

Writing-in-Action: Preliminary Results from a New Method of Teaching Technical Writing

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“I got into architecture because I loved to draw. But now, I spend all day writing.”

This statement, spoken by an architect in the twilight of his career, encapsulates the experience of many architects, whose careers often evolve from designing, visualizing, and detailing a project to project management, office management, and client relations, which require the composition of countless emails, letters, and other forms of written communication. Technical writing is a critical but underappreciated component of architectural practice, and—correspondingly—it is an undervalued part of architectural education.

Gerald Grow argued in “The Writing Problems of Visual Thinkers” that architects think—and therefore write—differently than the general population. If Grow is correct, should architectural educators not develop a unique pedagogical approach to teaching architects how to communicate through technical writing? And if so, which pedagogical approach is correct?

In *The Reflective Practitioner* and *Educating the Reflective Practitioner*, Donald Schön investigated the way that architects and other professionals work through a problem through a process of testing potential solutions, what Schön called “knowing-in-action,” “reflection-in-action,” and “reflecting on reflection-in-action” (his term for meta-thinking). Because the writing process mirrors the design process in many ways, Schön’s ideas for educating the reflective practitioner should be appropriate for teaching architecture students to write more effectively.

This paper analyzes the preliminary introduction of Writing-in-Action during the 2019-20 academic year and fall 2020 semester. The analysis includes three components: 1) an examination of the Writing-in-Action method in a senior-level “bookend” sustainability seminar, 2) an examination of specific Writing-in-Action interventions in a first-year introduction to sustainability course, and 3) a discussion of progress-to-date in a first-year English class taught during the fall 2020 semester.

DONALD SCHÖN AND THE REFLECTIVE PRACTITIONER¹

Schön’s research into the reflective practitioner stemmed from his belief that traditional research lacked relevance while traditional practice lacked rigor. According to Schön, the addition of professional schools to the traditional university, with its liberal arts and hard science focus, led to a “radical separation between research and practice” because research in traditional university courses was isolated from the messiness inherent in professional practice.² Looking at the idea of addressing problems that are either (A) narrow, focused, but manageable or (B) broad, realistic, but uncontrollable, Schön wrote:

The dilemma depends, I believe, upon a particular epistemology built into the modern research university, and, along with this, on our discovery of the increasing salience of certain “indeterminate zones” of practice—uncertainty, complexity, uniqueness, conflict—which fall outside the categories of that epistemology.³

The messiness—the “uncertainty, complexity, uniqueness, conflict”—of practice stands in stark contrast to the precision of what Schön calls “technical rationality,” a kind of process that is “instrumental, consisting in adjusting technical means to ends that are clear, fixed, and internally consistent.”⁴

Schön argues that technical rationality works in clean, laboratory conditions but has limited value in messy, complex, real-world scenarios. For example, civil engineers can use the technical rationality of their education to figure out how to build, but they are less well-equipped to argue with absolute certainty about why or even if something should be built.⁵ The latter two questions involve “a complex and ill-defined mélange of topographical, financial, economic, environmental, and political factors” that technical rationality is poorly situated to address.⁶

Technical rationality certainly has its place, however. Schön argues that technical rationality “becomes professional when it is based on the science or systematic knowledge produced by the schools of higher learning.”⁷ Many in the architecture and design fields, including architect Stephen Kieran, argue that more, not less, technical rationality is needed—specifically

new knowledge in the field known broadly as “building science.” As concerns about global climate change mount and client expectations of performance increase, architects and facility managers will face an increasing number of measurable markers of performance. Likewise, the emergence of big data—the ability to see formerly invisible trends with the use of massive data sets—promises to change the design of future facilities.

For the reasons discussed above, architecture programs occupy a disadvantaged position in the modern research university. Although university architecture programs are nearly 150 years old—the department of architecture at MIT was founded in 1868—architectural scholarship is not generally well-respected in the university community. The discipline of architecture, save the field of building science, is not terribly close to basic science, which is often considered the *raison d’être* of the modern research university. As Donald Schön observed, “The greater one’s proximity to basic science, as a rule, the higher one’s academic status.”⁸ Summarizing architecture’s position, Schön wrote:

Architecture is an established profession charged with important social functions, but it is also a fine art; and the arts tend to sit uneasily in the contemporary research university. Although some schools of architecture are free-standing institutions, most exist within a university, where they tend to be marginal, isolated, and of dubious status.⁹

Schön is not alone in his observations of the lowly reputation of architecture research. In their 1996 report on the overall state of architectural education, Ernest Boyer and Lee Mitgang wrote the following:

As W. Cecil Steward, dean of the University of Nebraska’s College of Architecture, has noted, many university administrators, especially those on research-driven campuses, tend to see the architecture field as splintered and disputatious, and the design orientation of architecture faculty places architecture among “the ‘soft,’ ‘fuzzy,’ and undervalued disciplines in a comprehensive university.”¹⁰

Henry N. Cobb, chairman of Harvard’s Department of Architecture from 1980-85, went further yet, saying that architecture is “a kind of ‘Pig-Pen’ character in the university family—that is to say disreputable and more or less useless, but to be tolerated with appropriate condescension and frequent expressions of dismay.”¹¹ As far back as a 1932, a report by the Association of Collegiate Schools of Architecture (ACSA) noted the lack of “real research” in architecture programs.¹²

Despite the less-than-sterling reputation of architectural scholarship, architectural education is often considered first

rate. In *Educating the Reflective Practitioner*, Donald Schön argued that architectural education is the paragon of professional education and is well-suited for teaching students about the messiness of professional practice, or similar open-ended problems.

One of the exciting components of Donald Schön’s research generally, and the Writing-in-Action method specifically, is the potential of Schönian methods to “flip the script”—for example, the potential of the WIA method to be deployed beyond architecture classes to other classes in which technical writing is taught, including English classes. This possibility partially explains why the WIA method was deployed in two sections of ENGL 150, discussed later in the paper.

Schön’s terminology

To understand Schön’s concept of the reflective practitioner, one must understand key terms, including “knowing-in-action,” “reflection-in-action,” and “reflecting on reflection-in-action.”

Knowing-in-action is the “spontaneous, skillful execution of [a] performance” where “the knowing is in the action.”¹³ A bicyclist who makes countless instantaneous adjustments to keep the bicycle upright is demonstrating knowing-in-action.¹⁴ Likewise, an architect who assembles a series of spaces on a floor plan—rotating, stretching, and re-assembling them so they work together—is demonstrating knowing-in-action.

Reflection-in-action occurs when the “familiar routine” of knowing-in-action is interrupted by a “surprise” moment—whether that surprise is good, ill, or neutral.¹⁵ For example, a bicyclist hits a pothole—a new experience—and either stays on course or crashes the bicycle. Either way, the bicyclist has an opportunity for reflection-in-action to determine what was done correctly (or incorrectly) and, more importantly, what needs to happen the next time a pothole is encountered. Similarly, an architect working on a floor plan may discover that a single-loaded corridor provides an opportunity to provide daylight and fresh air to the corridor. This “surprise” enables the architect to consider space planning in a new way.

Reflecting on reflection-in-action is Schön’s term for meta-thinking, or thinking about one’s thinking. The bicyclist who is surprised by the pothole might consider other potential road hazards and how they could be addressed even before they are encountered. The architect who “discovers” the single-loaded corridor may want to revise his or her design process so other obvious (after the fact) opportunities are not missed on future projects.

The challenge of reflecting on reflection-in-action is one of language—how best to describe what just happened, for oneself and for others. The kind of intelligence used in

knowing-in-action is “tacit and spontaneous”¹⁶ and does not necessarily lend itself to verbalization. Schön wrote:

Clearly, it is one thing to be able to reflect-in-action and quite another to be able to reflect on our reflection-in-action so as to produce a good verbal description of it; and it is still another thing to be able to reflect on the resulting description.¹⁷

Reflecting on reflection-in-action has the potential to be the epistemological basis of inquiry in a broad range of fields, including not only design fields such as architecture, but also other practice-based fields as diverse as counseling and music education, where the artistry of the professional is critical to success.¹⁸

Writing is one such practice-based field. The process of writing results in a definitive product—a text which can be analyzed and critiqued. Because of this, teaching writing should mirror teaching studio closely enough that the processes Schön observed in the studio crit should work for a writing crit.

THE WRITING-IN-ACTION PROCESS

To date, three Writing-in-Action (WIA) sessions have been held:

- ARCH 419—a senior-level sustainability seminar: 18 students
- ARCH 119—a freshman-level introduction to sustainability course: 5 students
- ENGL 150—two freshman-level English courses: 30 students total who participated in WIA sessions

I teach ARCH 419 and ARCH 119 myself; for the ENGL 150 class, I partnered with an English instructor in Ferris State University’s English, Literature, and World Languages department.

The overall intent of the Writing-in-Action session is to mimic a studio desk crit early in the design process, something akin to a second week desk crit for a five-week studio project.

Unlike the architectural desk crit, in which the pedagogical approach is often opaque to the student, we explicitly explain to the students the purpose of the Writing-in-Action session, using a script with the following points:

1. In a typical class, students are given a writing assignment, which they complete and turn in.
2. Students usually receive feedback. Sometimes, they are allowed to resubmit their essay in response to the feedback.
3. This Writing-in-Action session will work differently, being modeled on the architectural design studio, which is more than 100 years old.

4. In an architectural design studio, students receive feedback on their progress, not just the finished product. This is typically called a desk crit.

5. During a desk crit, the instructor and student work together to explore the preliminary design’s strengths and weaknesses, and to explore design options. Often, the instructor will sketch on trace paper or on top of the student’s work, thus becoming part of the design process. With digital media, the instructor may ask the student to make real-time changes in a virtual 3D model.

6. Today’s Writing-in-Action session will work similarly to a design crit. The instructor and student will analyze the student’s progress, and together they will edit and expand the paper.

7. The focus will be on ideas and the flow of ideas. Are arguments clear? Are arguments supported? Does one idea logically lead to the next?

8. The session will explore the writing process. Is the student stuck? Has progress come to a halt? The instructor will give suggestions that may help the student work through “writer’s block.”

9. Finally, the session will explore issues of grammar, style, and word choice, the technical—but critical—components of clear writing.

The ARCH 419 and ARCH 119 sessions occurred during the 2019-20 academic year. Both sessions were conducted face-to-face, as they were completed before the COVID-19 pandemic required a shift to online learning. The ENGL 150 sessions occurred during the fall 2020 semester and were conducted online.

The physical set-up for the face-to-face Writing-in-Action sessions was simple: a PC with Microsoft Word; a large, television-style monitor; two keyboards and two mice on a work table; and chairs for the student and the instructor at the table. Importantly, the seating arrangement allowed the student and the instructor to sit shoulder to shoulder with the task in front of them (think pilot and co-pilot). Students submitted Microsoft Word files of their drafts; the files were typically delivered via thumb drives.

The set-up for the online sessions was equally straightforward: students were asked to share a Microsoft Word files during a Microsoft Teams meeting.

Face-to-face sessions

During the fall 2019 semester, I worked with my senior ARCH 419 students on their term papers.¹⁹

The students were asked to arrive at the WIA session with a progress draft of their paper which included, at minimum, two completed paragraphs and an outline of the remainder of the paper. The set of deliverables was designed to provide the following:

- A sample of the student's writing (the completed paragraphs)
- An idea of the overall organization of the paper (the outline)
- A clear signal to each student that the ideal deliverable for the WIA session was not a complete draft

Relatively few students delivered the preferred product (i.e. a complete outline of the paper with some "finished" paragraphs). Some students had an outline and no paragraph, while other students had a few paragraphs but no outline. Some students—shocked, I say—brought hardly any work to the session. Anecdotally, when students brought the requested material to the WIA session, the session was more productive. However, the WIA process proved flexible enough that all students seemed to receive value from the session.

The typical WIA session started with my reading the student's submittal as the student read a printed copy of the WIA script described above. From the instructor's perspective, this process is similar to how a design instructor must familiarize himself or herself with the latest iteration of a student's project. Once the orientation process is complete, the "crit" process can begin.

When a student provides both an outline and completed paragraphs, I start the critique of the student's work with the outline, as that material addresses comprehensive issues such as the overall organization of the assignment and the coherence of the student's thoughts.

As the student and I discuss the outline, I may add ideas to the paper, or I may delete ideas or move them to the end of the paper. At the drafting stage, I encourage students to keep almost every thought or phrase; however, recognizing that some ideas are inappropriate for the paper at hand or otherwise distracting, I encourage students to move such ideas to a "holding pen" at the end of the draft or, better yet, to a separate Word document. This allows students to edit out weaker ideas without the mental burden of having to throw away ideas.

In addition to adding to or deleting from the draft outline, the student and I also often rearrange the outline. This, of

course, is a simple matter of cutting and pasting material in the Word document.

After reviewing and editing the student's outline, the student and I review and edit the student's paragraphs. At the paragraph level, we focus on issues such as transitions between ideas, phrasing, word choice, grammar, and style. Although these issues can be addressed in a traditional rough draft review, the WIA process provides the opportunity both to ask students if they understand the issue at hand and to allow the student to attempt a "live" correction.

Like a design instructor using trace paper and sketching on top of a student's draft, the WIA instructor is an active participant during the crit session, which leads to two observations. First, it is critical that certain changes in the paper, such as the insertion of new ideas, be clearly documented as coming from the instructor. Just as a design student can differentiate the instructor's tracing paper from the draft design, the writing student needs to be able to distinguish the instructor's ideas from his or her own ideas. This can be accomplished by inserting the instructor's ideas in brackets, by using a different color text, or by highlighting the changes (see the "Next steps" section below). Second, each student must be an active participant in the WIA process. Thus, I ask students to perform some of the editing themselves, asking questions such as "What is the best word here?"; "How would you solve this grammar issue?"; and "How could you rephrase this sentence for clarity?" Following the model of the best desk crits, in which students engage in a back-and-forth dialog with their professors, WIA sessions are most effective when students actively participate and edit their own work, a process which is critical to building each student's confidence as a writer..

As far as outcomes on the ARCH 419 term paper, the average grade in 2019 was 86.1/100, which compares to 87.2/100 in 2017 when WIA was not used. The sample sizes were very small, and the nature of the two student groups very different, so we caution against drawing any definitive conclusions from the comparison.

During the spring 2020 semester, I worked with five freshmen in ARCH 119. Initially, I had not planned to use the WIA process in ARCH 119, given the number of students in the class (37 students) and the fact it is a one credit hour class. However, based on the apparent success of the ARCH 419 sessions, I decided to use the WIA process with the students who had the most problematic drafts on a one-page reading critique. (The reading critique is a traditional assignment in which the students submit a draft, which I read, thoroughly annotate, and grade

the for effort. Finally, the students submit a revision, which is graded for quality as well as completeness.)

Unlike the standard WIA session, which is designed to occur fairly early in the writing process, my meetings with the ARCH 119 students focused on full drafts, which had been submitted and graded for completeness. Thus, I do not believe the WIA sessions were as valuable because the overall structure and major arguments of each essay were already set. However, the sessions did allow me to work one-on-one with each of the five students, focusing on the aforementioned mechanics of the essay: transitions between ideas, phrasing, word choice, grammar, style, and so forth. The value of the exercise was the students' being active participants in the editing process, not passive receivers of feedback from an authority.

Historically, students who perform poorly on the ARCH 119 essay are vulnerable to dropping out at the end of their freshman year. Although the sample size is tiny, it is worth noting that four of the five students who participated in the ARCH 119 WIA sessions are still students at Ferris.

Online sessions

During the fall 2020 semester, I worked with my research partner, Denise McDonald Coper, to bring the WIA process to two freshman-level ENGL 150 classes. These classes included both freshman Ferris students and dual-enrolled high school students from surrounding school districts.

Due to the ongoing COVID-19 pandemic, the ENGL 150 class was taught fully online, which provided us the opportunity to test the WIA method in a virtual environment.

Looking at our technology options, we decided to use Microsoft Teams for the meeting and Microsoft Word for the document. Versus Zoom, Teams seems to be more stable, it lags less, and it allows the instructor to take command of the student's screen at the same time the student can also control his/her screen. Microsoft Word is the industry-standard word processing software. We tested the combination of meeting platform and word processing software, and the combination worked beautifully, ensuring that our online WIA sessions would be seamless....

After five sessions with the students, we abandoned Teams and Word and moved, in most cases, to Zoom paired with Google Docs. Many of the students, particularly the dual-enrolled students, did not have access to or could not use Teams or Word. Furthermore, we were not able to use the "request control" function successfully with any student using a Mac.

In the end, the sessions worked as follows:

- 2 students: Teams and Word
- 17 students: Zoom and Google Docs
- 6 students: some other combination
- 5 students: did not participate

Other than the technology issues, the online sessions proceeded very similarly to the ARCH 419 sessions. Students were asked to produce an outline paired with a couple of completed paragraphs. Most students provided some paragraphs but no outline. However, this did not prove to be a huge impediment, as we simply worked with the students to develop their outlines.

We have received Ferris IRB approval to survey this set of students, and we are looking forward to examining the data from those surveys after the fall 2020 semester is complete.

PRELIMINARY RESULTS

Despite the stresses and oddities of the first full "COVID-19 semester," we were able to collect some data from the Fall 2020 ENGL 150 students. However, we were faced with diminishing returns. Of the 46 students enrolled in the two sections of ENGL 150, 30 signed up for the WIA process. Of those students, only 13 completed a survey. Thus, we are cautious not to read too much into the data.

One a Likert scale of 1 to 5, with 1 representing "strongly disagree" and 5 representing "strongly agree," we posited the following statements:

- The Writing-in-Action session helped me write a better paper. Average = 4.00
- The Writing-in-Action session helped me improve as a writer. Average = 3.85
- I remember specific details from the Writing-in-Action sessions that I can apply on future assignments, whether in college or at work. Average 3.85

Furthermore, we asked the following: Would you recommend using Writing-in-Action sessions on future assignments? Possible answers were yes, no, and no answer. Of the 13 students who completed a survey, 10 said *yes*, while 3 said *no answer*, and not a single student answered *no*.

NEXT STEPS

The research team's preliminary experiences with WIA have been very encouraging. As we proceed with the project, we anticipate taking the following next steps.

Broaden the literature review

This research project is inspired by the work of Donald Schön, whose work from the 1980s and early 1990s is still relevant today. However, we need to incorporate more current research on reflective practice, including material such as Kathleen Yancey's seminal work on reflective writing²⁰ and Pasternak and Rigoni's clarification of reflective writing terminology.²¹

Refine the online WIA process

We need to resolve the issue of meeting platforms and word-processing software. Although Christopher Cospers believes that Microsoft Teams and Microsoft Word are the superior tools, Denise Cospers prefers Zoom paired with Google Docs, as her freshman students have little experience with Teams (Perhaps it is less important to choose a single set of platforms than to develop a range of platforms that work.)

Also, we need to rationalize the annotation process and decide how instructor comments should appear on the students' papers—i.e. alternate text color, highlighting, comments in brackets, or some combination.

Implement the methodical research project

Based on our experiences to date, the WIA method seems to be a highly effective method for teaching writing. However, our impressions may be influenced by the "feel good" vibe from the sessions, which could simply be the enthusiasm of students who received attention (versus effective instruction). Thus, we plan to proceed with two research instruments.

First, we plan to survey students after they complete the WIA process. We acknowledge the limits of surveys—for example, students tend to exaggerate their educational progress on surveys. However, we believe that methodically gathering the students' impressions of the effectiveness of the WIA process will at least tell us if it is completely ineffective. In other words, positive surveys would not necessarily confirm that WIA is effective, but negative surveys would almost assuredly confirm that WIA is ineffective.

As previously mentioned, we have just received (November 2020) Ferris IRB approval to conduct our surveys, which will start with the fall 2020 ENGL 150 class.

Second, we plan to compare work produced by students taught traditionally with work produced by students using the WIA process.

A strength of Ferris State University—our small class sizes—makes conducting this research project challenging, as our sample sizes are inherently small. With that limitation in mind, I expanded the WIA project beyond the Architecture and Facility Management program to include an English class, which increased the number of students in the research sample.

We are debating two different techniques for checking the efficacy of the WIA method: either conducting test classes and control classes, or comparing current student work using the WIA method with past student work that did not use the WIA method. Naturally, each approach has its advantages and disadvantages.

While we believe that our preliminary experiences suggest that the WIA method would be valuable for teaching writing in many different types of classes, we believe it is particularly suited to teaching writing to architecture and other design students, as those students are already familiar with the desk crit concept. Thus, we encourage any architecture faculty interested in participating in the WIA process to contact the research team.

ENDNOTES

1. The material in the first section of this paper first appeared in Cospers, Christopher (2019) "Writing-in-Action: Teaching Technical Writing through the Lens of the Reflective Practitioner," *Building Technology Educator's Society*: Vol. 2019. Caryn Brause, Pegg L. Clouston, Naomi Darling (Eds.), Amherst, MA, 2019. <https://doi.org/10.7275/zvg9-m388> Available at: <https://scholarworks.umass.edu/btes/vol2019/iss1/18>
2. Schön, Donald A. 1995. "The new scholarship requires a new epistemology." *Change*, November: 26-34: p. 29.
3. *Ibid*, p. 28.
4. *Ibid*, p. 29.
5. Schön, Donald A. 1987. *Educating the Reflective Practitioner*. San Francisco: Jossey-Bass: p. 4.
6. *Ibid*, p. 4.
7. Schön 1995 (note 2), p. 29.
8. Schön 1987 (note 5), p. 9.
9. *Ibid*, p. 18.
10. Boyer, Ernest L., and Lee D. Mitgang. 1996. *Building Community: A New Future for Architecture Education and Practice*. Princeton, NJ: The Carnegie Foundation: p. 9.
11. *Ibid*, pp 9-10.
12. *Ibid*, p. 20.
13. Schön 1987 (note 5), p. 25.
14. *Ibid*, p. 25.
15. *Ibid*, p. 26.
16. *Ibid*, p. 25.
17. *Ibid*, p. 31.
18. *Ibid*.

Christopher Cospers initiated the Writing-in-Action project. Denise McDonald