

Writing in the Discipline: A case study for Architectural Engineering

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Abstract

This paper presents a case study of developing a writing intensive course using the Writing in the Discipline (WID) model for architectural engineering. Background issues are discussed, terms defined and a detailed course description and outline are given. A writing model is presented that outlines the process by which students construct complex theory papers, starting with "low-stakes" writing activities that lead to "high-stakes" formal papers. External course and internal student continuous improvement plans are explained. Survey data and sample grade patterns are presented and analyzed to support conclusions.

Introduction

There is little doubt that our students need to effectively write in the discipline. Writing is a critical form of thinking. Good writing and thinking is methodical and process driven. Our students may be technically competent but many times they cannot clearly express themselves in written form. This paper presents a case study of a writing intensive course using the Writing in the Discipline (WID) model for architectural engineering in an upper-level architectural theory course. A detailed course description and outline is presented in conjunction with a step-by-step process for writing. It shows how students develop complex theory papers starting with "low-stakes" writing activities that leads to "high-stakes" formal papers. This process incorporates a continuous improvement plan that uses several types of peer review. A campus-wide committee, referred to as the Writing in the Discipline Committee, also reviews and approves the pedagogical writing process used in the course. Student survey data is presented to measure student attitudes and perceptions. Sample grades are presented to show trends. Analysis, recommendations and conclusions are given. The goal here is to present a useful case study for faculty interested in teaching a writing intensive or WID course.

Background

There are two important background points that should be made. One, what type of writing is currently emphasized in this discipline pedagogically? Two, are there significant writing style differences in the discipline that that require faculty in the discipline to guide the student thought and writing process? The current emphasis in engineering and engineering technology programs is placed on highly formatted technical and scientific laboratory reports.¹ The problem with this type of technical writing in the discipline is that it doesn't really prepare students to communicate

¹ It is interesting to note that students have had a difficult time writing the conclusions in their laboratory reports. That is because conclusions are the most open-ended aspect of the report and require the summation of ideas. This complaint was one of the reasons for developing an earlier program at SUNY Farmingdale called Writing Across the Curriculum, a forerunner to the Writing in the Discipline program. Shapiro (2005) noted similar comments.

their ideas in areas such as design, ethics, policy, philosophy and social awareness because it's too stylized and canned. Writing about these larger ideas is important because it comprises much of the rational behind professional decision making. If students can't articulate these ideas then they will be limited in their professional careers. There are also differences, diversity, and heterogeneity that are emphasized in writing in each discipline (Monroe 2003). We should prepare students to use this discipline specific type of shorthand and thought process for professional writing. We can conclude that faculty outside the discipline can't effectively critique the content and discussion within the discipline because of these differences. Faculty in the discipline should also emphasize the non-technical and open-ended aspects of writing in the discipline.

The Writing Across the Curriculum (WAC) and Writing in the Disciplines (WID) movement were both developed to improve student writing.² There is literature on both sides to question or support WAC/WID goals and pedagogies (Ochsner & Fowler 2004). As faculty, we empirically know that the more students write the better they become so developing a structured writing routine is key to student success. As teaching practitioners, the issue is not so much about which program works better and can we prove it, rather how does the student become a better writer in their discipline?

ABET (Accreditation Board for Engineering and Technology) through their accreditation process promotes good writing and communication skills.³ This requirement is based on employer surveys that have indicated that students cannot clearly express themselves.⁴ These issues are driving the State University of New York at Farmingdale toward requiring that students take a writing intensive course in the discipline as part of the graduation requirement.

Thinking and Writing

Writing is a critical form of thinking (Zinsser 1988). It is developed through a formal method or process. It starts with collecting thoughts and refining them into very specific ideas. Reading, discussions, thinking out loud, note taking and free writing is all part of this collecting process that lead to critical writing skills (Woodward-Kron 2002). These experiences and ideas eventually become the prepositions that lead to a conclusive explanation of whatever point a student is trying to make; especially for theory writing (Gale 1998). Writing, reviewing, refining and rewriting become part of the finished process.

Writing in the Disciplines Committee and Review

The Writing in the Discipline Committee provides several important functions. First it publishes a Faculty Handbook on Writing (Shapiro 2005), that includes guidelines for writing intensive courses. The handbook is an excellent resource that includes approved sample course outlines. Second, the Committee peer reviews the course outlines. This becomes an opportunity for faculty to obtain suggestions and constructive peer criticism for improving the course. The

² Although it may seem that the older WAC evolved into WID, they are two distinct programs. WAC continues to be developed as its own program as is evident by many recent publications such as Guide to Writing and Technology across the Curriculum: A Resource for Professors and Student Assistants (2003), Writing across the Curriculum: A College Snapshot (2003), Writing across and against the Curriculum (2003), etc.

³ TAC/ABET and EAC/ABET Criteria (g) graduates must demonstrate an ability to communicate effectively

⁴ Similar comments are routinely expressed at the Department of Architecture & Construction Management at SUNY Farmingdale's Industry Advisory Board and graduate employer surveys.

committee also sets standards for what qualifies as a writing intensive course.⁵ It also guarantees that a continuous improvement model for writing is incorporated into the course. Third, it provides a forum for interested faculty to participate in discussions, workshops and expanded faculty development opportunities.

The Writing in the Discipline Committee also has a larger mission. The College is in the process of instituting a graduation policy of requiring students to take at least one writing intensive course in the discipline. This committee is charged with overseeing the review and approval process. This process includes completing a formal application and submission of course syllabus that clearly indicates the quality or types of writing used and the word quantity. The committee also asks each faculty to make a presentation and answer questions. The course should be 200-level or above. After review, the committee either approves the course or makes suggestions for improvement to meet the standard for approval.

Terminology

*High-stakes Writing*⁶

High-stakes writing activities in this course include the formal essays on take-home exams and the term paper. All high stakes writing is graded and revised.

*Low-stakes Writing*⁷

Low-stakes writing activities in this course include journal writing from the readings and discussions, summaries and simple comparative essays. Only the simple essays are graded and revised.

Student Peer Review

Three types of student peer review were used.

1. Individual (private/known) peer review of one or two student papers only
2. Public reading and peer review of all student papers
3. Blind peer review and ranking of all student papers

The Process

A course description, outline and detailed explanation of components is presented in the appendix. The course uses two writing processes: low-stakes and high-stakes. The low-stakes process is outlined below. Students repeated this process several times before advancing to the high stakes process. The step-by-step process is outlined as follows:

1. Reading 2 to 3 architectural theories
2. Note taking and journal writing⁸
3. Discussion and additional note taking
4. Simple writing application, usually a short comparative essay
5. Submit draft version, graded by faculty
6. Student peer review and comments

⁵ The Writing in the Disciplines Committee sets a 2,500-3,000 word high-stakes writing standard for each student in the course that can be broken up into one long paper and several short papers.

⁶ This terminology differs slightly from the definitions found in the Faculty Handbook on Writing (Shapiro 2005).

⁷ Ibid.

⁸ Dymont & O'Connell (2003) present an excellent historical overview of journal writing.

7. Revision to essay
8. Submit final version, graded by faculty

The high-stakes process is outlined below. Although this was specifically targeted for the term paper, a modified version (omitting steps 2 and 3) was used for the take-home mid-term exam. The step-by-step process is outlined as follows:

1. Collect ideas
2. Discussion
3. Outline
4. Complex writing application, topics based on previous low-stakes essays
5. Submit draft version, faculty review and comment
6. Student peer review and comments
7. Revision
8. Submit final version, graded by faculty

Continuous Improvement

Two types of continuous improvement are used here: external course review and an internal student improvement process. The external course review by the Writing in the Discipline Committee has been previously discussed in this paper and the benefits noted. The internal student improvement is based on a process of having all writing assignments reviewed and revised. Both faculty and student peers, as previously outlined, do the reviewing. This process gives students a second chance to improve their writing assignments.⁹ It also provides a continuous improvement model for ABET. The result is continuous improvement that is integrated into the pedagogy at all levels.

Data Collected

Survey

Three types of student peer review were used as previously outlined: Type 1, 2 and 3. A survey was given to see what experience students had with each type. The survey indicated the following:

When asked which type of review helped them the most with their paper: 0% said Type 1, individual (private) peer review of one or two student papers only; 83% said Type 2, public reading and peer review of all student papers; 17% said Type 3, blind peer review and ranking of all student papers; 0% said none.

The overwhelming majority of students felt that the Type 1, individual (private) peer review of one or two student papers only, did the following:

- They were the most diplomatic as a reviewer

The overwhelming majority of students indicated that Type 2, public reading and peer review of all student papers, did the following:

- Help them with their papers the most
- Made them think about their papers the most
- Gave them the best understanding of what a successful paper was

⁹ In short, everyone wants a second chance to improve.

- Gave them the best overall understanding of their paper
- Learned the most in terms of theory

The majority of students indicated that Type 2 did the following:

- Made them understand the grade they received
- Made them think the most as a reviewer

The majority of students indicated that Type 3, blind peer review and ranking of all student papers, did the following:

- They were the most honest as a reviewer

Grade Patterns

The table below gives a random sampling of student grades for the short 250-word essays. Unfortunately, only three short essays were completed during the semester because additional time was given for the term paper and mid-term exam.

Name (random sampling)	Paper 1 Draft	Paper 1 Revised	Paper 2 Draft	Paper 2 Revised	Paper 3 Draft	Paper 3 Revised
Student "A"	C	B	A-	A-	B+	A
Student "B"	B	B+	B	A-	B	A
Student "C"	C-	D+	C-	C	B-	B
Student "D"	C	no rev.	A	A	B	A
Student "E"	A	A	B-	B	A	A
Student "F"	C	C-	Absent	C+	D+	B+

Analysis

Based on the student survey the following points can be made. Students think peer review helps them with their paper versus no peer review. It indicates a level of respect that students have for their peer's ability to think about, analyze and comment on their writing for the purposes of improvement.

Students received the most benefit from reading all of the papers versus reading just one or two. The obvious reason for this is it gives them the big picture of what's good writing and what's bad writing. It also allows students to measure their paper against the largest possible sample, all their peers in the class.

There were no surprises about what type of review students indicated that they were the most honest versus the most diplomatic as peer reviewers. When the reviewer is known one-on-one, the reviewer is diplomatic and when the review is blind, they are more honest. Since people respond differently to criticism, it is difficult to say which type is better for improving a paper.

Looking carefully at the random grade sampling of the short 250-word essays, several inferences can be made. First, the more a student writes the better they become. Second, poor student writers showed the most improvement versus good writers who wrote well from the beginning. Third, if students are given the chance to revise a paper, they will almost always improve.

Conclusion

There are several important lessons learned in developing a writing intensive course in the discipline. First, the emphasis is on the process of thinking and writing and all of the components that support it and not the setting of benchmarks for course content. A liberal amount of time needs to be set aside in class for allowing this process to properly take place versus the traditional approach to teaching as lecturer. Second, writing intensive courses require twice as much grading, a draft paper and a final paper. This is in addition to setting a pace of having students write every week and probably having them submit a short paper every other week. A class limit of no more than 15 students is recommended. Third, There are many good reasons to use students as peer reviewers. Several additional reasons not stated are one, it gives students the ability to analyze writing, define the standards and then reflect on their writing. Two, students are a free and willing source of labor; the instructor can't do everything. Three, it also promotes a very important life-long skill of peer review that students will use after graduation to review and improve work professionally.

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Biography

JOSEPH A. BETZ is an Associate Professor in the Department of Architecture & Construction Management at the State University of New York at Farmingdale. He received his undergraduate and professional degrees in architecture from the Rensselaer Polytechnic Institute and his post-professional degree in architecture from Columbia University. He is a recipient of the SUNY Chancellor's Award for Excellence in Teaching.

Appendix

Course Description and Components

Architectural Theory and Design Factors - ARC350

Catalog Data

ARC350: Architectural Theory and Design Factors, Credits 3. The course will examine a series of architectural theories and design factors that attempts to explain, predict or influence design decisions that result in the built environment. Topics include historical theory; form and aesthetics; architectural technology; the urban, natural and human environment; economic and zoning factors; the social and behavioral implications of architecture; the design process itself and the architectural profession.

Prerequisites: History of Western Architecture

Required Text

1. Stein, Jay M. & Spreckelmeyer, Kent F., Classic Readings in Architecture. New York: WBC/McGraw-Hill, Inc., 1999
2. Comprehensive Dictionary

Grading

- Class participation and peer review = 10%
- Student lead discussion of reading (1) = 10%
- Journals (each week) = 05%
- Four (4) to Six (6) 250-word short essays = 40%
- One (1) 1250 word min. term paper = 20%
- One take-home midterm essay exam = 15%

Student Journals

Students are required to keep a journal. Journals form the basis and starting point of ideas for the essays. They may be informally reviewed with the instructor when developing the essays.

Short Essay

The short essay is to be a minimum of 250 words and must follow one of the two formats listed below.

- Each essay should be developed from in-class discussion and journal writing.
 - Each essay must include the definition of either two new words or two words used in a new context. The definitions are in addition to the 250-word minimum.
1. Summation of one reading that includes the following aspects. What was new to you, what issues do you find problematic, give examples of how this applies to design in a positive or negative way.
 2. Comparison of two articles pointing out similarities and specific differences.

Student Reading Presentation

Each student will present one reading during the semester and lead discussion. This gives students the opportunity to verbally explain a theory to the class, in their own words, prior to writing about it.

Student Peer Review

All short essays and term paper will be peer reviewed to improve the clarity of a student's work. Three types of peer review will be used, private one to one review of papers, public reading of all papers and blind review and ranking of papers. Student papers will be revised from peer review comments and the student's improved grade will be averaged. I remind students that these are friendly reviews!

Term Paper

An architectural work shall be selected (by the student and approved by the instructor) for analysis. A minimum of six readings will be used in the analysis. Their short essays form the basis for developing the term paper. An outline must be submitted 2 weeks prior to the paper's due date. All papers will be reviewed and students with a "B" grade or below must revise their paper.

Formal Exams/Quizzes

None! Architectural theory is about a thought process of critical inquiry and objectivity. Initial ideas will be formed through reading and discussion. They will then be developed and refined through the writing process. Emphasis is on a qualitative understanding of the material and its application in explaining architectural issues.