expect far too much from students.



Comments by students who were unhappy with their overall education were generally brief. For example, a Communication major included the following:

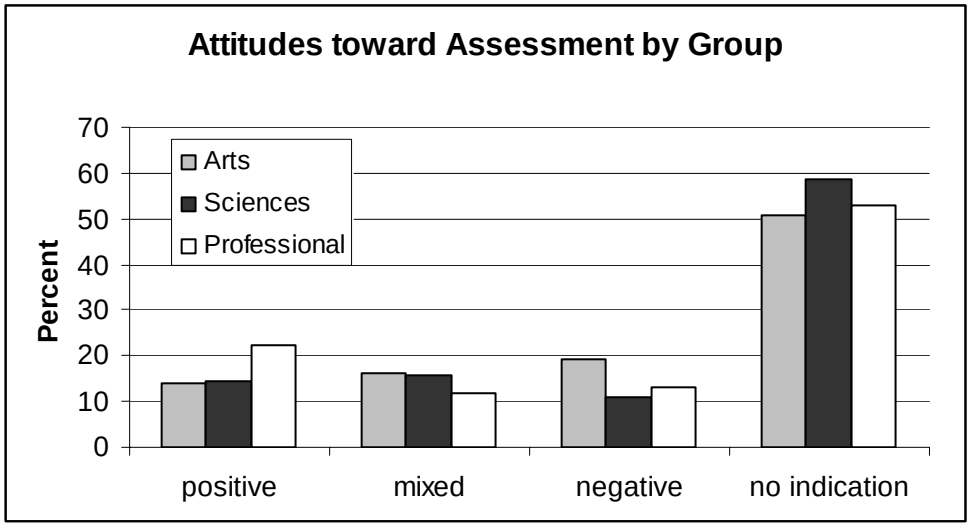
> *In terms of school experience, much of what I learned was common sense, but the piece of paper you get for listening to a hundred different ways to say the same thing is important to getting a job. In fact the job I am getting is a result of the experience I got outside of the classroom. Grades didn't mean a thing, education really didn't mean a thing, it was all about experience.*

Many students were broadly positive about their educational experiences at Truman. These excerpts from a Justice Systems major and an Accounting major are representative.

> *I do have to say that the University's tough curriculum and high expectations are what have prepared me to continue on after graduation. I am going to. . . law school and I honestly do not think I would be able to pursue this dream if I did not have the skills, the knowledge, and especially the self-confidence that I have gained in my four years here. I am proud to say that I graduated from Truman State University and I only hope that I can live up to the reputation and the expectations that Truman holds for its graduates.*

> *I believe I am receiving a quality education from a university who really cares about me and my future. The small class size and challenging professors really pushed me academically. Extracurricular activities also played a large part in my experience at Truman. I have been very involved on campus and I feel that it really changed me.*

ATTITUDES TOWARD ASSESSMENT AT TRUMAN



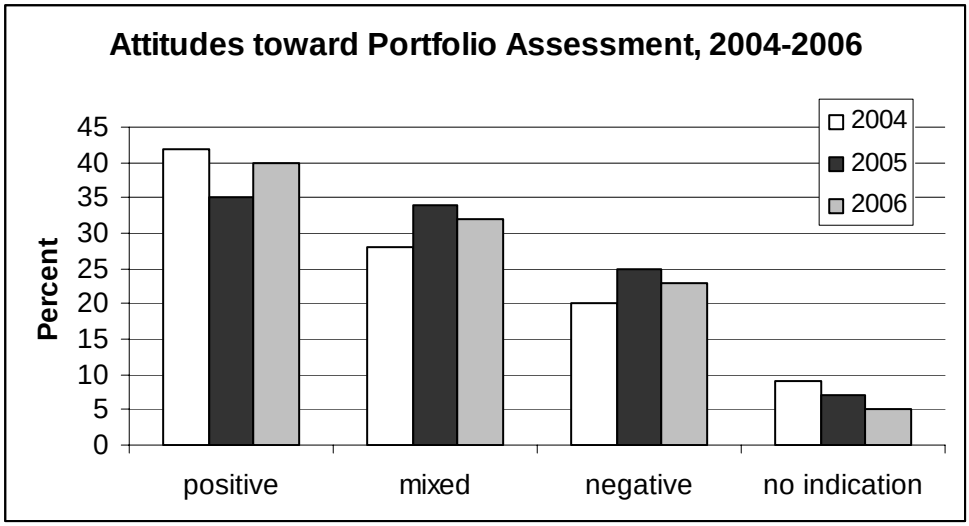
Students are also invited to discuss their attitudes toward assessment at Truman overall. Altogether, 451students made such comments. Of those, 35% were positive, 33% were mixed, and 31% were negative. Students with negative attitudes generally complained that assessment procedures had no direct benefit to them. As shown in the accompanying chart, students with professional majors were slightly more likely to express positive attitudes toward assessment than students with other majors. The lack of apparent benefit to students is clear in this observation by a Sociology/Anthropology major:

> *The portfolio is only one small part of how I am being assessed as a graduating senior. As the reader knows, all graduating seniors are also required to take a senior test and complete various other requirements. Honestly, I feel these are a waste of my time. This applies doubly to the senior test. . . It won't help me get a job or get into grad school. All it did was to waste two hours of my life which could have been spent studying or watching TV.*

Other than the time required, the most frequent complaint about assessment was that students were not provided with information about requirements early or often enough. For example, a Mathematics major writes:

> *I understand the purpose of junior and senior testing and I can see the validity of using these tests to determine how much we have learned during our college experiences, but I do not recall being informed of these tests while I was an incoming freshmen. Other colleges may not require as much testing as Truman, but I feel that these tests have been kept secret from us until it is time for us to take them. I think that it would serve students' interests for Truman to state at the beginning exactly what students will be required to do in order to graduate from Truman. Perhaps we were told in advance that we would have to take these tests, but it was not emphasized clearly enough for it to be solidified in my mind as something that I would have to go through in order to get my degree from Truman..*

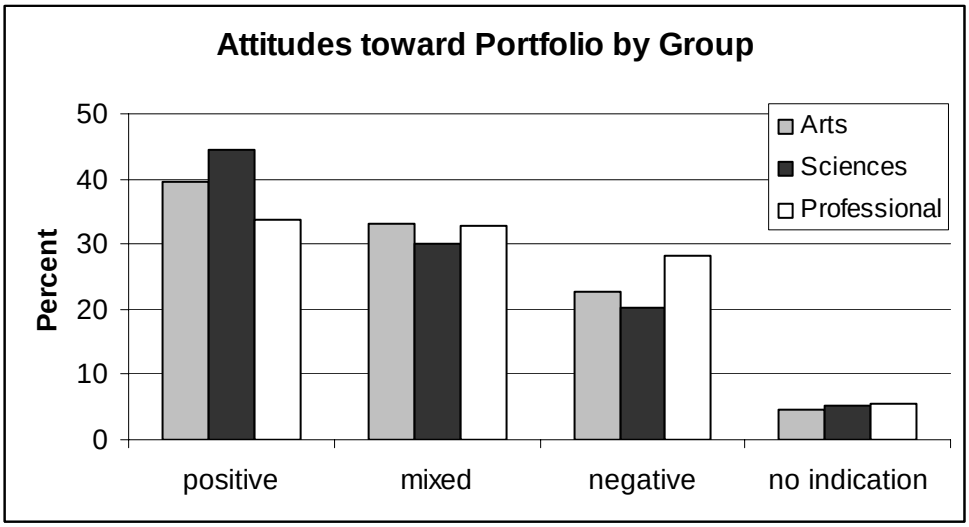
ATTITUDE TOWARD THE PORTFOLIO PROCESS



Overall, seniors express more positive than negative attitudes about the portfolio process, though many also express mixed attitudes. This year, only 5% of cover letters provided no feedback, which is down slightly from the past two years. Forty percent of seniors were positive about their experience with the portfolio, Twenty-three percent of cover letters contained negative attitudes toward the portfolio process. 32% had mixed feelings about the portfolio process. For many of these, they believed it to be a good opportunity, but felt that the requirement came at such a busy time that they did not have time to take advantage of the opportunity. For example, a Biology major shares the following:

> *I feel that the portfolio process in its current form falls more on the hassle side of things for seniors who are in the process of apply/interviewing for graduate schools and jobs while still trying to find time to study for upper level classes.*

When sorted by group, seniors in the professional majors are slightly more negative about portfolio assessment than are students in the other two groups. Students in the sciences and mathematics are slightly more positive about the process than other groups.



Occasionally, students recognize the value of the information gained through portfolio assessment, but have ideas about how to reduce the burden to seniors. A French major offers the following suggestion.

> *As for my thoughts on the portfolio process in general, I think that it is a good way for the University to examine itself, and to identify areas that could be improved. I am not sure though that a portfolio is the most efficient way to do it. Perhaps it could be better analyzed if professors were asked to provide portfolios demonstrating the range of work the have submitted to them in class.*

Similarly, a History major writes

> *Truman should have faith in its professors to create challenging courses that address the different modes of thinking and not place the burden on the students to demonstrate the professors' competence for designing courses. Truman should monitor the courses professors design and decide if they are up to Truman's standards rather than trying to assess the success of Truman as a university through portfolio's that are more reflective of individual students than of respective courses.*

Many students report that they did not expect the portfolio process to be valuable, but were surprised to find it enjoyable. The following excerpts come from a German major, a Health Sciences major, and a Business major l:

> *Creating this portfolio was, surprisingly, good for me. I expected an overly tedious task of sifting through old files and writing small essays about what I thought I was thinking at the time the work was written. Instead, the portfolio was a chance to remember my years at Truman, to see how I progressed, changed, and matured in all aspects of my life: spiritually, socially, academically, and how I saw my future. Creating this portfolio was also a chance to see what I had written, to remember my classes and teachers, to remember the trials of going through a difficult education at Truman. Honestly, I think the portfolio project is a great idea. I enjoyed looking at my old work. I enjoyed seeing how I had changed in the last four years, and I enjoyed seeing that, yes, I had actually learned something. I also enjoy having a small compilation of my work, that I can keep and call "My Portfolio." It's nice to have a small testament to the four years of hard work that I have put into Truman. A framed piece of paper with my degree on it looks nice, too, but actual work says something a bit more.*

> *Now that my portfolio is complete, I can honestly look back and say that I think having each student accumulate their college work and read and assess prompts is a worthwhile task. It is important for students to have a sense of responsibility with regards to their work as well as to be able to look across their years and see what their Truman State University experience has gained for them.*

> *The portfolio I put together is mostly representative on my time here at Truman, but I think more than the portfolio itself, were the feelings that were conjured up when I was sitting in my room sifting through the piles of files on my computer. It made me think of the dorm room and roommate I used to live with, the people I met in a particular class that I am still friends with, Freshman week, and all the other experiences that would not have been there had Truman not been my choice.*

A few students took a more playful approach to the portfolio. A Psychology major and a Political Science & Music double major shared the following:

> *. . .it was exciting to flip back through all the pages of notes and handouts that I've accrued in my time here. In doing so, I realized that I doodled a lot more than I remember. I also noticed that my drawings have gotten a lot better since freshman year, so that can be counted as a success.*

> *Thank you for caring about the quality of a Truman education. I'm glad people do, even though this Portfolio thing was a pain. I am hopeful that you can glean something interesting or amusing or insightful from mine.*

Summary and Conclusions

In 2006, the implementation of the portfolio project was nearly identical to that in 2005. A record 1104 portfolios were collected. As the portfolio project became a graduation requirement for students matriculating in the fall of 1999, we have now reached the point where essentially all graduates submit a portfolio.

The quality of academic work submitted by students remains stable, and overall demonstrates strong academic performance. The median scores for Critical Thinking, Interdisciplinary Thinking, and Aesthetic Analysis were all in the "Competent" range. The median scores for Historical Thinking and Scientific Reasoning were in the "Weak" range.

Problems of document storage and student motivation remain the greatest hindrances to interpretation of these scores. Students often complain that they were not able to submit their best work because they had not retained a copy of it. Other students admit that they chose the first work that came to mind, rather than thinking carefully about which work best fit their criteria. This is borne out by the fact that ENG 190 Writing as Critical Thinking is the most frequent source for Critical Thinking and Writing submission, despite the prompt's explicit suggestions that such submissions may not be the best examples (relative to examples from later in a student's academic career). Furthermore, students who display positive attitudes toward the portfolio score significantly higher on Interdisciplinary thinking than students with negative attitudes ($t(574) = 2.99$), suggesting that scores may be higher if students took more interest in the portfolio. Relatively low inter-rater reliability also suggests that faculty do not always define "interdisciplinarity" and "scientific reasoning" in the same ways. This low reliability also affects interpretation of the data, and raises interesting questions for possibilities of curriculum change.

As the university community contemplates changes in both structure and curriculum, an argument can be made that the portfolio should remain essentially the same; this will allow the effects of other changes to be more apparent. If resources for assessment decrease, some changes may be necessary. For example, sampling the data, rather than reading every submission in every category may become expedient. Other changes may increase the value of the portfolio for students. For example, efforts could be made to encourage formal reflections on their experiences more regularly as part of their academic advising.