Chapter XIV: PORTFOLIO ASSESSMENT

Portfolio Assessment

Who takes it?
All students matriculating in or after the fall of 1999 develop and submit portfolios as a requirement for graduation. In academic year 2007-2008, 1096 students submitted portfolios, exactly the same number as the previous year.

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?
The director of the portfolio administers it in conjunction with each discipline/program.

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. The results are available late in the fall or early in spring of the following year.

What type of information is sought?
Faculty evaluators and the Assessment Committee designate the types of works requested from students, but many of the requested items have remained constant. In the 2007-2008 academic year, a portfolio included works demonstrating 1) *critical thinking and writing*, 2) *interdisciplinary thinking*, 3) *historical analysis*, 4) *scientific reasoning*, and 5) *aesthetic analysis*. The portfolio also included a work or experience the student considered 6) *most personally satisfying*, and 7) *a cover letter* in which students reflect on ways they have changed while at Truman and offer any other thoughts they care to express about their experiences. Other items may be included, but these are evaluated separately.

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

Are the results available by department or discipline?
Historically, results by discipline are not made available to the general public. Discipline reports are shared with chairs and deans of the respective departments, and they may be shared more broadly starting this year.

To whom are results regularly distributed?
The overall results of portfolio assessment are 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 reaccreditation by the Higher Learning Commission. The Faculty and Student Senates have used the reports in developing planning documents and in curriculum review. Some faculty use the information to reform their curriculum, improve their major, and engage in self-study. 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.

2008 Liberal Arts and Sciences Portfolio

Since 1988, Truman State has utilized a locally designed senior portfolio for sampling and assessing student achievement and learning. It has been a graduation requirement since 1999. This volume reports and analyzes the 2007-2008 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 2008, portfolios from 1096 students, representing nearly 100% of graduates, were read and evaluated by faculty readers. 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 students submitted their portfolio in December 2007, but graduated in August 2009.

Forty-six faculty and staff members read and evaluated the portfolios, representing all ranks and seventeen academic disciplines. Nine of the faculty participants were new readers. This year there were two portfolio directors, both faculty , one completing the term of service and one beginning. Both organized the readings sessions, trained readers in holistic evaluation, and facilitated discussions. Furthermore, two student employees assisted with data entry and sorting. Their help was critical to the success of this large assessment process. Reading sessions were scheduled over the three weeks from May 12 to 30, 2008. One third of the readers participated during each week, with a few faculty participating more than one week. Most weeks, readers gathered daily at 9:00 AM and ended at 4:00 PM with an hour for lunch and a morning and afternoon break. The final week of reading had longer days, but did not meet on Monday, Memorial Day. Every week readers evaluated Interdisciplinary works and Critical Thinking & Writing works; however, Scientific reasoning was scored only during the first week, Aesthetic Analysis only during the second week, and Historical Analysis only during the third week. This year, not all of the submissions were read during the reading session. The portfolio directors made up for the shortfall during the summer and fall.

PORTFOLIOS BY MAJOR	
Accounting	58
Agricultural Science	23
Art	29
Art History	5
Biology	79
Business Administration	139
Chemistry	27
Classics	1
Communication	28
Communication Disorders	54
Computer Science	15
Economics	13
English	113
Exercise Science	48
French	7
German	
History	60
Health Sciences	31
Interdisciplinary Studies	8
Justice Systems	37
Linguistics	9
Mathematics	26
Music	38
Nursing	39
Philosophy and Religion	16
Physics	8
Political Science	38
Psychology	110
Russian	3
Sociology/Anthropology	17
Spanish	8
Theater	7

The 2008 Portfolio Contents

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

The 2008 portfolio focused on students' work across the liberal arts and sciences curriculum. It elicited student works demonstrating "critical thinking and writing", "interdisciplinary thinking", "scientific reasoning", "historical analysis" and "aesthetic analysis". 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.

2008 Portfolio Findings

This report presents the findings of the 2008 Portfolio Project for the entire group of participating seniors. For ease of comparison, the language and format from previous reports are used when possible. The findings are also grouped based on students' majors: "Arts & Humanities", "Science/Math ", and "Professional" studies. This year, SOAN majors have been classified as Science whereas in 2007 they were grouped within Humanities. The accompanying table shows how the various disciplines are characterized in this scheme. When a student had 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
Classics	Computer Science	Justice Systems
English	Economics	Nursing
English: Linguistics	Exercise Science	
French	Health Science	
German	Mathematics	
History	Physics	
Interdisciplinary Studies	Political Science	
Music	Psychology	
Philosophy and Religion	Sociology/Anthropology	
Russian		
Spanish		
Theatre		
359 Portfolios	**435 Portfolios**	**301 Portfolios**

Because this assessment relies on students to first retain 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 type of approach requested by individual prompts. 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. Some complete the portfolio in stages, as part of a course, and show good engagement with the process. Others are quite frank in stating that they compiled their portfolio quickly 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.

In addition to the ratings of quality, 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. In some cases, students could not recall all of the details of when and why the work was created; except where a large percentage of students were missing data, we include percentages only for those students who did report the information. 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. 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: Do not submit a writing sample from ENG 190 ("Writing as Critical Thinking") simply because this course focuses on critical thinking and writing. Typically students compose their best critical writing later in college.

Critical Thinking at a Glance

- Number of submissions read: **1083**
- Median critical thinking (on a 0 – 3 scale): **2**
- Mean critical thinking score (on a 0 – 3 scale): **1.89**
- Highest scoring "group": **Arts/Humanities**
- Most frequent source (course): **ENG 190**
- Most frequent source (discipline): **ENG**
- Trend: **Very stable**

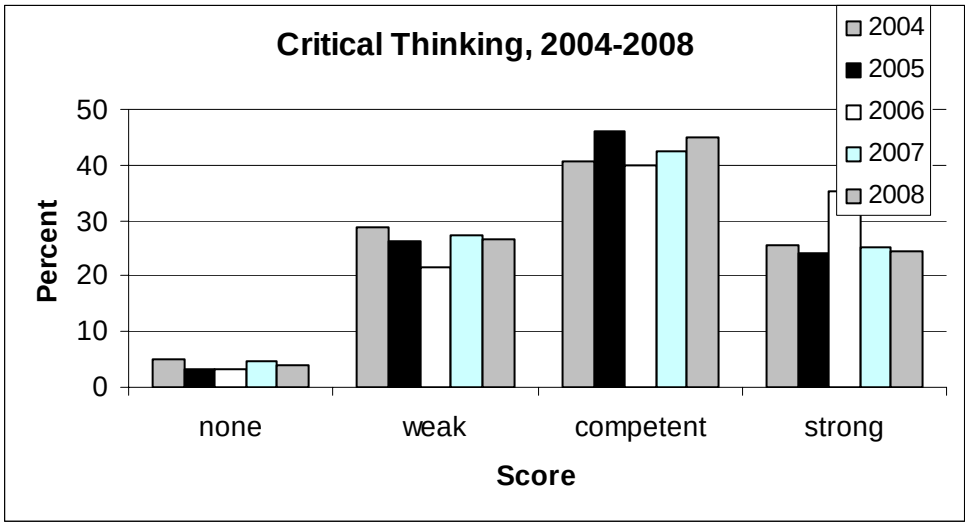
Of the 1096 portfolios collected, 1083 (99%) submitted readable examples of critical thinking. The others provided a corrupted electronic file, a file format that could not be translated, or had some other problem that prevented reading of the submission. Faculty readers evaluated the works for the quality 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

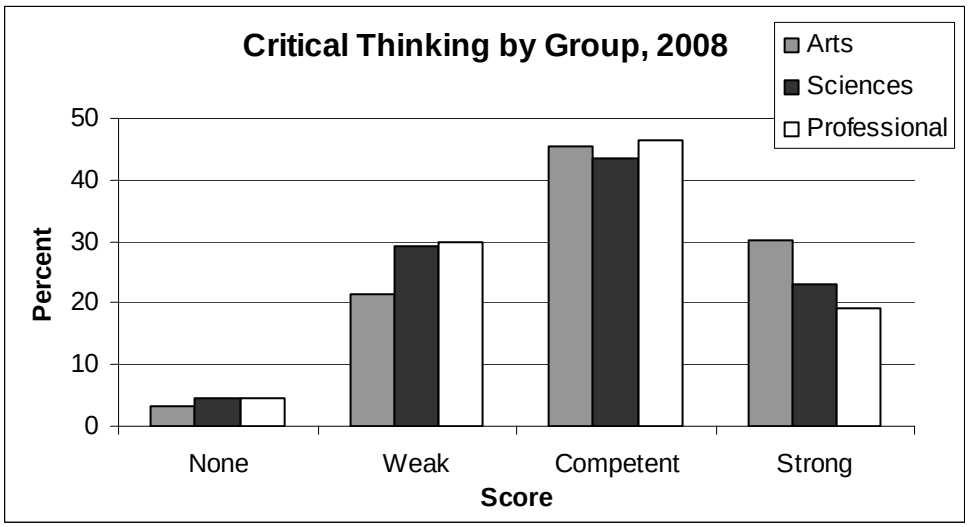
0 **No Evidence**	**1** **Weak Competence**	**2** **Competence**	**3** **Strong Competence**
displays no real development of ideas	develops ideas superficially or inconsistently	develops ideas with some consistency and depth	displays insight and thorough development of ideas
lacks convincing support	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 2008, 69% of seniors submitted material judged as demonstrating "competence" or "strong competence." Less than 5% submitted material judged as demonstrating no critical thinking. Typically, entries evaluated as "none" were creative writing or very short reports displaying neither analysis nor evaluation. The

percentage of seniors with submissions judged as competent or showing strong competence is nearly the same as submissions from 2007, and very similar to those from 2005, but are somewhat lower than those from 2006.



When the data are sorted according to major groups, Arts & Humanities majors demonstrate somewhat stronger critical thinking skills than those with Science & Math or Professional majors. Seventy-five percent of submissions from this group were rated at competent or above. For comparison, 66% of Science & Math majors and 65% of Professional majors were rated at "Competent" or above. No group had more than 5% of submissions demonstrating no competence.



Students drew from a wide variety of sources for this submission in this category: over 350 different courses. Despite the suggestion on the prompt, Writing as Critical Thinking (ENG 190) was the single most common source of submissions. English was also the most popular discipline overall, with both ENG 209 and ENG 265 making the list of ten most frequent sources of submission. JINS and Philosophy & Religion were also frequent sources of submission.

One thousand sixty-eight of the submissions provided information about the year in which they produced. Of those, 8.1% were generated in the first year, 16.5% in the sophomore year, 45.7% in the junior year, and 29. 8% in the senior year. This is encouraging, because one would hope that students recognize that more advanced critical thinking is likely to occur later in the college career. Furthermore, submissions produced early in a students career produced lower scores. Submissions from the first year had mean scores of 1.6, while submissions from later years were each at 1.9. These

Critical Thinking and Writing

Top Ten Courses		Top Ten Disciplines	
ENG190: Writing as Critical Thinking	47	ENG	209
ENG209: Applying Literary Theory	32	JINS	172
PHRE188: Ethics	28	PHRE	117
BSAD460: Strategic Management	24	BSAD	72
PHRE185: Exploring Religions	23	HIST	64
PHRE186: Intro to Philosophy	17	COMM	45
ENG265: American Lit: Chronology	16	JUST	32
ED389: Foundation of Education	14	NU	32
JINS 309: Decision Making	13	ED	28
BIOL301: Introduction to Ecology	12	POL	28

results were statistically significant with both Kruskal-Wallis and one-way ANOVA tests (F (3, 1056) = 4.03, MSe = 0.65 p =.007). Forty-nine percent of the submissions fulfilled assignments for classes in the major, 36% for Liberal Studies Program classes. The rest were products of elective courses, minor requirements or other sources. Of the items submitted, 9.2% dealt with issues of gender, 5.5% with issues of class, 7.7% with issues of race, and 11.6% with international perspectives. Eight percent were the product of collaborative effort. In their reflections, five students reported that they had never completed a work that demonstrated good critical thinking, and three indicated their submission was weak because their best work had been lost.

Analytical Writing Assessment

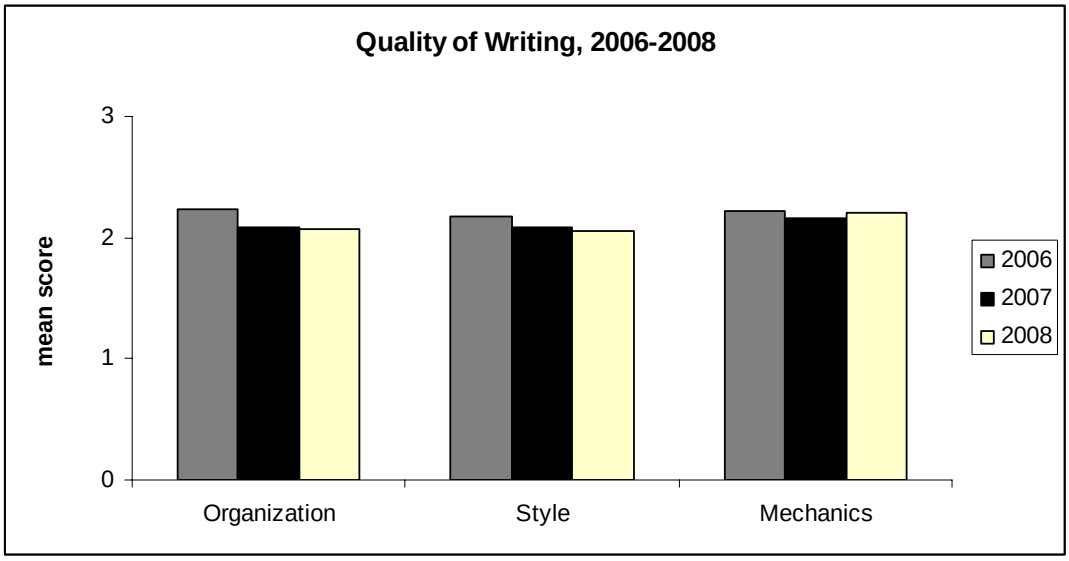
In addition to reading submissions from this prompt for critical thinking, faculty readers assessed them for evidence of writing skills. As with other categories where works are scored, a group of student-produced writing samples were used to assist faculty in identifying relevant factors. Online scoring also allowed for ambiguous submissions to be considered by the whole group of readers. A scoring rubric, first drafted by members of the Writing Assessment Committee, was used. 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

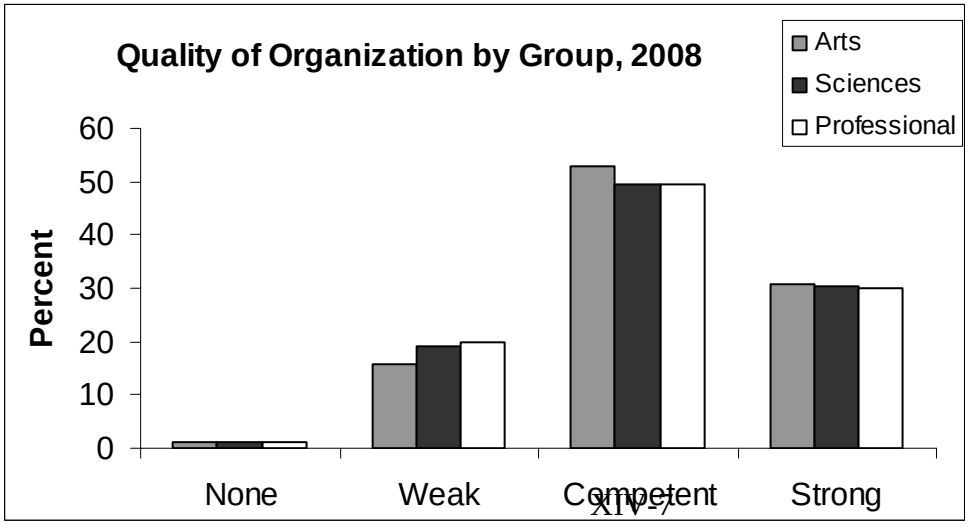
	0	1	2	3
Mechanics	lacks command of mechanical conventions: grammar, punctuation, or spelling errors present major distraction to readers	demonstrates weak command of mechanical conventions: grammar, punctuation, or spelling errors are occasionally distracting to readers	demonstrates adequate command 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 was "competent" (2) for each of three categories. The mean was 2.07 for organization), 2.06 for style, and 2.21 2.16 for mechanics. Again this year, readers found that students are generally competent in all three aspects of writing. This is particularly impressive given that the submission is not just for writing, but for critical thinking and writing. Furthermore, scores in each category are correlated with other writing categories and correlated with critical thinking.



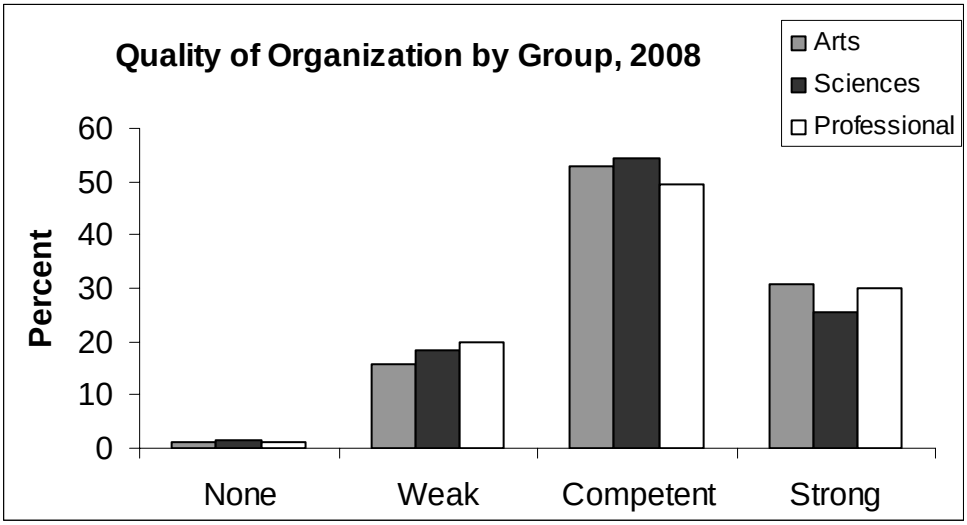
Correlations between analytical writing and Critical Thinking

	Thinking	Organization	Style
Organization	0.583		
Style	0.515	0.623	
Mechanics	0.485	0.533	0.630

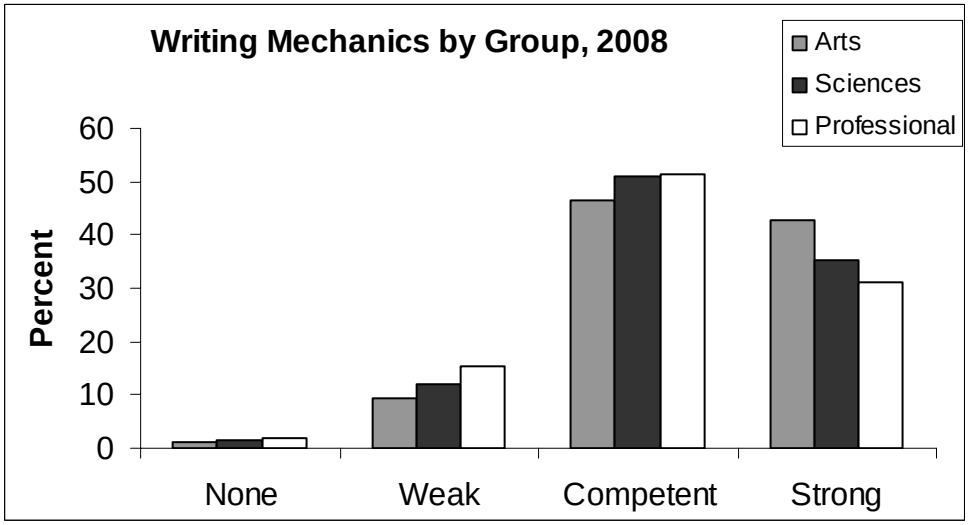


When scores are broken down into groups, similar patterns emerge. The charts here detail group scores for each category. Scores for organization show that 83.3% of submissions from Arts & Humanities were judged as competent or strongly competent. By

comparison, 79.8 % of Science and Math majors' submission and 79.2% of Professional majors' submissions were scored in the highest two categories. The median and mode was "competent" for each of the three groups.



Given the overall data patterns, it is not surprising that judgments of writing style of each group were quite similar to that of organization. 83.3% of Arts & Humanities submissions were scored in the highest two categories. 79.9% of Science & Math submissions and 79.2% of Professional majors' submissions received the highest two ratings. Again, the median and mode was "competent" for each of the three groups.



For the final element, mechanics, 89.5% of Arts and Humanities majors were rated as competent or strongly competent. 86.2% of Science & Math submissions were scored this way, and 82.6% of Professional majors' works received this score. Two, competent, was again the median and modal score for each of the three groups.

Interdisciplinary Thinking

Examples of student work demonstrating 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.

Altogether, readers evaluated 1076 submissions for interdisciplinary thinking. A small sample of 84 of the submissions were read a second time by a randomly selected faculty reader. This sample was too small to provide good information about inter-rater reliability, but overall, they suggested that reliability was low. In all cases the reader evaluated works "holistically" while keeping in mind the following descriptors:

Interdisciplinary Thinking at a Glance

- Number of submissions read **1076**
- Median score (on a 0-4 scale): **2.0**
- Mean score (on a 0-4 scale): **1.7**
- Highest scoring "group": **Arts and Humanities**
- Most frequent source (course): **JINS 309**
- Most frequent source (discipline): **JINS**
- Trends in recent years: **Stable scores**

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

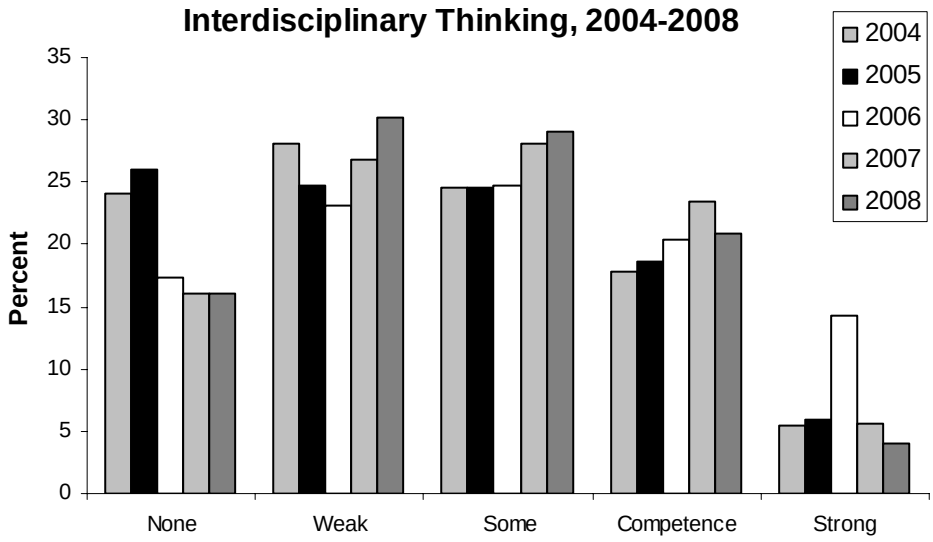
1 Weak Competence

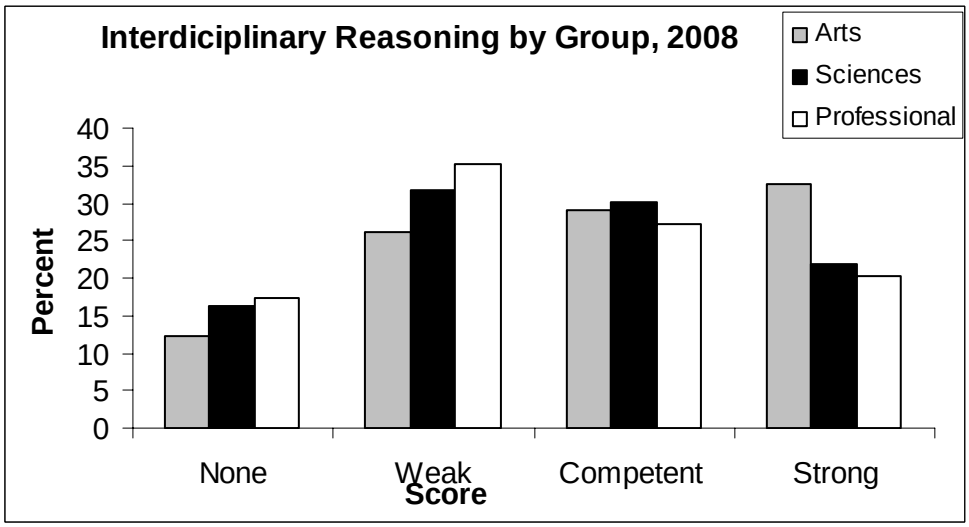
- A number of disciplines
- Mentions disciplines without making meaningful connections among them
- No analysis using multiple disciplines
- No evidence of comprehension of interdisciplinarity

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

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 2008 with the results from the previous four years. For readability of the chart above, half scores were combined with the score below them. (such that 3.5s were grouped with 3s). Another way to consider these data is to examine those judged competent and above. The total percent of submissions receiving a score of 2 or better was 53.9%, which is somewhat lower than the 57.2% and 59.5 % found in 2007 and 2006 respectively.





When data are sorted by major groups, submissions from Arts and Humanities were somewhat stronger than submissions form Professional majors, with Math and Science falling between. The median and score was 2 for Arts & Humanities, and 61.5% of submissions scored at competent or above. The median was also 2 for Science & Math, with 52.0% scoring at or above competence. The median score for the Professional submissions was 1, with 47.4 at or above competence . The data are summarized in the chart above. Again, half scores are combined with the score below them.

This year, JINS courses produced 59% of the submissions, very much like the 60% in 2007 but down slightly from 63% in 2006. The remainder of the submissions were widely scattered across disciplines. In fact, the top 28 courses producing submissions in this category were all JINS. Concomitantly, 68.6% of submissions came from LSP courses, while 21.4% were drawn from the major. Furthermore, submissions from JINS courses had a mean score of 1.92, while all other submissions had a mean score of 1.33, a difference that would be statistically significant (t (1045) = 8.74, p <.001). These data continue to support the notion that the JINS course in the Liberal Studies Program is promoting comprehension and demonstration of interdisciplinary thinking.

Given that most of the submissions are from JINS courses, it is not surprising that most of the submissions, 63.8%, came from the junior year. Nineteen percent came from the senior year, 13.9% from the sophomore year and 3.2% from the first year. Eight percent of the items were the result of collaborative work. 10.8% of submissions dealt in some way with gender issues, 17.5% with international issues, 12.1% with race, , and 8.3% dealt with class. Six students indicated in their reflection that they had never completed an interdisciplinary work. Thirteen students stated their submission was weak because their best work had been lost.

Interdisciplinary Thinking

Top Ten Courses			Top Ten Disciplines	
JINS 309: Decision Making	33		JINS	647
JINS 351: Faust Tradition	30		ENG	54
JINS 316: Portrayals of Women	28		PHRE	35
JINS 338: Race and Ethnicity	26		BSAD	29
JINS 301: Music in Religious …	24		COMM	27
JINS 319: Human & Computer Cog.	24		ECON	19
JINS 302: Wilderness Leadership	23		HIST	19
JINS 364: Aesthetics of Food	20		MUSI	19
JINS 329: Language and Meaning	18		PSYC	17
JINS 341: Sport and Society	18		SPAN	16

Historical Analysis

The following prompt elicited 1083 submissions for Historical Analysis:

> *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.*

Historical Analysis at a Glance

- Number of submissions: **1083**
- Median score (on a 0-3 scale): **2.0**
- Mean score (on a 0-3 scale): **1.59**
- Highest scoring "group": **Arts/Humanities**
- Most frequent source (course): **HIST 105**
- Most frequent Source: (discipline): **History**
- Trend **Stable Scores**

These submissions were evaluated with the descriptors below.

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.

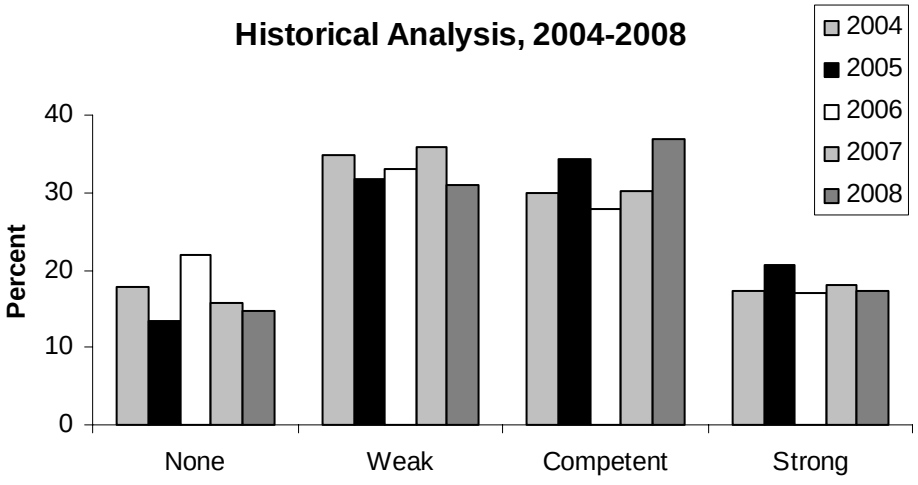
1 Minimal Competence

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

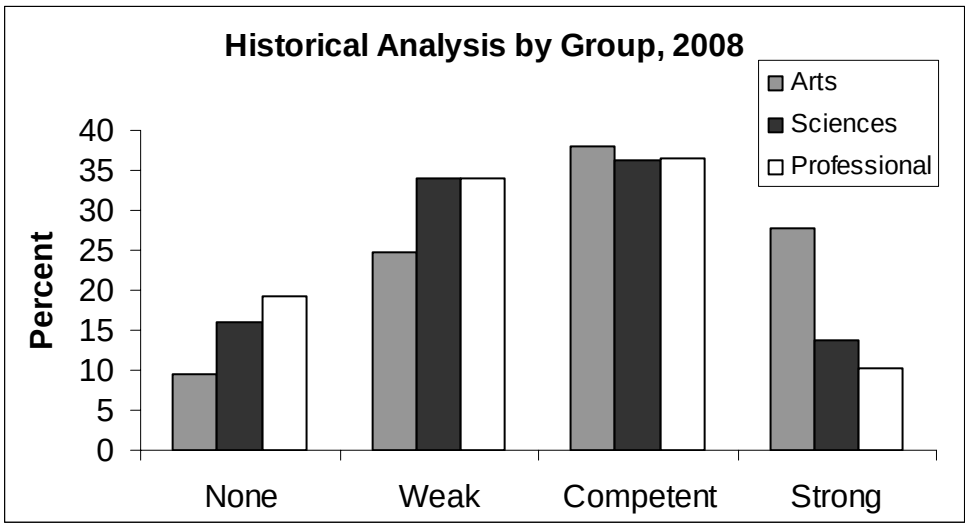
0 No Competence

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



One hundred six of the submissions for this category were read independently by two readers. The Spearman correlations between these correlations were .42, indicating relatively low reliability for individual scores. For the following analyses, submissions scored by two readers were given the average of the two scores. For the charts, half scores are combined with the score below them: for example, scores of 2.5 are grouped with scores of 2.0. The chart above compares the data for Historical Analyses across the past five years. The median score of 2 appears slightly higher than the median of 1.50 in 2007, but the overall pattern indicates that any shift upward is relatively small.

The chart Historical Analyses by Group presents the data sorted according to the major groupings. In this category, the median score was 2 for students majoring in the Arts & Humanities disciplines, 1.5 for Science & Math majors and 1 for Professional majors. 65.8% of Arts & Humanities submissions were at or above competence, compared to 49.9% of Science & Math and 46.6% of Professional submissions.



As expected, students frequently chose works from history courses for this category. Thirty-five percent of the items came from history courses. JINS courses accounted for over 15% of the submissions, English courses for 8% of the submissions, PHRE for 5%, and ART and MUSI each for 3%. 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 14% of the total number. Six of the top ten individual courses generating submissions were history courses. Submissions from history courses also scored significantly higher than other submissions (t (1077) = 7.36, p < .001)

HISTORICAL SOURCES

Top Ten Courses		Top Ten Disciplines	
HIST 105: U.S. History II	85	HIST	373
HIST 104: U.S. History I	59	JINS	158
HIST 131: World Civ. before 500 AD	34	ENG	79
HIST 133: World Civ. since 1700	31	PHRE	61
PHRE185: Exploring Religions	23	ART	41
JINS 316: Portrayals of Women	21	MUSI	32
HIST 132: World Civ. AD 500 to 1700	18	POL	31
ENG 190: Writing as Critical Thinking	15	COMM	29
JINS 369: Why We Fight	15	BSAD	27
HIST 231: Historiography	14	ECON	27

Submissions in this category were more widely distributed across year than they were for Critical Thinking or Interdisciplinary: 24.2% of the Historical submissions were produced in the senior year, 40.4% in the junior year, 18.9% in the sophomore year and 16.6% in the first year. Nearly half of the submitted works were produced in LSP classes, 32.0% were assignments in major courses, 10.5% were from elective courses and 7.9% were produced in classes taken to fulfill minor requirements. 16.6% dealt with international perspectives, 13.6% with race, 10.9% with issues of gender, and 7.6% with class issues. In this category, 5.7% of the items submitted were collaborative works. In their reflection, 32 students stated that their best work for this prompt had been lost, and 76 stated that they had never completed and appropriate historical work. The mean score for these students was 1.1. This is significantly lower than the 1.6 average for remaining students (t (1078) = 6.2, p <.001), but still not the near- zero one might expect from the students' descriptions.

Scientific Reasoning

Examples of scientific work 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*

Scientific Reasoning at a Glance

- Number of submissions: **1079**
- Median score **1.0**
- Mean score (on a 0-3 scale): **1.2**
- Highest scoring "group": **Science/Math**
- Most frequent source (course): **BIOL 100**
- Most frequent Source: (discipline): **Biology**
- Trends: **Stable scores**

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.

Readers evaluated 1079 submissions, assessing the competence of scientific reasoning as evidenced in the submissions. 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

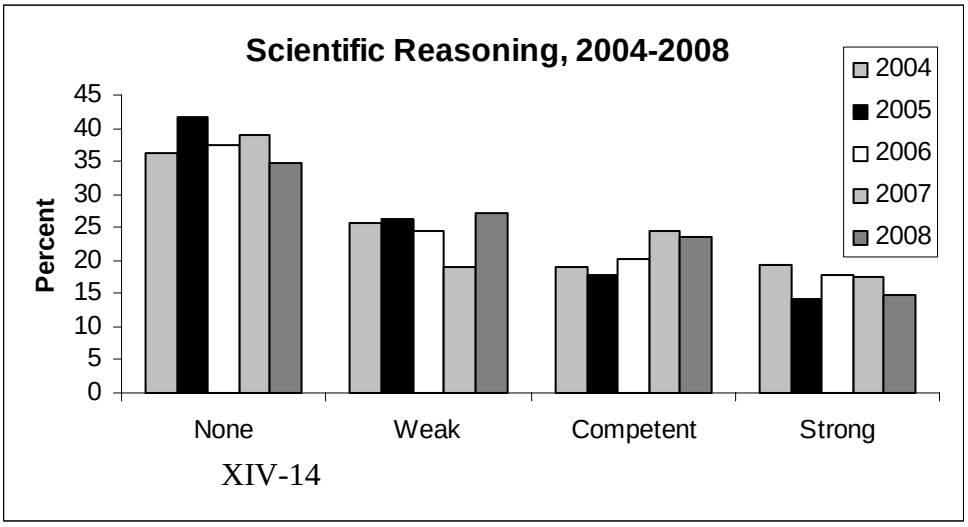
The item may have some, many, or all of these features:

- 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

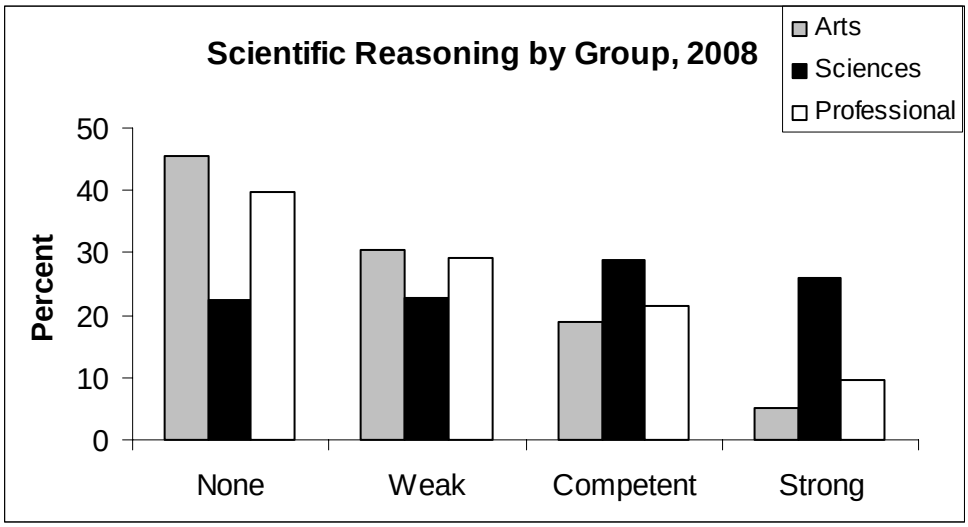
0 No demonstration of competence in scientific reasoning

- 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

As in past years, the most common finding was "no evidence". This is the ninth consecutive year that submissions scored a zero outnumbered submissions judged "minimally competent." Some of these works showed knowledge of facts, but no reasoning, and thus scored zero. The chart at



right shows that scores over the past five years have been consistently low: 1.1 in 2005, 1.3 in 2006. 1.2 in 2007 and 1.2 in 2008. (Because some 2006 submissions were double-read, half scores are grouped into the lower category.)



As might be expected, Science & Math majors score notably better than other majors. Submissions from Science & Mathematics majors had a median score of 2 while Arts & Humanities and Professional submissions each had a median score of 1. Majors from the professional group were similar to those in the arts, but had a median score of 1. 54.% of submissions from Science & Math were competent or above, compared to only 31.2% from Professional majors and 23.9% from Arts & Humanities

Biology was the most popular source discipline, accounting for over 23% of the submissions. Disciplines in the top ten remained the mostly the same as in previous years, though STAT did not make the list this year and COMM did. The top ten individual courses also included three Biology courses. Two Business and Accountancy courses, BSAD 349 and 360 made the top ten. One way ANOVA with Tukey post hoc tests suggested that submissions from traditional science courses (AGSC, BIOL, CHEM, and PHYS) scored at the same level as PSYC submissions, but higher than BSAD and remaining submissions. ($F(3, 1075) = 7.84$, MSe = 1.18, $p < .001$)

Scientific Reasoning Sources

Top Ten Courses		Top Ten Disciplines	
BIOL 100: General Biology	112	BIOL	242
AGSC 100: Food, Ag & Environment	47	PSYC	115
PSYC 466: Psychological Research	39	JINS	77
BIOL 107: Introductory Biology I	29	CHEM	70
BIOL 301: Introduction to Ecology	23	AGSC	69
BSAD 349: Organizational Behavior	22	BSAD	59
PSYC 166: General Psychology	20	PHYS	48
PHYS 246: Astronomy I	19	ES	36
CHEM 120: Chemical Principles I	15	ENG	30
BSAD 360: Marketing research	14	COMM	27

29.3% of the submissions came from the senior year; 37.3% came from the junior year; 19.2% came from the sophomore year; and 14.2% were generated by first-year students. 52.4 % of submissions were generated by students satisfying requirements of their majors, 35.3% were from LSP courses 5.7% were from minor course, and elective courses accounted for 6.3%. Few of the submissions dealt with race (1.8%), class (1.6%), gender (4.8%) or international issues (3.7%). Nearly forty percent of submissions were the results of collaborative work, and these collaborative submissions scored nearly a point higher than other submissions ($t(1074) = 13.0$, $p < .001$). In their reflection, thirty-one students stated that their best work for this prompt had been lost, and seventy-three stated that they had never completed an appropriate scientific work. The averages for these students were 0.61 and 0.38 respectively. These groups combined are notably lower than the average of the other scores (1.27), indicating their self-analysis was reasonably accurate ($t(1075) = 8.02$, $p < .001$).

Aesthetic Analysis

The following prompt for Aesthetic Analysis has been used since spring 2002:

> *Please submit an analysis of a creative work or works, using aesthetic criteria. The subject of your analysis*

Aesthetic Analysis at a Glance

- Number of submissions: **1076**
- 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): **MUSI 204**
- Most frequent Source: (discipline): **ENG**
- Trend **Stable scores**

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.

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:

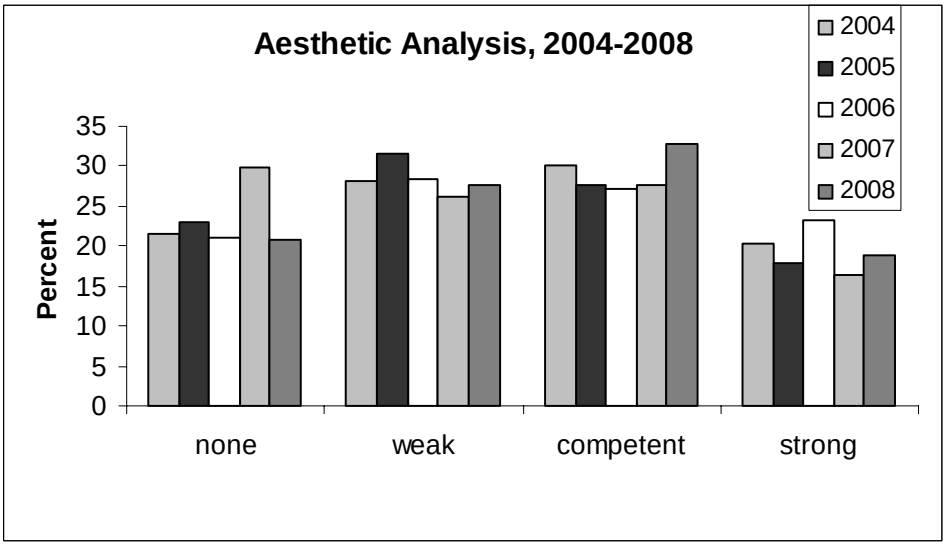
- Minimal evidence of engagement with the cultural artifact or production (creative works in visual art, music, literature, theatre, film, dance. . .)
- Placement of the artifact or production within a context (historical, cultural, period, aesthetic movement. . .)
- Description of the artifact or production's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

The 2008 median score for Aesthetic submissions was 2, which is higher than in previous years. The mean score for the 1076 readable submissions was 1.5, which is the same as the mean in 2006, but somewhat higher than last year's mean of 1.3 Fifty one point six percent of 2008 Aesthetic Analysis submissions received a score of competent or strongly competent. This year's scores may be even stronger than they appear relative to previous years, because before 2006, a large number of students failed to submit a work in this category.

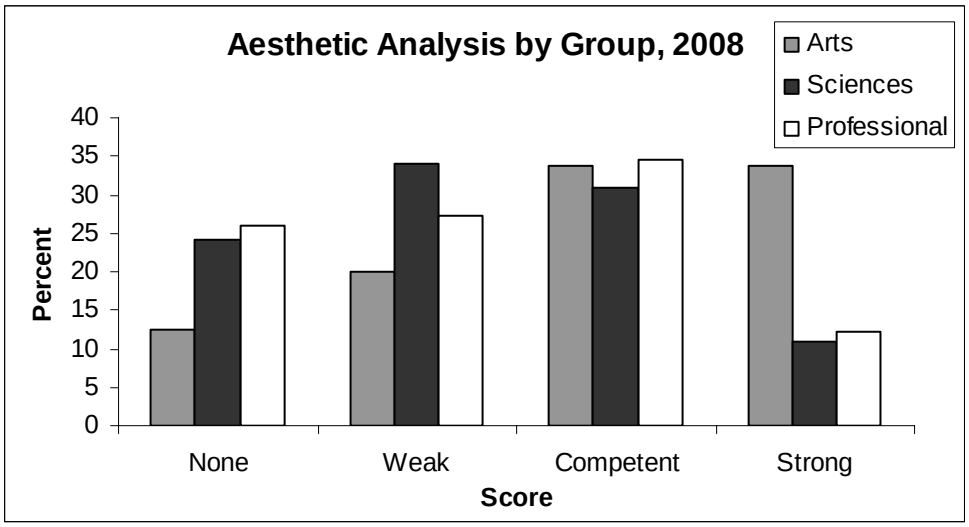


When comparing groups, Arts & Humanities majors scored significantly better than either Science & Math or Professional majors. The median score was 2 for Arts & Humanities majors, and 1 for Science & Math and Professional majors. 67.6% of submissions from Arts & Humanities were competent or above, compared to only 46.6% from Professional majors and 41.6% from Science & Math .

Forty students did not provide information on the source of their submission in this category. The remaining data are presented for those who did. As one might expect, many entries for this category came from English – 28.3% of submissions. However, JINS courses produced 15% of the submissions. The top ten disciplines were the same as those used in 2006 and 2007, and the top five were in the same order. Students submitted from a wide variety of courses: no single course produced more than 5% of submissions. Individual courses producing submissions were much the same as in years past, though the specific order has changed. This year, three of the five top courses were Perspectives in Music.

Aesthetic Analysis Sources

Top Ten Courses		Top Ten Disciplines	
MUSI 204: Persp. in Music: Western	43	ENG	299
MUSI 205 Persp. in Music: World	42	JINS	168
ART 223: Art in Europe and . . .	40	MUSI	165
ENG 265:American Lit. Chronology	39	ART	116
MUSI 207: Persp. in Music: Jazz	36	THEA	46
THEA 275: Intro. to Theatre Arts	36	COMM	33
ENG 190:Writing as Critical Thinking	32	PHRE	24
ART 203: Intro. to Visual Arts	29	HIST	21
ENG 266:American Literatures Topics	29	SPAN	19
JINS 316: Portrayals of Women	27	BSAD	14



The works represented a relatively even distribution across year of production, with a slight favoring of the junior year. 21.7% of Aesthetic submissions were created during the senior year. Another 37% were produced during the junior year, while 21 7% were from the sophomore year, and

21.4% from the first year. Fifty-eight percent of the submissions came from LSP courses, while 24.8% were from major courses. 6.1% were from minor courses, and 11.2% from elective courses. Collaborative efforts comprised only 4.6% of the submissions. In this group, 11.2% dealt with international perspectives,8.4% involved gender issues, 7.3% examined issues of race, and 6.2% considered issues of class. Twenty three students indicated in their reflection that their best work for this category had been lost, and 48 indicated they had never completed an appropriate work for this category. The averages for these students were 0.22 and 0.47 respectively. These groups combined are substantially lower than the average of the other scores (1.57), indicating their self-analysis was reasonably accurate ($t(1073) = 9.83$, $p < .001$).

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.*

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, 1081 of the portfolios contained an item or a description representing a "most personally satisfying experience." Based on submissions from previous years, 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. "Collaborative" was replaced on the online system by "creative." "Enjoyable" also appeared on the paper system. In any system, if none of these was a good representation of the student's reasoning, a more detailed explanation was given. Of the 1081 submissions, 14, about 2% gave no indication of why they found the experience satisfying.

Why Was It Satisfying?	Number
Achieved Significant Personal Growth	445
Was especially Challenging	377
Represented a personal best	286
Was an Enjoyable experience	276
Modeled Working As A Professional	223
Achieved Personal Goals	201
Was especially Creative	82
Was a Collaborative effort	44
Other	227

The accompanying table presents the reasons why a submission was most satisfying for the remaining submissions. Many students identified several reasons why their experience was satisfying. Thus, the total numbers of reasons is more than the number of submissions. 41.2% percent of submissions explained that one of the reasons for satisfaction was the result of having achieved "significant personal growth", 34.9% reported that it was especially challenging, 26.5% considered it a "personal best", 25.5% discussed having been particularly enjoyable. Twenty-one percent of students provided a another reason instead of or in addition to those listed above, but these varied widely. For instance, some said that the experience was satisfying because it provided a closer connection to friends or family. Others found the experience satisfying because it was useful to the community. A few talked about experiences being satisfying because it was the final one and would not have to be repeated. Others included the experience because it helped them choose a mate or a major, represented a turning point, or demonstrated a close relationship with faculty.

As in the past year, the most frequent settings for these experiences are academic. Other seniors talk about friends, family, religion, 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. 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.

Context	Frequency	%
Major course	473	43.8
LSP course	160	14.8
Minor course	66	6.1
Elective course	62	5.7
Study abroad	47	4.3
Research	27	2.5
Greek life	26	2.4
Athletics	18	1.7
Internship	18	1.7
Resume/Grad. School application	18	1.7
Capstone project/performance	17	1.6
Service	15	1.4
Religious Organization	11	1.0
Campus Media	9	0.8
Creative Effort	8	0.7
Relationships	8	0.7
Student organization	7	0.6
Honor Society	6	0.6
Music organization	6	0.6
Student government	5	0.5

Forty-one percent of the "most satisfying experiences" occurred in the senior year, 36.7% in the junior year, 10.8% in the sophomore year, and 6.9% in the first year. 3.3% occurred across multiple years, and 1.2% gave no indication of year. As not all submissions are works, many cannot be "scored" for inclusion of gender, race, class, or international issues. However,115 submissions 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 51 submissions, while 43 dealt with race issues, and 32 dealt with issues of class.

Reflective Cover Letters

Finally, the portfolio asks students to compose a cover letter addressed to the Liberal Arts and Science Portfolio Project Team. In 2008, 97.5% of seniors submitted a cover letter. This is especially impressive, given that portfolios must be resubmitted if they are missing one of the academic prompts, but portfolios without cover letters are accepted. 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. The content of cover letters varies widely, and many students do not talk about all topics. Therefore, when data are reported for this category, any student not reporting an opinion is listed as "no indication." This is true even when a student gives no indication because they submitted no cover letter.

Cover Letter at a Glance

- Number of submissions: **1076**
- Median time to complete portfolio: **3 hours**
- Attitudes to Truman Education **Positive**
- Attitudes to portfolio **Mixed**
- Common themes **Growth in writing skill**
  Praise to faculty
  Varied opinions on LSP

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.

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 those opinions are positive, mixed, or negative. Finally, readers designate parts of letters containing relevant insights, or specific suggestions, to be given a broader audience. Some of these insights and suggestions are shared openly with the other readers as described above, and some are included as quotes here.

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. In 2008, the modal response was two hours, the median was three hours, and the mean was 3.67. The lowest assembly time reported was 15 minutes total and the most was 72 hours. 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, and probably an overestimate. Consider for example that the student who reported 72 hours also said that they finished within a single weekend. One third of students reported spending two hours or less. Fifty -eight percent of students reported spending 3 hours or less. Ninety-seven percent reported 8 hours or less. The following quote is highly representative of the process students describe:

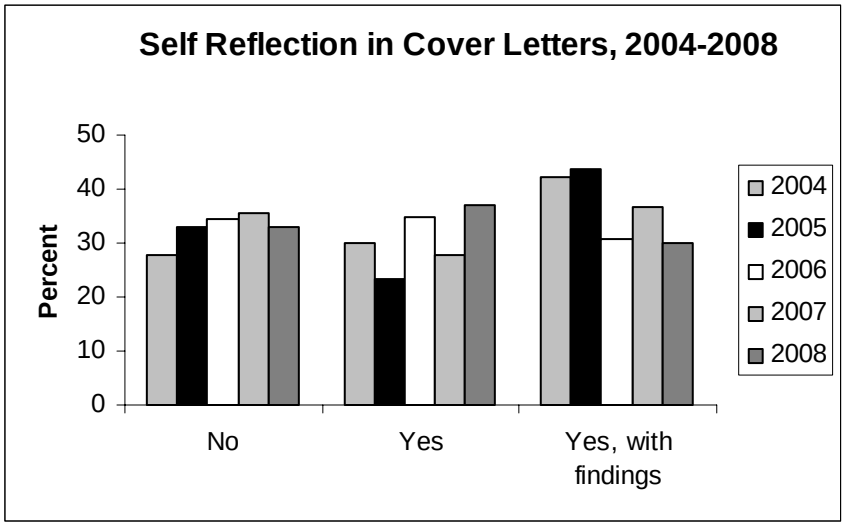
> *When putting together this portfolio I compiled the papers and works that might work for each of the prompts. After going through each one, I decided which was most fitting for the prompt that I was also proud of. I worked on it over a course of time, spending approximately three to four hours total on the project.*

Some students reported difficulty in finding papers because their computers had crashed or they had not remembered to save their work, but many also reported that choosing the best work for each prompt was quite simple.

> *There were a few paper-rufflings, a couple mouse-clicks and before I knew it, my portfolio was complete in under an hour. A few of the categories were specific enough that it would be difficult for me to come up with any artifact other than one specific example.*

REFLECTION IN COVER LETTERS

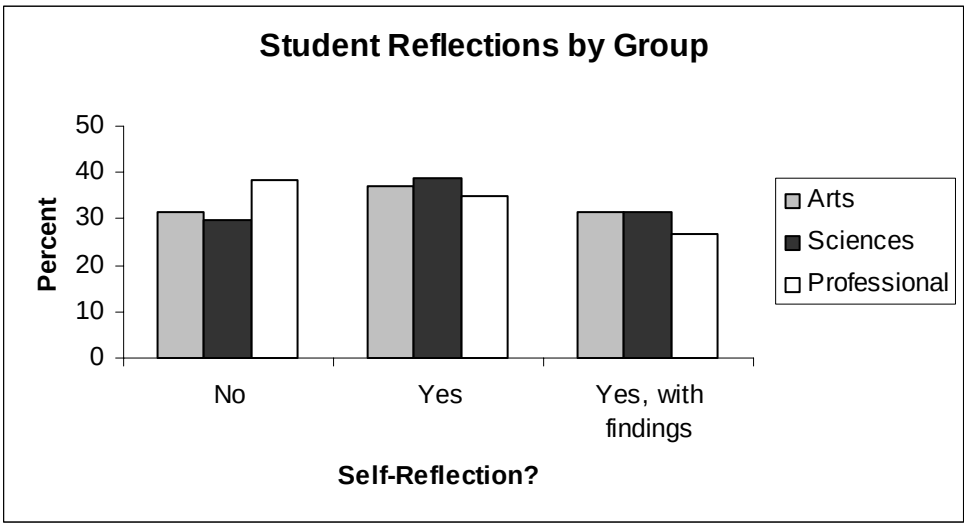
Ideally, the portfolio serves as an opportunity for students to reflect on their experiences at the University. . student presents specific insights into growth or lack of growth. Many students did engage in self-assessment; however, the number of students who share findings of their self- reflection declined relative to 2004 and 2005, 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 slightly less likely to include reflection than are the students in either Science or Professional majors. In 2007, students in the Arts and Humanities were most likely to include specifics about how they had changed. However, in 2008 student in Math & Sciences had the highest percentage Overall, 68.4% of

seniors in the Arts & Humanities included some sort of reflection, as did 70.1% of students in Math & Sciences, and 61.6% of seniors in Professional majors.

When students do share the results of self-reflection, most comment on improvement in their writing. For example, one student writes



I can definitely tell where my writing has increased in focus and depth, showing that I am writing with more knowledge and passion than before.

Two more give a less representati

ve, but more complex view on the change in their writing:

I found that my writing has definitely changed, some aspects for the better, others for the worse, but being able to see that change was something I hadn't expected to see. As a freshman, I thought I was one hell of a writer, but most of the subjects I was writing about were fairly easy and not very demanding. However, as the years continued, I found that the confidence I had as a writer was masked with a little bit of arrogance.

I learned by completing this portfolio that the best papers I have written are in classes that I was most challenged in.

A great many students commented on overall intellectual growth, and some linked that to specific curricular experiences.

I realized how much my critical thinking has expanded because of Truman's encouragement of interdisciplinary thinking.

Others students used the portfolio as a way to determine their strengths and challenges. For example, one student shared the following

The timing of collection of materials coincided with applying to graduate school, and helped me to see not only which classes I had enjoyed the most, which turned out to be many at Truman, but what my reading and research interests are. A former student at Truman had advised me that the portfolio project was a useful way of summing up my undergraduate academic experience for statement of purposes and personal statements, and I think she was right.

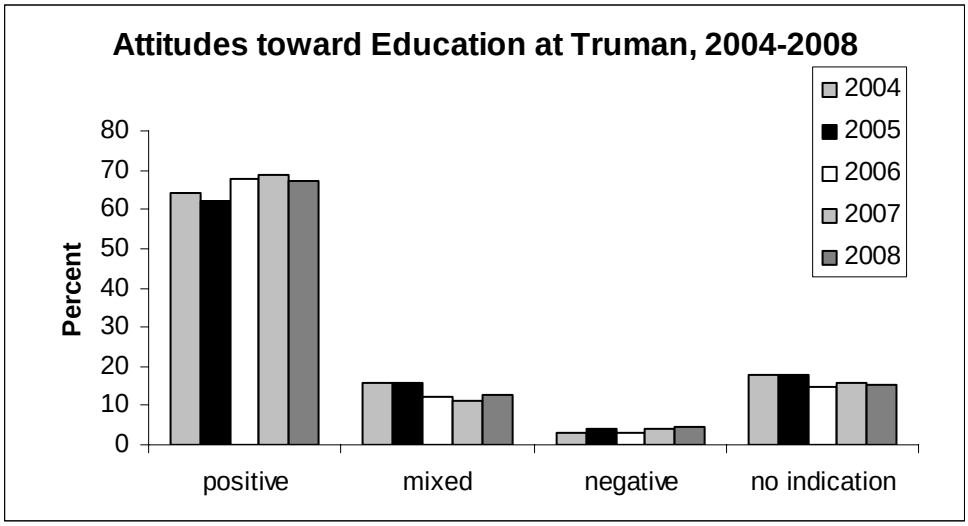
A few students' reflections included thoughts about the difference between grades and learning experiences.

On a separate note, at times I feel that I cared more about getting a great grade than really learning the material or even caring about the course because of pressure and competitiveness among my peers; in hindsight, I would rather have taken a lower grade than have simply rushed through useful material.

Finally, some of the reflection about self-growth includes growth through co-curricular experiences. In cases like the following, growth in one area fostered growth in another

My freshman year I joined Delta Sigma Pi, a business fraternity, and I have seen how extra curricular programs can enhance the learning process.

ATTITUDE TOWARD EDUCATION AT TRUMAN



Student attitudes regarding their education at Truman continue to be primarily positive. Nine hundred and twenty - nine students gave some opinion of their overall education. Of those, 67.2% expressed a positive attitude, 12.9% expressed mixed feelings, and only 4.7% expressed generally negative feelings. Overall, the pattern of a large percentage of positive attitudes and a small percentage of negative attitudes towards a Truman education has been demonstrated each year the portfolio has been administered. This pattern of mostly positive attitudes toward Truman is also true across disciplines and majors. Differences across major groups were small. One frequent theme in positive comments was about rewarding experiences with faculty. The following are representative.

Truman turned out to be the perfect fit for me. It has been a place where I can feel challenged and accomplished. I have grown and thrived in my time here, and I am thankful everyday that I made this choice for my education. One thing I am particularly satisfied with is the relationships I have been able to develop with my professors. I find that teachers are extremely accessible here, whether through office hours or email, and I have always been able to excel by working things out with them. It has been nice to know that my teachers actually know who I am and can assist me on a personal level.

My academic advisor has been immensely incredible and supportive . . . without him, I surely would've fallen through the cracks.

I enjoyed the small class sizes, personal attention, and the professional as well as social networking opportunities that I have made in my time here at Truman. Truman will always hold a high place in my heart and I am proud to be one of its May 2008 graduates.

Above anything, I am very appreciative toward my professors. Several of my professors at Truman have made a huge impact on me, and my hope is to remain in contact with them for years to come. I am so lucky to have found my way into their classrooms and received an amazing learning experience from them.

Other students emphasized co-curricular activities .

The thing I liked most about Truman was the experience and people I met through my scholarship/institutional jobs.

I also feel very fortunate for the experiences I have been afforded by Truman . . . working at the Joseph Baldwin Academy every summer, the chance to study abroad, undergraduate research, and the ability to be involved with numerous organizations on campus.

Overall, my experiences at Truman have been positive ones. I am very active in Greek Life here and I have been able to meet many people both faculty and students alike and forge very meaningful friendships. I enjoyed meeting and working with administrators and professors to improve Greek Life on Truman's campus.

Truman's general education curriculum, the Liberal Studies Program (LSP), was mentioned frequently. However, opinions on the efficacy of the LSP and of the value of liberal arts in general were highly varied. The following provide some idea of the range of comments.

I understand that the LSP classes have guaranteed me a more rounded education and I appreciate the different skills and tools that I have acquired from these courses, but I never had the opportunity to really utilize those skills in a major course assignment or otherwise.

While I was taking such classes as Bio 100 and Trig, I absolutely hated them. I constantly complained that it was information that I'd never need or use. It's funny how wrong I was. While I can honestly say that I'll probably never use Trig in my life, I understand now that the applicability of the coursework wasn't really the point. The point of a liberal arts education is to train the mind and make better thinkers. If you can only look at things from one viewpoint, you'll never get the full picture. The value of a liberal arts education is not something that I realized until this semester.

I learned that every single one of my submissions came from an LAS course. No matter how much I complained about being forced to take them, they brought out something good in me.

Beyond the comments on the LSP, there was little consistency among the mixed and negative comments about overall Truman experience. This makes it difficult to know which are isolated experiences and which represent broader trends in university life. Following are some examples.

The University, despite the promotional mailings from Admissions, has not yet fully abandoned its past as a regional state university. Many of the professors at Truman are holdovers from Northeast. Changing the name and level selectivity yet keeping a mediocre underpaid faculty is not the path to excellence.

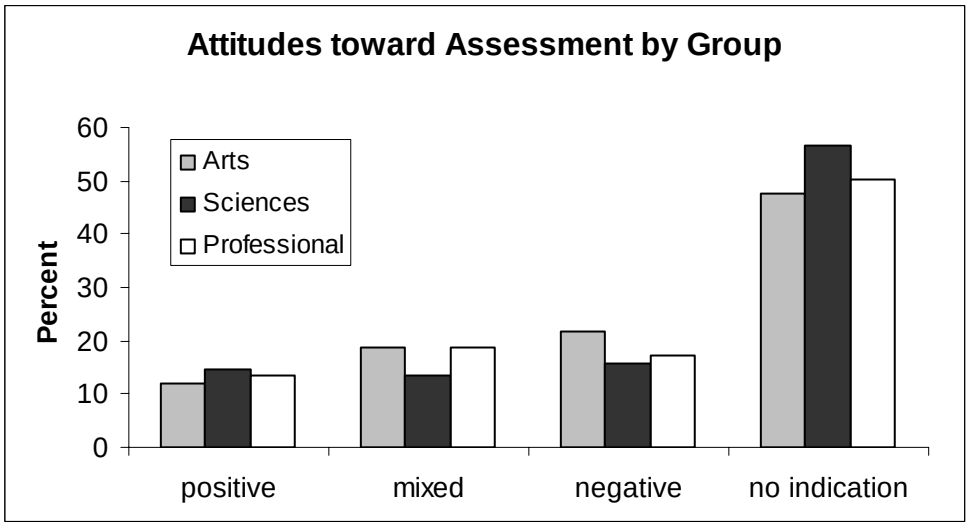
Considering only the work I have submitted to you, it is apparent that there is a serious deficiency in a students assessment, as the works submitted, all of which received the highest marks, represent very little effort, and even less dependence on concepts learned or research performed. For instance, my Historical Analysis received a 94%, and I wrote it the morning it was due, having done no research.

PLEASE ENCOURAGE MORE DIVERSITY, while I hear everyday in class how lame talking about diversity is, and how we (nursing) is sick of talking about diversity, the reality is that talking about it where there is no diversity to talk about is lame, but that does not mean that diversity itself is not something to be valued, sought, and implemented rigorously in campus ACADEMICS, and in intellectual conversations.

Almost every teacher I've had throws a book at you and then every few weeks asks you to tell them what it says. It is strictly memorization without the opportunity to apply what you learn in a way that will let the knowledge stick with you in the future.

ATTITUDES TOWARD ASSESSMENT AT TRUMAN

Students are also invited to discuss their attitudes toward assessment at Truman overall. Altogether, 528 students made such comments. Note that this does not include students who made comments only about the portfolio. There was a small a trend toward negative attitudes. More precisely, 27.8% of those with comments had positive attitudes,



34.7% were mixed, and 37.5% were negative. Students in the Professional majors were somewhat more likely to have positive attitudes, possibly because more of their assessments are related to licensure or accreditation. Note, however, the majority of students in each group gave no indication of their opinion.

Those students who made positive comments often had brief remarks about how assessment is good for the university. Those with negative comments were often about how they were frustrated by assessments that had little impact on them personally. For example,

Assessment is something that is best done with the person who is being tested can receive valuable feedback. Without feedback to the one who is assessed there can be no learning and thus the test itself was a pointless exercise in which the test taker has gained nothing.

The assessment most frequently singled out by students was junior testing.

I do not think that it is necessary to have both the junior and the senior tests. I think that the senior test is important because it helps to measure how each college or division of Truman is doing in educating students in their major. The junior test seemed to be similar to the ACT or SAT, something that every student at Truman has completed and need not complete again

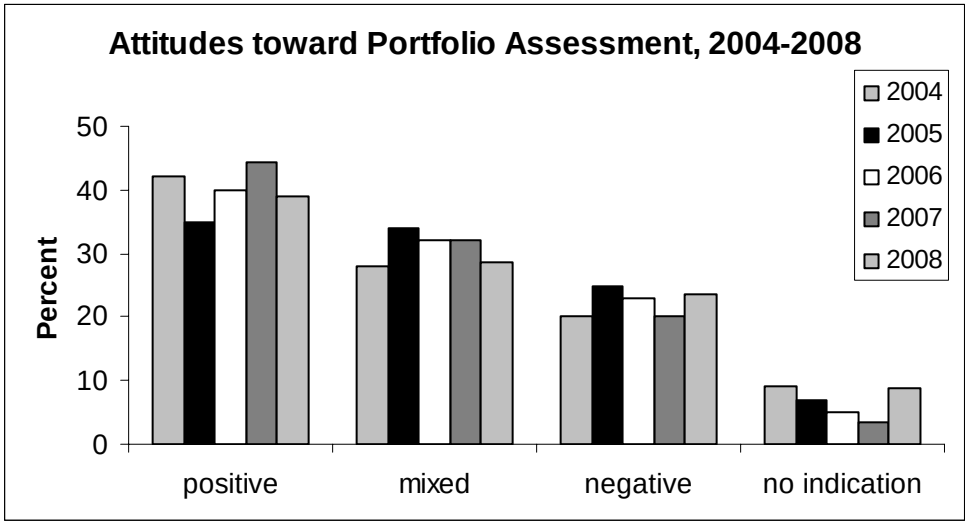
Several students contrasted juniors tests with the portfolio process. Most, but not all of those thought the portfolio provided a more meaningful assessment of their abilities.

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, 8.7% of cover letters provided no feedback, which is up slightly from the previous year. Just under forty percent of seniors were positive about their experience with the portfolio. Negative attitudes pervaded 23.7% of cover letters, and 28.4% had mixed feelings about the portfolio process. Attitudes across major were reasonably similar, with those in the Professional group providing more mixed opinions.

A great many students report that their attitude toward the portfolio was negative before they started, but positive after they finished. For example

Although I was skeptical about completing the portfolio, I found the task surprisingly fun and interesting. I enjoyed looking back and seeing how far I've come in the last four years. My cognitive processes have matured and so has my ability to create connections between different subjects.

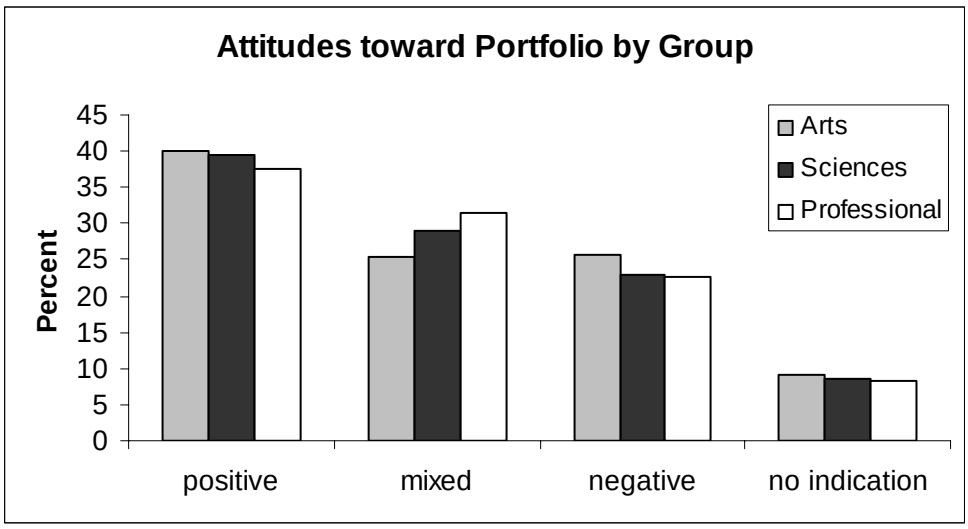


Positive comments, like each of the following, often recognize the value of the reflection occasioned by the process of looking through their previous work.

I enjoyed the process of compiling my portfolio. . . It was a tangible way for me to understand the progress I have made at Truman.

Without this project I never would have looked twice on what I wrote in the last four years

I feel that the portfolio assignment is a good idea for the simple fact that it allows for the construction of closure on the Truman experience.



Negative comments, like those from the following two students, were often about how the portfolio took too much time away from things they saw as more meaningful.

I was highly annoyed that I had to devote precious hours of my life during the busiest year of my college career to putting this together.

The portfolio, for me, became one more strip of bureaucratic red tape

A few students went out of their way to mention that early knowledge of the portfolio made the entire process easier. For example,

Upon entering the University in the Fall 2005 semester, I was aware of the portfolio requirement. Because of this, I began saving what I felt was a representation of my best work early in my college career. Thus, as a senior, the process of assembling my portfolio has been a fairly simple one.

Similarly, spacing out the work and having faculty show interest in the products also gave the process more meaning.

The liberal arts and sciences portfolio has been an interesting and unique experience. As part of ES 451 Concepts of Aquatics, a portfolio prompt was required to be submitted each week. Once all the prompts were submitted, the head of the department assisted us by compiling them and turning them in. As a result of this assignment having deadlines, the task was far more manageable.

As in years past, many students have trouble seeing any value in assessment that does not directly measure the major.

I do not see the completion of this portfolio as a good way of judging my performance at this university. As a music major, most of the areas emphasized in the portfolio not emphasized in my field and yield little benefit for me to spend time on. I believe that a departmental portfolio would be much better suited to assess my performance at this university.

Furthermore, students occasionally bemoan the fact that there is neither incentive nor punishment based on the quality of the work. Some suggest that there should be some sort of consequence attached.

Making this a grade in a class could improve the students response and effort put into the portfolio admissions. There are many students who do not seem to put serious thought into this senior assignment

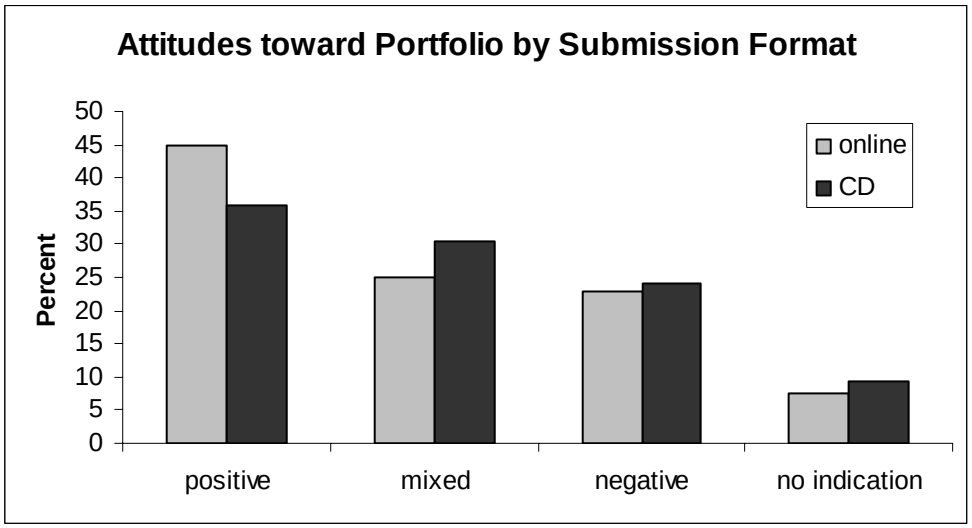
Nonetheless, these attitudes may represent a slight upward trend: keeping up communication with students is always a challenge. However, attempts at communication have been increased relative to five years ago, and have been aided by technology. As before, notices are sent to all first-year and transfer students at the beginning of their education, capstone instructors are given specific portfolio information, and portfolio readers are encouraged to remind their students and colleagues of the process. The student newspaper had some articles on the portfolio in 2006, which may have raised awareness of student graduating in 2007, and might explain why those number are higher than this year's. For the past two years, all students with senior status have also received reminder emails, and students who submit graduation application in time receive reminder emails. The Office of Assessment and Testing has also been serving as a point of collection for students who have not already submitted through the capstone course. Though there is certainly room for improvement, these attempts

may be having the intended effect of making the portfolio less onerous for students, as evidenced by the following student quote.

This portfolio is only what I came to expect from Truman:. A challenging yet rewarding experience.

TRIAL OF ONLINE PORTFOLIO SUBMISSION

This year there was one substantial change to the process of portfolio submission: an online submission system was piloted with a small number of students in Fall 2007, and made optional for all students in spring 2008. In total, 413 students submitted online and 675 submitted through CD (or occasionally through email).



The online submission process made the administration of the portfolio somewhat easier. Though there were a few technological problems in the spring, most students were able to submit in less time online than for the traditional CD submission. There is some possibility that students who had difficulty submitting online chose to submit via CD, which would increase the total time for submission. However, if that is the case, we would have expected more students to complain about that within the cover letter. The average time taken for online submission was 3.0 hours, while CD submission averaged 3.9 hours, a statistically significant difference (t (879) = 4.75, $p < .001$), as well as one that is likely to be meaningful to students. The chart above also shows that students who submitted online also reported slightly better attitudes toward the portfolio process than those who submitted via CD, a pattern that is statistically significant ($X(2) = 8.09$, $p = .018$). Few commented on this explicitly in the cover letters, but one said

In general, I feel that the online option for submission is a useful tool for students who have their writing stored as files on a computer.

Faculty Reader Reflection

During the portfolio reading sessions, faculty and staff have many conversations about expectations of students and the structure of the curriculum. After reading submissions from each prompt, faculty reflect on the quality of work. At the end of each reading session; faculty are asked to comment on their experience. Both verbal and written feedback is recorded. This allows readers to share their views on the overall quality of work, to share insights about student achievement, and to speak about evidence of teaching innovation. It also provides the portfolio director with feedback about the process itself.

Reader responses again affirmed portfolio reading as a positive experience for faculty development. Several commented that it was a good opportunity to see what is going on outside their own department. In fact, a few readers suggested that all new faculty should be required or encouraged to read portfolios after their first year at the university. Many appreciated the camaraderie that can development with colleagues who rarely have opportunity to meet during the academic year.

Despite the many attempts at communication with students, readers were concerned that students did not know enough about the portfolio. Several faculty were concerned that students may not be submitting their best work for the portfolio, and many had suggestions for improving the communication process for both faculty and

students. For example, some readers suggested creating a time where faculty from different departments could discuss how the portfolio was integrated into the capstone experience across disciplines. Other faculty thought it was unrealistic for student motivation to improve unless faculty more universally supported portfolio assessment. To this end, they suggested additional dissemination of the data and more collection of demographic data to allow more analyses. Readers suggested that more could be done with assessment data in general.

This is the second year in which the reading week was shortened from 40 to 30 hours. Most were still very glad of the shorter days, but new readers commented on missing the opportunity to score two of the five academic categories This year more than previously, readers reporting feeling rushed. This is particularly interesting given that readers finished reading the submissions for 2007, but did not for 2008. This may have been partly because reporting scores was slightly different for online and CD submissions, requiring readers to learn both systems. Many preferred the online system overall. Another procedural suggestion was to allow reading at different times of year. For example, one week of reading could occur at the end of or just prior to the Fall semester.

As Truman is in the midst of considering a revision to the core curriculum, many of the conversations were about how the work reviewed can provide information about student learning under the current curriculum. We also discussed how the work might suggest areas of strength and concern. Finally, suggestions were made about categories that could be added to the portfolio. For example, the portfolio might be changed to include the best work from the major, creative work, work that showed the most intellectual growth, or work that showed engagement with the community.

Reliability and Validity

Inter-rater reliability continues to be a concern. Few submissions were double-scored this year, but the inter-rater correlations for Historical Analysis were only .42. However, if scoring error is randomly distributed, it should balance out across the large number of submissions, making the averages fairly representative. Furthermore, the scoring meets the most obvious tests of criterion validity: science majors score notably higher on the Scientific Reasoning prompt than students in other majors; history majors score notably higher on the Historical Analysis prompt than students in other majors, etc. Furthermore, students who submit work from the junior and senior years score higher than students who submit work from the earlier years. As in 2007, this is true for each prompt except interdisciplinary, where junior and sophomore submissions from JINS courses outscore submissions from the senior year. Similarly, students who report that their best work was lost or that they never completed work appropriate for a prompt generally receive lower scores than remaining students

Undergraduate Truman G.P.A. was obtained from information systems for most of the graduates. As in 2007, cumulative GPA correlated with each of the portfolio categories. Undergraduate G.P.A correlated with scores for Critical Thinking (r (1074)= .249), Interdisciplinary Thinking (r (1067) = .238), Scientific Reasoning (r (1070) = .152) Historical Analysis (r (1073) = .137), and Aesthetic Analysis (r (1067) = .144). Furthermore, ACT correlated with scores for Critical Thinking (r (1041)= .199), Interdisciplinary Thinking (r (1036) = .178), Scientific Reasoning (r (1040) = .028) Historical Analysis (r (1042) = .083), and Aesthetic Analysis (r (1037) = .146). All of these would be statistically significant at the .01 level except ACT and Scientific Reasoning. One would expect these correlations to be small, because cumulative G.P.A. and ACT are each influenced by many factors, some completely unrelated to any of these portfolio categories. However, these correlations with portfolio scores indicate that the portfolio is sensitive to some of the variability in overall student ability. In contrast, time to complete the portfolio does not correlate well with scores for any of the prompts or cumulative G.P.A (r values range from .023 for Scientific Reasoning to -.012 for Aesthetic Analysis). The strongest correlation between time to complete the portfolio and any of the academic variables was a nonsignificant *negative* correlation with ACT (r (856) = -.052, p = .128), This is encouraging: students who spend little time assembling the portfolio may still choose appropriate works for each prompt. Collectively, these statistics show that scores consistently follow expected patterns, something that would be unlikely if they were entirely unreliable.

Summary and Conclusions

Student performance as demonstrated by the portfolio has remained remarkably stable. The quality of academic work submitted by students remains much the same as that in previous years. The median scores for Critical Thinking and each of the Analytic Writing categories demonstrate competence. The scores for Interdisciplinary Thinking demonstrate some competence, and the remaining averages were in the weak competence range. The gains in interdisciplinary thinking found after the implementation of the Junior Interdisciplinary Seminar seem to have leveled off.

The portfolio prompts have changed little over the past few years, but strict enforcement of the graduation requirement now means that essentially all students submit works in essentially all categories. Slight decreases in average scores relative to five years ago may reflect this increase in submissions, rather than an actual decrease in quality of work. Keeping some of the content of the portfolio consistent may prove to be an advantage as the university contemplates major curricular changes: consistency in portfolio procedures may allow the effects of curricular changes to be more apparent.

Faculty continue to report that reading portfolios is good faculty development. Implementation of online submission appears to be a success: students who submit online reported requiring less time to complete the portfolio, and had slightly better attitudes toward the process. Problems of document storage remain a problem, but extension of the online submission process could be extremely helpful, increase the validity of the measure by ensuring that students have access to all of the works they produced. Having that space available early in a student's career would also open up potential for students and advisors to use the portfolio as a reflective tool: in addition to talking about whether certain courses had been completed, advisors could ask students to use the portfolio to consider their progress across skills.