



Joining the Engineering Community: How Do Novices Learn to Write Like Engineers?

DOROTHY A. WINSOR

- Winsor, Dorothy A. "Joining the Engineering Community: How Do Novices Learn to Write Like Engineers?" *Technical Communication* 37.2 (1990): 171–72. Print.

Framing the Reading

Dorothy A. Winsor retired from Iowa State University, where she focused her research on the writing and rhetoric of engineers. A large proportion of what the field of writing studies knows about how engineers write, we know because of Winsor's work. She had two major books in this area, *Writing Like an Engineer: A Rhetorical Education*, and *Writing Power: An Ethnographic Study of Writing in an Engineering Center*. She also was editor of the *Journal of Business and Technical Communication*, the leading scholarly journal in technical communication. Her typical method of conducting research was to interview people, gather a large corpus of their writing, and compare how they talked about writing with what they *did* when they wrote (as evidenced by the resulting texts). Winsor showed that if you want to understand how writing and texts supported or mediated an activity, you have to examine very carefully how what the texts actually *do* in making the activity what it is.

The article included here is quite short and was written fairly early in Winsor's studies of engineering writing that led to her two books. It appeared in a special section of the scholarly journal *Technical Communication*. Usually, space in journals is given to research that is already completed or at least where the writer is already reporting substantive findings from their research project. Almost everything you read in *Writing about Writing* falls in that category. But at the time Winsor's piece was published, *Technical Communication* was also making a few pages available for researchers to report on projects that *weren't* finished yet, but were instead in progress, and in their early stages, before the researcher was drawing many conclusions. The instructions the journal editors gave regarding this work were: "Readers are invited to contribute reports on in-progress research. Entries should include the rationale, methods, and preliminary results of the research and should not exceed one thousand words in



length" (about the length of a three-page, double-spaced essay). So, as you read Winsor's piece, you should consider how different her rhetorical situation was from many of the longer research-based pieces you read in *Writing about Writing*.

It may help you in reading this piece to understand that when Winsor asks whether "novice employees" learn to write "via models or mentoring" (para. 1), she engages what at the time (the end of the 1980s) was an important conversation in the field about that exact question: How much can people actually learn to write by following models? On the one hand, it seems intuitive that people learning to write should be able to take an example and "copy" or *imitate* its structure, moves, look, feel, and sound. But that is sometimes surprisingly hard to do—you have to understand a thing fairly well before you can imitate it well. And at the same time, if writers are learning mostly by imitation, when do they learn how to make their own designs for writing? So there's some discomfort with modeling, even though it looks like it should work well, and even though it's fairly difficult for most people to write a kind of text *well* if they've never seen that kind of text before. At the time Winsor wrote this piece, learning to write via models was not accepted by all writing teachers and scholars (and still isn't). While Winsor doesn't take space in her very short one thousand words to explain all this, if you read the piece with that question in mind, you'll see the places where she's thinking about it.

Getting Ready to Read

Before you read, do at least one of the following activities:

- Use Wikipedia to look up the terms *tacit knowledge* and *exemplar*.
- Remember a time you were given a model of a piece of writing and asked to create another piece of writing like it.

As you read, consider the following questions:

- What concepts are you encountering in Winsor's work that seem to overlap with ideas you've read elsewhere in this book?
- Apart from the teacher of your current writing course, do you have any "expert" writers helping you build your writing abilities now? Have you in the past?

The current interest in discourse communities has raised the question of how novices learn the communication practices of disciplines and organizations. How and when do novice employees learn to write effectively? Do they learn to write via models or mentoring? Do they learn in their technical writing courses in school what they need to know to write effectively on the job? Or are there aspects of technical writing that can be learned only at work? This article reports on early findings of a study aimed at answering this last question and points out directions for further research which these early findings suggest.

A Preliminary Study

As an early step in this study, I collected written statements from 190 seniors at a co-operative engineering college. These students had alternated three-month periods of school and full-time work from the time they entered college. They had accumulated an average of 21 months of work experience and thus may be taken as a sample of novice engineers.

They were asked to write open-ended reports on the writing they had done at work and how they learned to do it. The open-ended nature of the task meant that 13% of the students made no mention of how they had learned to write. For the students who did cite learning methods, the most commonly given one was the use of models (cited by 53% of the students), followed by advice/editing from supervisors (38%), advice/editing from co-workers (24%), a college technical writing class they all were required to take as freshmen (14%), high school training (7%), classes at work (5%), and work evaluations (5%). The descriptions students wrote of their activities also indicate that much learning took place from sink-or-swim experience.

These statistics suggest that students perceive abstract rules and training, represented by various kinds of classes, as *least* useful among the cited learning methods. In contrast, the students see the embodied experience of models and interaction with experts as most productive, particularly when combined with practice and feedback.

Students' Comments

Students' comments on their learning give further insight into what these statistics mean. Students indicate that a typical learning pattern is to use models and seek advice from co-workers when preparing drafts, submit the draft to a supervisor, and use the supervisor's feedback to revise.

When students comment on the use of models, they most often say that what they get from the models is, as one student says, "help with the format and style that is generally used at my plant." Such models are useful, says another student, "because the audience is familiar with certain formats." As can be seen from both these comments, these novice engineers typically regard format as a matter of local convention, rather than something right or wrong. Sometimes, this understanding is explicit, as in the following remark: "As it is in most companies, they all have their set ways of doing things. Even if there is a better way of preparing a report, they don't want to hear about it."

These comments might suggest that students see formats as solely a matter of using conventional arrangement to declare themselves members of the work community. Other comments, however, suggest that this is not so

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and that "format" is extended to mean something more like genre, governing content as well as arrangement (Cf. Winker [I]). One non-native speaker, for instance, reports reading models repeatedly as to "understand what they have to say in these kinds of reports." Another student reports using "an earlier report as a basis for my analysis as well as an outline for my actual report." A third says he used models for "what was expected to be presented in the report and the desired report format."

To supplement these models, students often seek out the help of more experienced co-workers, who offer advice on rhetorical matter as well as on content and form. Thus one student says co-workers "taught me the essentials of writing a report," which were "writing at the level of the audience, information breakdown and organization for this audience, and basic technical report format." And another, who had to write the minutes of a volatile meeting, says that "co-workers advised me on the points of emphasis and stressed the importance of detailing the results of the meeting."

Supervisors provide feedback on all areas of writing but are most valued by these students for their advice on political matters. Thus one student reports, "Throughout my work experiences I have had supervisors who were kind enough to give me advice on terms to use and not to use in certain situations. This is especially important when dealing with highly political issues in which the documentation may be around for years to come." And a typical story is told by another student who, as a freshman, was asked to evaluate a software system: "In my opinion, the software really stunk, and my report reflected these feelings. Luckily, I had my boss review it before I sent it out. He got a real kick out of it, but said it had to be toned down before I sent it out."

Overall, students remark on the value of experience: "Communication skills cannot be learned solely from a textbook. The style of writing in a workplace can only be learned from experience"; "My skills in this area were gained less through the use of advice or examples and more through necessity"; "School can show us the reins but we won't really learn to control the horse until we ride it."

Implications

While these statistics and comments are interesting, they raise more questions than they answer, particularly about what these young engineers mean when they say they use models. Precisely how did they use models and what did they learn from them? A recent study by Warren W. Werner articulates some of the problems teachers see in students' use of models in technical writing classes [2]. Werner distinguishes the abstract pattern of a model from the concrete examples in textbooks and says students often copy examples slavishly, fail to generalize to the model, and therefore do not learn anything transferrable to situations which differ from the one the example originally addressed.

Our understanding of the use of models is made more complicated if we see them as analogous to genres. Charles Bazerman sees many of the same limitations in textbook treatment of genre that Werner sees in student use of

examples. Bazerman eschews the notion “that there are simple genres that must be slavishly followed, that we must give students an appropriate set of cookie cutters for their anticipated careers” [3].

On the other hand, Bazerman does see a positive role for genres. A genre, he says, represents a solution to a common rhetorical problem in an area. His definition echoes the work of Carolyn Miller, who says a genre is “typified rhetorical action” encompassing both form and substance [4]. Furthermore, Miller and Selzer have shown that in engineering documents, genre expectations are mixed with those of discipline and organization [5].

It is possible to see use of models as one way individuals interact with surrounding socioculture to achieve assimilation into discourse communities. In this sense, models can function like Kuhnian exemplars, that is, as shared examples of acceptable work which train a student to function like an engineer in an organization [6].

If students are learning from models in this way, then a lot of their learning may be tacit. H. M. Collins writes about his own experience as a participant/observer trying to build a laser [7]. He concludes that much skill-like knowledge is unlearnable by means of rules. He claims such learning takes place only by means of actual contact between expert and novice, a conclusion which squares well with students’ citing as a learning method not only imitation but also advice or editing from supervisors and co-workers.

Collins makes the interesting point that once skill has been achieved, many learners perceive what they have learned as a rule and blame themselves for not having taken it in earlier. Collins claims, however, that learners have taken in far more than can be explained by rules. They have assimilated tacit knowledge which, as he says, weaves them into a social network.

If novice engineers are able to use models both as temporary crutches to compensate for their own lack of experience with the complex rhetorical demands of their workplace and as aids to acquiring tacit knowledge of those demands, then it is not surprising that models are useful.

Next Step

None of these speculations is confirmable with the data I have from students’ reports. My next step will be to observe a limited number of young engineers writing at work, and interview them and their supervisors about the relationship between their writing and models they work from. I hope to answer such questions as these:

1. How do novices select models? How do they recognize a good model?
2. What areas do they consciously attend to in imitating a model?
3. Do they use models early in the writing process, with consequences for invention, or late in the process, with consequences primarily for shaping?
4. How do they know when they’ve done a good job of imitating a model? Do their supervisors agree on which imitations are successful?

5. How local is the knowledge they gain from models? Will it transfer to other companies or departments?
6. Which imitated areas seem most central to their roles as engineers and employees?

References

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2. Warren W. Werner, “Models and the Teaching of Technical Writing,” *Journal of Technical Writing and Communication* 19, 1 (1989): 69–81.
3. Charles Bazerman, *Shaping Written Knowledge* (Madison: University of Wisconsin Press, 1988), 8, 62.
4. Carolyn R. Miller, “Genre as Social Action,” *Quarterly Journal of Speech* 70, 2 (1984): 151–67.
5. Carolyn R. Miller and Jack Selzer, “Special Topics of Argument in Engineering Reports,” in *Writing in Nonacademic Settings*, eds. Lee Odell and Dixie Goswami (N.Y.: Guilford, 1985), 309–41.
6. Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1970).
7. H.M. Collins, *Changing Order* (Beverly Hills, CA: Sage, 1985).

Questions for Discussion and Journaling

1. Winsor’s opening sentence makes an assertion and an assumption: “The current interest in discourse communities has raised the question of how novices learn the communication practices of disciplines and organizations.” What does Winsor assume her audience already knows and agrees with before they even begin reading her article? And how does that shape who her audience can be?
2. From the “Student Comments” section of the article, choose three comments that sound “right” to you and three that don’t, and explain why.
3. If you have enough experience with writing outside school to offer your own opinion on Winsor’s question in her first paragraph, what would you say? What can and can’t school teach about writing outside of school (or, specifically, workplace writing)?
4. Get your Google on and search the term *Kuhnian exemplar* (para. 14). What’s Winsor talking about?
5. We expect you were unsurprised that the students Winsor talked to “perceive abstract rules and training, represented by various kinds of classes, as *least* useful among the cited learning methods” (para. 4). If you wanted to make an argument *for* using and teaching some of the abstract rules and training you encounter in classes, what would you say?

6. Winsor uses Warren Werner's research to point out a potential problem with learning via models: that a writer may "copy examples slavishly" and thus not do the kind of learning which will transfer to later writing situations. Yet Winsor's research suggests that there is some important kind of learning happening via models. How would you summarize her explanation of how/when models can be useful?
7. Do you have any answers from your own experience to the five questions Winsor poses at the end of her article (under "Next Step") on how writers actually use models?

Applying and Exploring Ideas

1. Write a short literacy narrative in which you focus specifically on how you've used models as you've learned to write various kinds of texts both inside and outside of school. For example, how often were you given models when you were assigned a kind of writing? How well did using models work for you—what was good and bad about having them?
2. Think of a specific kind (genre) of writing that you had to learn in one setting and then use later on in other settings. It might be a kind of essay or report (kinds of writing you probably associate with school), or a kind of writing you use out of school—letters, invitations, party flyers, newspaper stories, etc. Whatever genre you settle on, think back to how you initially learned to write it, and then think about what *changed* (if anything) when you had to use the same genre in a different setting from where/how you learned it. What did you have to do differently? What knowledge about that kind of writing "transferred" from where you learned it to other places where you used it later? What knowledge didn't transfer? Did anyone help you figure out the transition or did you have to understand it on your own?
3. Paraphrasing Collins, Winsor writes about "assimilat[ing] tacit knowledge" which "weaves [us] into a social network" (para. 16). Look up the term *tacit knowledge* (we recommend its Wikipedia page). Then, through class discussion or working in groups, talk with other students about examples from your own experiences of, first, becoming part of a social network (which is another term for activity system, which you learned in Chapter 2), and second, what tacit knowledge that social network expected you to learn in order to become a member.
4. Make a list of each specific kind (or genre) of writing Winsor mentions in the article. She talks about "writing" a lot, but she doesn't say much about particular genres. If you wanted to find out about more genres of engineering writing, how would you go about it? Write a research plan for what electronic or human resources you'd use to build a catalog of genres of writing in engineering.

Meta Moment

If you are currently learning various kinds of writing (or writing abilities) through the use of models, how are you making sure that you learn knowledge that you'll be able to use in later writing situations?

Late Nights, Last Rites, and the Rain-Slick Road to Self-Destruction

THOMAS OSBORNE

- Osborne, Thomas. "Late Nights, Last Rites, and the Rain-Slick Road to Self-Destruction." *Stylus* 2.2 (Fall 2011): 1–4. Web. 15 Jan. 2014.

Framing the Reading

Thomas Osborne wrote this paper for Matthew Bryan's ENC 1101 class at the University of Central Florida. It was revised and subsequently published in UCF's peer-reviewed journal for first-year students, *Stylus*, and it later won him an award at the 2nd Annual Knights Write Showcase.

This is a reflective, conversational account of Osborne's struggle with writing and how what he calls the "spectacular failure" of his attempts to compose in response to the assignment led him to the ideas he describes here. One of the reasons that we have included Osborne's essay is that he describes the difficulty of letting go of his words and ideas once they are written and admitting that he needs to "just start over" (para. 3). Many of the other authors in this chapter talk about the difficulty—and necessity—of sometimes doing this. Sondra Perl, for example, describes how her case study, "Tony," simply can't get away from the words he has already put on the page, and how he labors over them without considering that he could start anew. Nancy Sommers describes the difficulty students have in seeing revision as anything more than changing words or sentences.

Another reason we have included Osborne's essay is that he analyzes his "failed" piece of writing to examine his writing style and attempt to strengthen it. He describes, for example, how his ingrained need to correct every grammar error causes him to lose ideas that never make it to the page.

Getting Ready to Read

Before you read, do the following activity:

- Consider your own attitude toward revising text once you have written it.

As you read, consider the following questions:

- Compare yourself as a writer to Osborne's description of himself as a writer. How are you similar? How are you different?

