

# Transforming WAC through a Discourse-Based Approach to University Outcomes Assessment

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Our aim in this paper is to tell the story of how a discourse-based approach to university outcomes assessment can transform the teaching of writing and critical thinking across the curriculum. The institutional assessment plan developed by our university has been influenced by the work of Barbara Walvoord, a pioneering figure in writing across the curriculum. We will illustrate the surprising power of Walvoord's methods by telling our story at Seattle University, where Walvoord was hired as an outside consultant to help us with university assessment planning. We believe that these methods could be successfully transported to other institutions.

## Background and Theory

*Prior History of WAC and University Outcomes Assessment at Seattle University*

Seattle University, a Jesuit institution with 3500 undergraduates, started an infusion model of WAC in 1986 with the inauguration of a new core curriculum that mandated "a significant amount of writing" in every core course. Co-author John C. Bean accepted a new position at Seattle University to help coordinate WAC efforts and to conduct grant-supported faculty workshops. In the late 80s and early 90s WAC received considerable attention on campus, one result of which was Bean's book *Engaging Ideas: The Professor's Guide to Integrating Writing, Critical Thinking, and Active Learning in the Classroom*. After the initial workshops, however, interest in WAC was maintained primarily by a small network of faculty who valued WAC's on-going pedagogical conversations—the "converts" often celebrated in WAC literature. Without institutionalized "W" courses or an oversight committee that monitored writing in Core courses, Seattle University had no identifiable WAC program. As we will show, Walvoord's approach to assessment has transformed WAC in significant ways.

Whereas Seattle University began its WAC initiatives in the mid 80s, it has only recently developed a plan for university outcomes assessment. Like many private institutions that weren't accountable to legislative bodies, Seattle

University largely ignored the assessment movement until motivated by a new University Strategic Plan passed by the Board of Trustees. The assessment mandate in the Strategic Plan partly responded to pressures from the Northwest Association of Schools and Colleges (the accrediting body in our region) but also reflected our higher administration's recognition that assessment—properly instituted—might have a positive impact on student learning and faculty development. Although the university's professional schools had conducted outcomes assessment for professional accreditation, there was no coordinated university assessment plan. Moreover, resistance to assessment was fierce in the arts and sciences, where many faculty protested the reductionism of standardized tests, the anticipated loss of classroom autonomy, the time demands that assessment seemed to impose, and the general philosophic positivism and corporate mentality that seemed to underlie the assessment movement.

The first steps towards outcomes assessment were taken when the university prepared its self-study for a Northwest Association of Schools and Colleges accreditation review in 2000. Although no assessment plan was in place, each department created—often for the first time—a list of learning outcomes for its undergraduate majors. From the perspective of WAC, it is noteworthy that almost every department included, as one of its outcome statements, the desire that graduating seniors be able to produce an apprentice professional paper within the discipline's discourse. However, few disciplines actually required such a professional paper, and there was no process in place to assess whether students actually possessed the requisite skills. When the university was criticized by NASC for having no assessment plan—and given a “revisit in five years” mandate—the pressure to create an assessment plan was increased.

### *The Crucial Question: Choosing an Assessment Approach*

Uncertain how to proceed, the university decided to hire an outside consultant. Looking back on the process, we can now see that the choice of our consultant—Barbara Walvoord—set us on an assessment path that would differ in key ways from the paths chosen by many other colleges and universities. (Over a two-year period, Walvoord spent four days on our campus, held workshops, talked to faculty and administrators, responded generously to scores of e-mail queries, and conducted several telephone conferences.) Except for John Bean, who knew Walvoord's pioneering reputation in writing across the curriculum, no one on campus associated Walvoord with WAC pedagogy. To faculty and administrators, she was an assessment expert plain and simple. Moreover, Walvoord's identity in assessment rather than WAC was crucial to her influence on campus (which already had a WAC person).

The defining feature of Walvoord's approach to assessment is her emphasis on the course-embedded assignment and on the professional expertise

of the individual professor, whose experience in grading student work is the foundational assessment act (see Walvoord and Walvoord and Anderson). Whereas other approaches to assessment often discount the professor-as-grader, Walvoord foregrounds the professor's expertise. What Walvoord asks is that professors become more intentional, reflective, and articulate in naming their criteria for evaluating student performance on a particular assignment. To this end, she asks professors to develop rubrics that specify levels of performance across various criteria, to use the rubrics to score student work, and then to analyze the distribution of scores to discover patterns of strengths and weaknesses in student performance. When these patterns are reported at a department meeting, the ensuing faculty discussion often leads to suggested improvements in teaching methods, assignments, course design, or curricular coverage to ameliorate weaknesses.

Walvoord's approach thus builds an assessment plan upon the work faculty are already doing in their courses. A department's assessment plan in any given year can be based upon assignments embedded within departmental courses and can use as data the professor's grading of the assignments using a rubric. The assessment instrument can be a paper, an exam, an in-class free-write, an oral presentation, a multimedia project, a painting, a senior project—any observable product or performance that can be graded. Because in practice most of the products are papers or oral presentations, the potential impact on writing-across-the-curriculum or communication-across-the-curriculum is immediately apparent.

### *Discourse-Based Versus Psychometric Assessment Models*

To distinguish Walvoord's emphases from those of other assessment models, we have chosen the terms "discourse-based" versus "psychometric." These terms are not elegant and do not, of course, do justice to the many different ways that excellent assessment can be undertaken. Given our rough binary schema, the psychometric approach is characterized by its empirical emphasis on data collected through a robust research design and analyzed for reliability, validity, and statistical significance. A prototypical psychometric project might be a pre-/post-investigation aimed at detecting gains in student performance across a course of study. In contrast, a discourse approach focuses primarily on rich faculty talk about ways to improve curriculum and instruction in light of strengths and weaknesses in student performance on course-embedded assignments. A typical assessment sequence based on the discourse model might look like this:

- *Starting point:* Departmental faculty decide upon a learning outcome to be assessed (for example: students' ability to integrate primary and secondary sources into a researched argument or their ability to display empirical data graphically in a technical report).

- *Instructor action:* Departmental faculty determine places in the curriculum where these skills are required in assignments already embedded in one or more courses. Working individually or as a team, faculty develop a scoring rubric for assessing the desired outcomes. Individual faculty score their own students using the rubric and analyze patterns of strengths and weaknesses in student performance.
- *Departmental action:* At a departmental assessment meeting, instructors report their results. Departmental faculty articulate characteristic strengths and weaknesses of student performance, discuss ways to improve performance, and suggest possible changes in assignments, instructional methods, or curriculum design to improve student performance. To complete the assessment cycle, department faculty then implement selected changes proposed in the department meeting.

Our experience at Seattle University suggests that this approach can reduce faculty resistance to assessment. First, the method is simple. It focuses on departmental discussion leading to improvements in curriculum and instruction. The only paperwork required is a one- or two-page annual report that identifies the learning goals assessed, the embedded assignments chosen for assessment, the patterns of strengths and weaknesses found, and the kinds of changes in curriculum or instruction the department intends to implement. Second, this method validates the professionalism of instructors. It relies on individual professors' holistic judgments about complex student performances, thus lessening fear of reductive numbers or other kinds of philosophic positivism that underlies much faculty resistance to assessment. Finally, faculty often enjoy the productive departmental discussions that result from a discourse-based approach. While clearly focused on student learning, these discussions help faculty reach consensus about teaching goals, discover gaps in the curriculum, develop better assignments, improve teaching methods, and better coordinate instruction.

Of course, the discourse model that we have just described can easily be expanded to fit a psychometric model. When instructors score student work using a well-designed rubric (especially after faculty have been "normed" to use the rubric consistently), the resultant scores can be treated as hard data for purposes of psychometric study of student performance. Comparative or longitudinal studies, using complex research designs and sophisticated statistical analyses, can be based on data derived from discourse-based studies initially aimed at producing rich faculty talk. (For assessment approaches that blend both discourse and psychometric methods, see Huba; Suskie).

What we want to show in the remainder of this article is the way that departmentally-based discourse approaches to assessment have revitalized writing across the curriculum.

## The Assessment of Student Learning in a Sophomore History Sequence for Majors

The History Department at Seattle University wants to teach all its majors to think like historians. To do such thinking, students must learn how historians pose questions, conduct inquiry, gather and interpret evidence, and make historical arguments. History professors have long understood the complexity of this goal. Students must learn not just the traditional scope of historiography, which is often taught as the history of writing about history, but also the skills of doing their own historical writing, which includes epistemological issues (the construction, reconstruction, and deconstruction of historical knowledge), research methodology (the nature of evidence and how to use it in the construction of a historical argument), critical thinking (how to discuss and analyze complicated primary and secondary materials), writing and stylistic issues (organization, clarity, gracefulness), and technical issues (formatting, citation of sources). When faculty began thinking of its history curriculum from an assessment perspective, their perception, based mostly on anecdotal evidence, was that students were entering their upper-division research seminars without proper understanding of the fundamentals of writing a history paper. The department decided to use its first formal assessment project to address this problem.

### *Overview of the History Department's Assessment Project*

To move beyond anecdotal evidence, the faculty began by examining representative samples of history term papers written in senior level courses. With some exceptions, the department's anecdotally-influenced preconceptions were confirmed. Many student papers were narrative-based informational reports that addressed no clear problem or question, were uninformed by theory, and failed to answer readers' "so what?" questions about significance. The department's assumption that students would somehow learn these disciplinary thinking and writing skills through osmosis was called into question.

The department then turned its attention to two sophomore-level courses required of all majors—History 200, "Introduction to Historiography," and History 201, "Methods." It began by studying instructors' existing methods for teaching these courses. An examination of syllabi and assignments showed that the courses didn't focus on historical inquiry and argument. Taught largely through lecture with conventional term paper assignments, the courses seemed to be hodgepodges based on no guiding pedagogical principles. They didn't explicitly introduce students to theory, teach interpretive practices, or coach the process of historical research and writing. Through ensuing discussions, the department established the following teaching goals for the two-course sequence: 1) to prepare students for upper-division coursework in general and

research seminars in particular; 2) to teach students how and why historians ask questions and how they develop theories of interpretation; 3) to provide a solid understanding of the major traditions and current trends of the discipline of history; 4) to teach students how to conduct historical inquiry and present their conclusions to various audiences, whether in written or oral form.

The following year, co-author Theresa Earenfight was assigned to teach the first of these courses—Historiography—with the explicit mission of redesigning it to fit these new department goals. She began by transforming the department’s teaching goals into specific learning outcomes: By the end of the course students should be able to (1) analyze and evaluate the theoretical assumptions in an historian’s work; (2) articulate and defend their own theoretical assumptions; (3) do a close reading of primary sources; (4) interpret visual sources including maps; (5) assess oral sources; (6) evaluate quantitative materials; and (7) make their own historical arguments in the form of a research paper and an oral presentation. Using a variety of WAC strategies, she developed new kinds of assignments. In place of the traditional term paper, Earenfight designed a sequence of informal exploratory pieces, short papers, and a major final paper as follows:

- *Intellectual Journal.* Students were asked to write regularly in an intellectual journal aimed at deepening ideas and increasing participation in class discussion. She explained to students in her syllabus:

The only way to really grasp theory is to wrestle with it. In other words, I want you to use the journal as a way to talk to the authors and tell them what you think. I will distribute via email discussion-starter questions for each set of readings to guide your reading, but I expect you to go beyond my questions and formulate your own. I expect to see an ongoing discussion of your personal stance as a historian, couched in the professional vocabulary of a historian. At the end of the journal, for the last entry, I want you to articulate clearly and concisely (a page or two) this theoretical stance.

- *A series of four short papers.* The historical area for Earenfight’s course was the historiography of the English Civil War and Revolution. Her syllabus explained the major purposes and goals for this sequence as follows:

First, I want you to consider thoughtfully a single historical event from a variety of perspectives that will give you some idea of the complexity and difficulty in analyzing the events and people of the past. Second, you will begin to think like a historian. In introductory courses in history, you were taught to think historically (to examine and analyze change

across time), but now you are asked to think like a historian, to consider what happened through an analysis of the array of meanings that an event, a person, a social movement, a religious phenomenon, a political trend, and a dynamic of power possessed. Finally, you are asked to consider the role of the historian—you, me, Lord Clarendon, Herbert Butterfield, Christopher Hill, and everyone else who writes history—in the creation of meaning. You will critique the assumptions, biases, and preferences that we bring to the discussion and see how these a priori attitudes inflect, by both creating and distorting, historical truth.

- *A major research paper discussing theoretical frameworks that have shaped historians' interpretations of the English Civil War and Revolution.* This assignment asked students to develop their thinking through stages that included consultation with the instructor, multiple drafts, peer review, and a final oral presentation set within a context of a hypothetical professional conference.

At the end of the course, Earenfight made copies of the students' final fifteen-page research papers and presented her own analysis of their strengths and weaknesses based on a rubric. Additionally, five papers were randomly selected for scoring by the whole department. Finally, to see whether students could "talk like a history major," the department videotaped students' oral responses to questions about their final papers. Throughout the process, the department tried to discover whether students were able to read different kinds of historical evidence critically and imaginatively, to interpret an historical event in a reasoned format, and to place the event in an historical context. The department also considered questions like these: Does the student use a sophisticated and specialized vocabulary? Does the student understand the differences among interpretive practices and the role of theory in writing history? Can he or she consider how to address a problem using the methods and approaches of a historian?

### *Results and Discussion*

The department was impressed by how most students were able to synthesize complex and contradictory evidence and to develop some very sophisticated interpretations of an historical event. Of the sixteen students enrolled in the course, Earenfight identified nine papers as "strong," two as "good," and five as "weak." The department's discussion of the five randomly selected papers read by all the faculty showed considerable agreement about strengths and weaknesses. Here for example are two professor's descriptions of the strong papers:

**Professor 1:** I found that the grades awarded for this essay assignment were definitely in accord with the criteria provided to students, in a very clear and straightforward manner. . . . The structure of this assignment encouraged students not only to present a basic understanding of the content of the three historical works (which each student reviewed), but to go beyond this, to analyze/synthesize the authors' theoretical approaches concerning the English Civil War and grapple through to their own views about the validity of the authors' approaches and related matters.

**Professor 2:** They [writers of the strong papers] are able to distinguish among different interpretive schools. They are able to see that most historians do not belong to or use just one school of thought. They can identify themselves as having affinity with one or more schools of thought, and sometimes they say why in their papers. Their understanding of the different theories enables them to assess historians' work not only from the examination of theses and research but at a more interpretive level. They are able to see why historians interpret their findings in certain ways. I am overall impressed with their level of critical assessment of historical work, their capacity in assimilating material learned in class.

As another example, here are two professor's assessments of one of the weaker papers, identified as "student 2":

**Professor 1:** Student 2—Doesn't engage with theory. Mostly a description, a research paper.

**Professor 2:** Student 2—Weak analysis, very shaky use of theoretical approaches to understanding the events of the English Civil War. Can pinpoint the various theories at work but cannot really discuss them in a meaningful way. Essentially a summary without any substantive engagement with the terminology and concepts of historical analysis.

Departmental analyses of the videotaped oral discussions ( $N = 12$ ) revealed similar results as shown in the following table:

	No	Partially	Yes	Not asked
Able to Talk Like Historian [to use appropriately specific historical terminology that indicates the intellectual tradition of the discipline]	1	4	7	
Able to Identify Major Historical Thinkers	2	3	7	
Able to Define Own Historiographical Position	2	1	8	1
Able to Discuss “Objectivity Question” in History [to discuss whether objective history, as a discipline, is possible]	2	2	6	1

The department’s assessment procedures suggested that Earenfight’s pedagogical approach using WAC strategies helped students make progress toward more sophisticated historical inquiry and argument. The department now plans to extend the same procedures into the second of the two sophomore courses and to assure that students take the courses in sequence at the beginning of the major. Additionally faculty now seem more confident in creating stringent research projects in upper division courses. An unusually high number of recent history majors have presented papers at undergraduate research conferences or won distinguished scholarships to graduate schools.

### **The Assessment of Critical Thinking in a Capstone Finance Course**

The story of the undergraduate critical thinking assessment project in finance begins with faculty frustration at what instructors perceived as a lack of critical thinking skills among finance majors. The frustration had been building for several years and often dominated departmental meeting discussions as well as informal faculty conversations. Led by co-author David Carrithers, the department decided to conduct a pilot study of students’ critical thinking skills using an embedded assignment in accordance with the discourse-based assessment procedures recommended by Barbara Walvoord.

#### *Design of the Pilot Study*

To design the study, the department used a definition of critical thinking developed by cognitive psychologist Joanne Kurfiss. For Kurfiss, critical thinking is triggered when students confront an “ill-structured problem”—that is, a problem that cannot be solved algorithmically to yield a single right answer. Kurfiss defines critical thinking as “an investigation whose purpose is to explore a situation, phenomenon, question, or problem to arrive at a hypothesis or conclusion about it that integrates all available information and that

can therefore be convincingly justified"(2). According to Kurfiss, an effective assessment of critical thinking would typically ask students to develop a best solution to an ill-structured problem and to justify their proposed solutions, orally or in writing, with reasons and evidence appropriate to the discipline. Researchers could then study the processes by which students determined their solutions and developed supporting oral or written arguments.

The department's first task was to create an ill-structured finance problem that would evoke the kinds of critical thinking sought from students. Working as a committee of the whole, the Finance Department designed an ill-structured case problem in which students had to write a two-page memo to a lay client. In brief, the case assignment asked the student—playing the role of an investment advisor—to offer advice to a husband and wife about two investment choices for the wife's retirement savings: Plan A—taking a lump sum payout of a 401(k) plan and buying a fixed-rate annuity, or Plan B—taking a lump sum payout and investing it in a stock/bond fund. Of concern to the clients were the anticipated monthly income from each option, the long-range sustainability of that income, and the death benefit to survivors. Numerous variables were built into the case—some crucial and some extraneous—to approximate a real-world ill-structured problem. Finance faculty hoped that students would get quickly to the heart of the problem by identifying the client's lifespan as the chief risk factor for Plan A and the rate of return on the lump sum investment as the chief risk factor for Plan B. The students' task was to explain these risk differences to the clients and to show them different scenarios resulting from different lengths of time until death or different rates of return on the Plan B investment. Faculty also expected students to construct audience-friendly graphics showing intersections between the two options under different variable conditions (different life spans/different rates of interest).

By designing a case centered on an ill-structured problem, the department treated critical thinking in a dynamic, holistic way—as a total problem-solving and argumentative performance in response to a disciplinary problem. The department hoped to observe students' critical thinking abilities across several specific dimensions:

- The ability to determine appropriate analytical tools and finance methodologies to analyze each option.
- The ability to determine relevant data, analyze and evaluate these data, apply the analysis to the client's problem, make good decisions, and create an argument justifying the decisions.
- The ability to communicate ideas effectively in a professional situation to a non-finance audience.

The case assignment was administered in a 400-level course in finance taught by Carrithers. The department selected this course because it serves a near-capstone role in the finance curriculum. Students in the class tend to be graduating seniors having satisfied the requirements of a finance concentration. The assignment was given as part of a take-home final examination. Students had approximately one week to analyze the problem, determine their solutions, and write their memos. Thirty-two student case analyses were submitted.

The case analyses were scored by seven Finance faculty using norming and staff-grading processes well-known by composition researchers (see, for example, White). The department developed a six-point scoring rubric specifying finance concepts and elements of communication the faculty felt should have been used in the analysis. After a “norming” session, the finance faculty staff-graded the case analyses giving each memo two independent readings with “splits” arbitrated by a third reader.

### *Results and Discussion*

The most obvious and distressing result is that about half our students scored in a range which the faculty consider cause for concern while even top-half students showed considerable critical thinking weaknesses. More research is needed to determine whether these weaknesses result from failure to master crucial finance concepts, from inadequate problem-solving processes (for example, failure to break the problem into parts or to draw heuristic diagrams), from failure to think abstractly enough to apply concepts flexibly in new situations, or from an inability to imagine the needs of a lay audience.

In our analyses of the results, we identified four kinds of frequently recurring critical thinking problems:

- *Random rather than purposeful application of finance tools and methodologies*

Almost all students used tools and methods covered in the finance curriculum (analyzing Net Present Value, calculating an Internal Rate of Return, doing a break-even analysis, quantifying risk, doing a sensitivity analysis), but many students used them randomly, often applying them to extraneous data, and revealing no purpose or goal in the calculation. Many students were thus unable to identify key variables and risk factors or to choose appropriate methods of analysis and use them correctly. Exhibit 1 shows how one low-scoring student used sensitivity analysis in an untitled page attached to the memo.

Out of the context of the rhetorically-focused assignment, this analysis is technically correct, but it was not tied in any way to other analyses the student had done, nor did the student refer to it in the client memo.

**Exhibit 1: Unassimilated Use of a Sensitivity Analysis**

Return	NPV @ 0%	NPV @ 2%	NPV @ 4%	NPV @ 6%
10.0%	\$161,388.19	\$1,159,322.22	\$78,534.54	\$47,599.66
12.0%	\$194,564.15	\$145,397.14	\$104,589.31	\$71,252.22
13.0%	\$211,747.32	\$160,639.47	\$118,461.38	\$83,460.12
15.0%	\$246,743.43	\$191,640.77	\$146,090.96	\$108,227.57
17.0%	\$282,683.76	\$223,416.27	\$174,358.43	\$133,522.27
20.0%	\$338,674.85	\$272,787.29	\$218,165.21	\$172,626.12

- *Failure to address the client's problem and provide the requested financial counsel.*

The case assignment instructs students to help the retiring couple choose between Plan A and Plan B and to provide justifying explanations. In many lower-scoring analyses, readers couldn't determine whether the student had actually addressed the question. Often lower-scoring students wrote introductions that gave no clue what thesis or position they were supporting. Here is an apparent thesis passage from a paper in the lower end of the scoring distribution:

Congratulations! Retirement is meant to be a time of relaxation to be enjoyed spending your hard earned time with loved ones and enjoying the outdoors of the Pacific Northwest. You have worked very hard for the last thirty years and deserve to be presented with the best retirement payout option plan suitable to your needs. Reaching retirement has presented the question of what the best payout option might be for the next ten years. The options to be evaluated are....

Contrast this passage with the following one from one of the better papers from the sample:

This memo is in response to your question about the best retirement plan for you. You have asked me to compare two plans, which are reviewed in detail below, to advise you about any variables you might have inadvertently overlooked, and to make a recommendation of which plan you should select. After conducting a quantitative and qualitative analysis pertinent to your situation, I recommend Plan A.

The first example fails to identify the reason for the analysis, the subject of the analysis, or the recommended action. The second example makes it clear why the writer is doing the analysis, what she is analyzing, and what she recommends.

- *Inability to translate finance concepts/methods into lay language.*

The case asked students to write their memos to a specific audience, an educated couple without specialized training in finance. Students would often begin their memos in audience-friendly language but then lapse quickly into finance jargon, perhaps imagining the instructor as audience rather than the couple specified in the case. Here is a typical passage exhibiting this problem:

When the two NPV's are compared we can see what return the growth fund must earn to make it a better option than the ISLA. When the NPV's are equal at a specific discount rate, that is the return the growth fund must earn to make it the better option. ... The second analysis conducted was figuring the IRR for the ISLA option and comparing it to the expected return of the growth fund.

At first glance, this problem may be considered a writing or communication deficiency. But we believe it may indicate an underlying critical thinking problem. When students use financial jargon, including abbreviations, as in the above excerpt, it may be an indication that they are not comfortable in their knowledge of the concept—especially when they provide no explanation of the tool or how it is employed in the analysis. Students, we surmise, tend to find comfort in jargon. They can memorize the terms, and thus feel that they sound like finance professionals, without fully understanding the concepts they represent. However, it takes considerable control of the concepts to be able to explain them to a non-expert audience. Besides revealing weak communication skills, use of jargon may thus be evidence of a fundamental inability to use financial concepts in unfamiliar settings.

Now compare the excerpt above to one scoring in the upper range of the distribution:

There are three main ways that we can analyze the two options. We can find out the value of the cash flows the plans will provide in today's dollars (net present value), we can find out the rate of return the plans will provide (internal rate of return), and we can think about the returns in terms of risk and required rate of return. We have to look at this issue within the framework of a sensitivity analysis, especially the sensitivity to how many years you will be receiving the annual payments. For the sake of analysis, let us

compare 4 cases of 10, 20, 30, and 40 years. Let us begin with Plan A.

By defining terms and by explaining the process in which the financial tool will be used, this student recognizes what the audience understands and needs, while at the same time demonstrating that she knows how to use the tool analytically.

- *Failure to construct rhetorically useful graphics*

Another insight from the case analyses is that many students did not use tables, graphs, or other visuals effectively in supporting their analysis. Often, in fact, supporting graphics were gratuitous. For example, consider Exhibit 2, which one student attached to his memo as an appendix without reference or explanation. In this example, the author creates an entire table of identical cash flows to demonstrate a simple NPV calculation. While perhaps useful to the writer in making calculations, it has no meaning for the intended audience nor does the writer connect it to a supporting argument. The behavior we desired—students’ constructing rhetorically effective graphics that told the story of the two investment options at a glance—did not occur.

***Exhibit 2: Example of a Rhetorically Ineffective Graphic***

**401K Balance:** \$155,673.53  
**Monthly Payments:** \$1,225.85  
**Lump Sum:** \$37,000.00  
**Discount Rate:** 6% .45%

### **Assumptions:**

1. Since annuity is risk free, 10 Year Treasury bill rate is used that is 6% annually, 0.5% monthly
  2. 10 year investment horizon is used as an example
  3. Merrill Lynch will be the co-trustee for this annuity

July	August	Sept.	Oct.	Nov.	Dec.	Sum of PV
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	157,806.80
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	1,225.85	14,710.20
<b>Lump-Sum Payout</b>						304,908.80
<b>Sum of PV (age 56-66)</b>						20,660.61
<b>IRR</b>						-4.57%

### *How the Finance Department Is Using the Results*

In discussing the results of their assessment project, finance faculty quickly identified an underlying pedagogical problem: Students were being asked to demonstrate skills they had never explicitly been taught. Typical homework assignments throughout the finance curriculum consisted of end-of-chapter problem sets in which students performed algorithmically governed calculations in response to well-structured problems with right answers. The curriculum successfully taught students how to use sophisticated mathematical tools, but not when or why to use those tools in messy cases. With few exceptions, students were not asked to write professional arguments addressing messy problems within a rhetorical context. (For an example of an exception, see Robertson, Bean, and Peterson.) Likewise, students were not taught to design graphics that extract information from spread sheets to tell a relevant and significant story. In short, faculty realized that the design of the curriculum did not help students achieve desired learning outcomes in critical thinking and professional communication.

To address these problems, finance faculty are in the process of redesigning the homework dimension of the finance curriculum. Although algorithmic problem sets will still comprise a significant proportion of assigned homework, faculty are now creating writing or speaking assignments that ask students to apply disciplinary knowledge to ill-structured finance problems. Through an assessment implementation grant funded by our Provost's office,

a research team is also designing instructional modules to teach students how to create rhetorically effective graphics. A long-range goal for finance faculty is to create a handbook for students on critical thinking within the discourse of finance and also a corresponding sourcebook for faculty containing examples of ill-structured finance problems, writing assignments, grading rubrics, and a coordination plan for sequencing assignments within the finance curriculum.

## **Conclusion**

It should be noted from the outset that the assessment studies described in this paper depended on a supportive institutional environment of trust. Faculty did not fear that administrators would hold them accountable for what might be taken as a failure to teach students to produce effective historical research or to do critical thinking in finance. In fact, our studies sought out the “bad news” instead of trying to hide it. Faculty were motivated by the opportunity to identify students’ weaknesses so that they could take corrective actions by implementing changes in curricula and pedagogy.

Our studies also demonstrate that an assessment project, to be valuable, must have substantial faculty buy-in. We were fortunate to have widespread support of history and finance faculty, who were motivated primarily by the intrinsic interest of the project as well as the hope that a systematic study of student learning could improve curriculum and instruction. Although the current assessment movement in the United States is being partially driven by external accrediting agencies or (in the case of public institutions) by legislative bodies, our projects show that assessment can lead to dynamic and invigorating faculty discussions that are valuable in themselves. Finally, the discourse-based approach to assessment that we have featured in this paper leads faculty naturally to focus on the discourse of their own disciplines. Our assessment studies suggest that a rigorous program in writing in the disciplines may be the best way to produce students who know their disciplines’ concepts and procedures but who can also use this knowledge in complex rhetorical environments where arguments have stakes and where professionals-in-training must take responsibility for the solutions they propose.

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