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Technological Literacy in First-Year Composition: Implementing a Module Approach

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Introduction

Many first-year writing programs offer exposure to technological literacy in their curricula. Students are introduced to software programs in the designated computer lab; they are asked to engage in web research; they write and edit papers with various composing and editing tools; they use presentation tools to support their oral presentation; and they might create a website in lieu of or to support their final paper. Selfe's (1999) explorations of literacy in the 21st century, Duffelmeyer's (2000) article on critical literacy in first-year composition, Selber's (2004) discussions on technological multiliteracies, and Gruber's (2007) work on students' approaches to technological literacy have helped us conceptualize our roles as composition teachers who consider technological literacy as integral to a 21st century literate college population. We know that teaching critical technological literacy has become even more important now that students are tech savvy but not necessarily analytical about the impact of technology on their lives. We also understand that they might have better job prospects in difficult economic times if they can combine the functional skills with the critical and rhetorical skills outlined by Stuart Selber (2004).

Many of us try our best to follow the excellent suggestions we read about when we incorporate technology and multimodal teaching into the writing curriculum. But our efforts are often hampered because we don't have sufficient training, means, or support to be innovative and successful in our individualized contexts with long histories, specific student populations, and specific administrative needs. To help us think through the practical aspects of integrating technology into the writing curriculum, I use the concept of reflective practice outlined by Donald Schon (1983) in *The Reflective Practitioner* where he encourages us to look at our experiences, build new understandings, and connect these understandings to the situation that is

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unfolding. As Schon puts it,

> The practitioner allows himself to experience surprise, puzzlement, or confusion in a situation which he finds uncertain or unique. He reflects on the phenomenon before him, and on the prior understandings which have been implicit in his behaviour. He carries out an experiment which serves to generate both a new understanding of the phenomenon and a change in the situation. (p. 68)

To reflect on how we built on and made changes based on our experiences, I show one institution's efforts to integrate technological literacy despite initial resistance from graduate teaching assistants and faculty in the department. I show why and how we decided to incorporate a structured module approach to technological literacy in the first-year writing curriculum at my institution, what components were included into the modules, and how we trained graduate assistants to teach the modules. After providing the institutional context, I show the programmatic background that led to the development of seven technological literacy modules, incorporating functional skills as well as critical and analytical skills, ending with production skills. I focus on the specific challenges that we encountered when we moved from the "idea"—the conceptual and theoretical stage—of technological literacy modules to the "doing"—the practical stage—where we trained graduate assistants in the day-to-day classroom practices of incorporating technological literacy modules into a writing curriculum. Ultimately, I emphasize the need for explicit and continuous training and assessment, with ongoing refinement of existing modules to meet the needs of the students as well as the needs of those who teach technological literacy.

Understanding the Past, Moving Towards the Present

The 4-credit first-year writing course at my institution is taught by graduate teaching

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assistants who are enrolled in a two-year master's program in English with area specializations in literature, rhetoric, creative writing, linguistics, or English education. A small number of GTAs are enrolled in the applied linguistics PhD program. The writing program also hires two one-year instructors who were GTAs the previous year and who just finished their master's program. Much of the training happens during a two-week orientation (previously one week) before the start of the Fall semester. Furthermore, new GTAs take a 3-hour practicum course during the first semester they teach in the program. GTAs, before I became the WPA, followed the same general syllabus that they could adapt to their specific strengths. However, all sections used the same readings, which focused on the environment, and they used the same assignments in all their classes. One of the GTA concerns when I started was the lack of guidance for day-to-day activities in the classroom and the general feeling that the GTAs did not receive enough support to do the best job possible as new teachers.

When I was asked to take on the position and responsibilities of the Writing Program Administrator in 2002, I was not only asked to make sure that the GTAs received the support they needed to teach the introductory writing course successfully, but I was also charged to incorporate technology into the first-year writing curriculum. The chair of the department considered my teaching and research interests in technological literacy as a perfect fit with the university's goal to become a technology-enhanced and technology-focused campus.

In some ways, I considered this to be the perfect charge. I could use my training in computers and writing to explore how best to integrate functional and critical technological literacy skills into an introductory writing course, making sure that the overall goal of the course—to teach critical reading, thinking, and writing—would stay intact. I could train the graduate assistants to look beyond teaching computer skills to teaching analytical skills that were

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already an integral part of the curriculum. Students would become critical users of technology; they would be ready to discuss social, cultural, religious, and gender implication of technology use, and they would be able to incorporate their own, critically evaluated, multi-media productions. I could go to campus-wide meetings and address the need for a definition of technological literacy that went beyond the functional to the critical and analytical.

In many ways, it was a monumental charge. The university-wide technology committee wanted to follow a national trend that would show prospective employers that students had the functional skills to enter the workforce. The 2002 mission statement, for example, stated that "undergraduate programming prepares students for life in the twenty-first century by assuring individual development through small classes, close interaction with senior faculty, and sophisticated learning technologies more commonly found at the nation's leading private universities" (2002 University Mission Statement). The department chair wanted to be able to tell the university that the writing program could contribute to this trend, and that we would teach functional skills and make students more marketable in the workplace. This would provide the English Department with leverage for asking for additional funding for a second computer lab. We could promise that every section of the first-year writing course would be taught in the computer lab once a week, and we could make sure that students knew how to use word-processing software, documentation software, presentation software, and even web-editing software.

Although the university was ready to move into the 21st century with "sophisticated learning technologies" and many online programs and courses, teaching technology—or teaching about technology—in a first-year writing course was seen as incongruent. Many departmental faculty members, although they didn't teach the first-year writing course, weren't sure why the

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English Department needed to teach technology at all. What were the reasons, they wanted to know, for wasting time on technology when students don't even have a grasp of sentence structure and grammar? And the graduate teaching assistants were horrified that they would have to teach technology skills to their students. What, they wanted to know, would happen if they didn't know how to trouble-shoot? What would happen if students knew more than they did?

Such attitudes about technological literacy, and the concerns voiced by many faculty and graduate assistants have been widely documented in current computers and writing research, and much of the research has pointed to the need for looking more closely at how technological literacy is defined. Furthermore, researchers have also pointed to pedagogical benefits—for students and teachers—of incorporating technologies into the writing curriculum to create active learning communities in the classroom (see, for example, Bromley and Apple, 1998; Selfe, 1999, 2007; Day, 2000; Selber, 2004; Oblinger, 2007).

It would, however, be unrealistic to discount the administration's and faculty's perspectives and concerns, and the fears of those who would have to teach technological literacy. I could appreciate the administration's push towards functional literacy. I could even agree that students needed to be proficient in functional technological literacy to make them more competitive in a competitive job market. It is a university's goal in this economy-driven and consumer-oriented system to prepare students for the challenges they will encounter once they receive their university degree. But I could not agree that functional literacy was the ultimate goal in students' technological literacy training.

The most immediately impacted constituents—in addition to the students enrolled in the first-year composition course—were the GTAs. Considering that many of them had not been exposed to extensive technological literacy training in their undergraduate careers, it was no

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surprise that mention of an integrated technological literacy curriculum was received with more resistance than excitement. In addition to learning how to teach students how to write in an academic setting, they were now also asked to teach them how to use technology. This additional responsibility, as they saw it, interfered with their own studies in the various English Department master's programs. How could they teach writing successfully, learn new software and teach it, and get a degree on the side? Sure, they used computers to do research and to write their papers, but why would a writing teacher actively engage in teaching students technological literacy, a concept that they, like the administration, considered to focus around functional skills.

I commend my educational background, the theories I read and applied in my research and my teaching, the practices that resulted from years of experience and years of reading scholarly work, and the many discussions I had with colleagues, for my continued willingness to forge ahead with a vision that didn't gain much support from the constituents with whom I needed to work. Although my approach to the methodologies and pedagogies of teaching writing and incorporating technological literacies did at first not intersect with those of most of my departmental colleagues or graduate teaching assistants, I was still convinced that I didn't want to support a curriculum that would make students into adept technology users, but I wanted them to be able to approach technological innovations critically and analytically. That meant to work closely with the administration and with my colleagues, but it especially meant to work closely with the graduate assistants who would be teaching the course, and to clarify the reasons for incorporating technological literacy, and with it multimodal literacy, into the writing curriculum.

Joddy Murray (2009), in *Non-Discursive Rhetoric: Image and Affect in Multimodal Composition*, provides a well-articulated argument for moving students and teachers from discursive and print-oriented rhetoric to a new model of rhetoric that includes multimodality, or

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non-discursive text, image, and affectivity. The need for this new approach, according to Murray, is evident in everyday texts and is "an important development to rhetors and teachers alike because it provides us a way to talk about rhetoric as it is experienced in many multiple and layered textual modes and media" (p. 2). Discussing and assigning multimodal texts also allows us to bring "our classrooms into the twenty-first century b assigning the kinds of texts students will undoubtedly encounter outside of academia" (8).

Murray's discussion of producing discursive and non-discursive texts confirms the challenge I faced when advocating for integrating technology and multimodality into the composition classroom. As Murray puts it, "the challenge … is not one of substitution, rather one of addition: we must continue to teach students to become adept at writing discursive text with its sequential structures, disciplinary expectations, and, ultimately, nonaffective tone; we must also teach students to become adept at 'writing' non-discursive texts with its layers, images, and, without a doubt, pervasive affectivity" (p. 8). Promoting student skills in both areas is especially pertinent if we take seriously Stuart Selber's (2004) comment in *Multiliteracies for a Digital Age:*

> If students are to become agents of positive change, they will need an education that is comprehensive and truly relevant to a digital age in which much of the instructional agenda seems to be little more than indoctrination into the value systems of the dominant computer culture. … It fails to expose students to the wide array of literacies they will need in order to participate fully and productively in the technological dimensions of their professional and personal lives. (p. 234)

If we ask students in our composition classes to critically engage in analysis and thoughtful production of multimodal texts—succinctly discussed by Gunther Kress (2000) in

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"Multimodality"—we encourage students to understand the complexity of writing in multimodal environments. As Kress would put it, we force "a rethinking of the distinctions usually made between communication and use, and in particular between reading and use" (p. 188).

When I argued for the inclusion of technological literacy into the writing curriculum, I was especially concerned about providing students with an understanding of the complexities involved in communicating, and the need to become multiliterate and multimodal. And, as Selber argues, "it is certainly the responsibility of writing and communication teachers to help students develop … a keen and judicious sense of the technological world around them" (p. 235).

Exploring Intersections

When I started working with the GTAs in the Spring of 2002, we decided, after consulting with the GTAs, to use the curriculum that was already in place and to work on revisions during that first semester. The overall course goals were very discursive and did not encourage multimodality and multiliteracies advocated by Murray (2009), Selber (2004), Kress (2000), and others. In many ways, the course goals were very similar to and modeled after the goals of other first-year writing courses and included:

- To introduce fundamental writing principles used in academic settings.
- To understand the connections between critical reading and writing skills through close attention to the production and interpretation of texts.
- To apply critical reading and writing skills to formal writing tasks, including an extended writing project.

In other words, the course was intended to introduce students to critical reading and writing in the academic community. Throughout the semester, they were asked to practice the reading process: generating questions or deriving answers from texts; summarizing texts;

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identifying examples, drawing inferences, and making logical or comparative connections; organizing information in a variety of ways; seeing and learning rhetorical skills used by effective writers; and evaluating the merits of what we read. At the same time, they were also required to practice the writing process: identifying audience and purpose; gathering or finding ideas; organizing and interrelating those ideas for readers; drafting in order to develop, support, and illustrate ideas; revising from trial-and-error and in light of peer input; and editing for clarity and accuracy.

After several meetings, we formed a GTA curriculum committee that worked on changes to the readings and the assignments used in the course. Many of the GTAs had expressed concern that the current readings, with a strong focus on the environment, did not appeal to the student population they were working with. Furthermore, GTAs wanted to include instructions for GTAs on how to teach the assignments that included summary, analysis, synthesis, rhetorical analysis, and argument. They also wanted to make sure that students would be given detailed guidelines for every assignment. The semester-long collaborations on the curriculum revision were shared during regular GTA meetings, making sure that everybody felt comfortable with the changes to be implemented in the Fall of 2002. The resulting changes to the readings, and the instructions on rhetorical principles were published in a reader and rhetoric, *Composing Identity through Language, Culture, Technology, and the Environment,* which was used by every GTA teaching the course.

In addition to the curricular changes we worked on during the Spring semester, the department chair and I learned about the funding of an additional computer lab, and the scheduling of all classes in the lab, at the end of the Spring semester. GTAs had finished the curriculum revisions; many were getting ready to graduate, and the few returning ones were

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getting ready for summer break. When I introduced the notion of technological literacy to the group who would be returning in the fall, the responses were not hostile, which I attributed partly to the successful collaboration and GTA involvement with curriculum revisions throughout the semester. However, the responses were not enthusiastic either and could best be described as lukewarm. The few GTAs who had taught in the computer lab told the others that "it wasn't a big deal." They liked being able to get students on the computer and have them write in class. It was much easier to read their writing this way. At that point, I didn't engage in extensive discussions about the role of technological literacy in the classroom, but I knew that I had to be specific and explicit about the constructive use of technology in a first-year writing course, moving GTAs away from using computers as high-tech babysitters that would get teachers out of teaching and that would get students to be expert typists. Instead, I needed for the GTAs to understand that technological literacy would be more complex than functional literacy. It would encompass Cynthia Selfe's (1999) definition that "*technological literacy* refers to a complex set of socially and culturally situated values, practices, and skills involved in operating linguistically within the context of electronic environments, including reading, writing, and communicating" (p. 11). It would also address the need for multiliteracies and multimodality so pertinent in twenty-first century lives.

After talking to the GTAs at the end of the spring semester, I also realized that we would need more extensive training than the one-week session that had been the norm in the past. GTAs needed to be introduced to the course goals, the curriculum, lesson planning, pedagogies and methodologies, and they also needed to understand the purpose of technological literacy—the functional as well as the critical, and what Selber (2004) called the rhetorical and what we called the creation process—in the writing curriculum. I also wanted to make sure that GTAs

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would be invested in teaching technological literacy. This implied to me, taking Jeanne Gunner's (1994, 2002), Janet Miller's (1990), Irene Ward's (2002), and Edward White's (2002) comments on shared authority and de-centering the writing program to heart, that the graduate assistants needed to participate in developing the specific aspects of each module even though many had not had any training in teaching, much less in integrating technological literacy into a first-year writing course.

The summer before orientation and before fall classes started was one of the busiest summers of my career. Because I wanted to make sure that GTAs were compensated for an additional week of training, I needed to write a grant proposal to the university's e-learning center, outlining the reasons for funding one week of GTA training. I also needed to research possibilities for integrating technology into a writing course, and putting together outcomes, skills, and practical tasks that students should be able to perform throughout the semester. The course description, for example, had to undergo some changes and needed to include that students were expected to develop technological literacy skills to rhetorically analyze texts, sounds, and images, to use online resources based on the audience addressed, the purpose explored, and the language used, and to produce multimedia projects that addressed the rhetorical concepts that students explored in the classroom.

The integration of this course goal was intended to show that technological literacy was intricately connected to the rhetorical principles taught in the course. By including this goal, we expected that graduate assistants would be trained and would be willing to teach this goal to their students. I knew from previous conversations that many GTAs, and many of my colleagues in the department, considered this an additional goal that was not connected to the primary goals—to teach critical thinking, reading, and writing--of the course. Since the GTAs had never received

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training on how to integrate technology—even though some taught in the departmental computer lab and didn't think it was "a big deal"—technology remained a stand-alone project that nobody had attempted to clarify. Now, with the intended integration of technology, and with one hour/week of every section of the first-year writing course taught in a computer lab, it became necessary to rethink training, to explore how graduate assistants would be introduced to the changes in the curriculum, to make sure that their workload did not increase, and to ponder how those changes would be related to my colleagues and to the administration.

To provide a starting point for discussions about how technological literacy would function within a writing course, one of my colleagues and I established specific outcomes for a technology-rich writing curriculum. We learned much from the work done at Michigan Technological University by Cynthia Selfe, Dickie Selfe, Marilyn Cooper, and Anne Wysocki. We also found Albert Borgmann's (1984) concepts of technological literacy and Barbara Duffelmeyer's (2000) work insightful in our decision-making processes. Based on our research and on our understanding of our institution's needs and student body, we initially focused on working on the following primary tasks:

- Provide all students with increased technological literacy skills.
- Establish the connection of technological literacy learning with learner-centered education.
- Train teachers to use learner-centered pedagogies in e-learning environments.
- Establish ongoing assessment of learning outcomes to adjust to students', teachers,' and employers' needs as the new economy expands and evolves.

We used the summer break to outline the learning objectives connected to technological literacy

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in the writing curriculum, making sure to underline the importance of integrating multimodal literacies. This was in line with NCTE's (2005) "Declarations concerning the broadest definitions of multimodal literacies" where they tell us that "it is the interplay of meaning-making systems (alphabetic, oral, visual, etc.) that teachers and students should strive to study and produce." (NCTE). Based on our experiences, our research, and the research of colleagues in computers and writing research, we focused on the following objectives:

- Students will be able to critically analyze the use of text, graphics, links, and sounds in online resources.
- Students will be able to rhetorically analyze online resources based on the audience addressed, the purpose explored, and the language used
- Students will learn to be critical of the diverse and often contradictory information present in online resources
- Students will have the basic skills to build an academic website that pays attention to rhetorical principles and that exhibits their most important work from the introductory writing course
- Students will be able to apply technological literacy skills to work in their major and other disciplines

This, of course, required certain practical tasks that needed to be included in the course syllabus and that students needed to finish. We underscored the importance of using functional skills for critical purposes, which is outlined in the following list:

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- *Module 1: Using Word Processing, Online Editing, and Email Skills*: strengthen students' skills to write successful papers, memos, and letters by considering audience, purpose, and author.
- *Module 2: Collaborative Activities/Online Discussions*: strengthen writing and collaborative skills by providing students with an opportunity to communicate effectively with their peers by paying attention to the rhetorical situation.
- *Module 3: Web Research/Use of Internet Sources*: connect in-class readings, library resources, and web information to increase student awareness of viable and non-viable sources by focusing on audience, purpose, and author and the author's use of rhetorical appeals.
- *Module 4: Multi-Media Presentation*: increase awareness of presenting information for different audiences by using appropriate formats and paying attention to the rhetorical situation.
- *Module 5: Development of an Academic Web Site*: apply critical analysis and writing skills to developing a site for academic learning and growth.
- *Module 6: Analysis of Visual/Cultural Representation in Popular Media*: increase awareness of diversity and be able to critically analyze social, cultural, and political frameworks.
- *Module 7: Argumentation in Multimedia Environments*: strengthen analytical skills by using rhetorical tools to evaluate the argument in film (documentary and feature), websites, news broadcasts, and other multimedia environments.

In the course description, we incorporated technological literacy as part of the course goals (see Appendix A). In the syllabus, we outlined the specific tasks that each student in the first-year

writing class would complete. Below is an example of how the syllabus was structured, including class activities, what students needed to have read and completed before class, and what the lab activity would be. In the first example, during Week 4, students were introduced to writing a synthesis essay, and the lab activities were geared towards increasing students' understanding of the connections and intersections between Plato and Freire, strengthening their understanding of synthesis. In the second example, during Week 10, students were asked to rhetorically analyze a documentary that they all watched in the university's auditorium. In class, they worked on analyzing web advertisements connected to the documentary, and they focused on how arguments can be made visually. In every case, the technological literacy modules were intricately connected to the overall goal for the day, the week, and the semester.

Date	**What we'll do in class**	**Have this read**	**Completed homework for this class**	**Lab Activity**
W4	**Synthesis Essay**			**Module 3: Web Research/Use of Internet Sources**
Day1	Lecture: • Writing a Synthesis thesis • Making connections in Plato and Freire	• Re-read Freire and Plato	• Review the key points that Plato and Freire made • Check the internet to find biographical	• Do an internet search to find out what Plato's and Freire's main philosophical

			information on Plato. Write down the main points • Check the internet to find biographical information on Freire. Write down the main points.	and educational ideas were • Write a paragraph outlining the connections between Plato's and Freire's philosophical and educational ideas. • Send your paragraph as an attachment to your instructor

W10	**Argument Writing**			**Module 6: Analysis of Visual/Cultural Representation in Popular Media**
Day1	Visual Literacy • PP: An Introduction to	• Documentary: Killing Us Softly 3	• Outline the rhetorical appeals used in	• Find 2 websites that depict women's and

	the Nature… of Visual Literacy" • Rhetorical Analysis • Presenting an argument visually		the documentary • Outline the constraints that are at play in the documentary	men's roles in advertisements. • Outline how the visuals appeal to an audience's emotions.

However, despite the outline of activities we provided to the GTAs, we also understood that the implementation of these tasks would only work if the GTAs were willing to give it a try, and if they had specific lesson plans. Most of them were going to be new to the program (approximately 65 percent of the GTAs) and did not have any background in teaching in a university writing program. We considered the implementation of the technological literacy components as a pilot, fully expecting that we would need to modify and adjust our learning objectives and initial tasks based on teacher and student experiences and feedback.

Training GTAs in Connecting Technological Literacy to Rhetorical Principles

Graduate assistant orientation is always an exciting and challenging part of teacher training. We ask our new instructors to buy into a program that we established; we ask returning GTAs to support changes that happened over the summer (changes that they might have suggested or that might have been instituted based on administrative decisions); we want to create a strong community and support network, and we want to make sure that everybody is ready for the first few weeks of classes. Often, we have established a routine that has worked in

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the past, and we can be relatively sure that it will work again. However, when a curriculum undergoes major revisions, and when it is essential to get major buy-in for something that most GTAs do not necessarily intuitively connect to teaching writing, established routines might no longer be applicable.

Historically, GTA training at my institution was conducted by the WPA with the help of two one-year instructors. Although this structure was still in place, I convinced a colleague and the two instructors to help not only with the logistics of training GTAs in teaching technological literacy, but also with structuring and guiding the specific tasks we included in the training session, and with involving GTAs more actively in the training sessions. Our approach was influenced by Ward and Carpenter's (2002) participatory methods outlined in their sourcebook, as well as Johnson and Morahan's (2002) edited collection exploring successful training and teaching concepts.

As a result, we paid specific attention to clarifying not only what we intended to do, but also why we wanted to incorporate technological literacy into the first-year curriculum. We provided our reasons for establishing the goals, skills, and tasks, and we encouraged GTAs to comment on any or all of the information we provided for them. We also made sure to provide GTAs with time to discuss their perspectives in groups and to voice their concerns. Much of the discussions centered around being unfamiliar with technologies, and being worried that an emphasis on technology would reduce the amount of time that students would be able to work on refining their writing skills. However, despite these concerns, GTAs were willing to pilot the modules, and they brought up a number of useful ideas about facilitating the integration of technology that we incorporated into the training sessions.

Providing space for GTAs to address their concerns and to contribute to the way in which

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the module approach developed over the course of the training session and throughout the semester let us move to the next steps (what Selber would call critical and rhetorical technological literacy in his 2004 work). Although the GTAs had only peripherally participated in deciding on the general concepts of the modules we wanted to pilot for the course, we underscored the importance of their involvement by asking them to contribute to how these modules would be taught, what the specific components of the modules would be, and how they would connect the modules to the teaching of writing. Instead of providing them with a finished product, we provided them with a framework that needed to be filled in (outlined as seven modules above). In addition to providing GTAs with readings that focused on learner-centered education, we also provided them with readings that discussed the integration of technological literacy into the writing curriculum, especially Cynthia Selfe's (1999) *Technology and Literacy in the Twenty-First Century,* Barbara Duffelmeyer's (2000) "Critical Computer Literacy," Laura Gurak's (2002) "Cyberliteracy," and case studies involving multimodal literacies in the composition classroom (e.g., Gruber, 1995; Regan, 1993; Romano, 1993) to make sure that GTAs could see some practical applications of technology use in the classroom.

This approach—a basic theoretical and practical framework established by the WPA, and specific means provided to the GTAs to participate in how the modules would be taught and integrated—was based on Jeanne Gunner's (1994, 2002) ideas on collaborative approaches to administration, and Irene Ward's (2002) work on management and leadership styles. Since we wanted to ensure that GTAs felt invested in and committed to the program without being left exclusively to their own devices, we asked them to take the module idea and provide hands-on exercises and information that would be shared with everybody. Their experiences were invaluable in putting together the content of the modules, making sure that the strategies and

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examples used to teach technological literacy related to students' current technology experiences. Once they taught these modules for which they provided the details, we would revise them and update them based on their feedback and the feedback of the students in their classes.

Since the integration of technological literacy was a pilot project, everybody involved knew that we would be changing and adapting specific exercises and tasks throughout the semester and over the next few years. Although we wanted to provide a successful initial model for the integration of technology, we also knew that the first year of implementing the project would provide us with important information for changes that needed to be considered for subsequent years. This knowledge alleviated some of the pressure we all felt about this monumental project. As a WPA, I knew that I couldn't control the quality and execution of each module, but I could count on everybody trying their best to make this a successful pilot project. Similarly, the GTAs knew that the content they created during orientation would be tried out in each classroom and would be discussed in the practicum class. They also knew that the program would conduct surveys to find out about the effectiveness of teaching technological literacy in the composition classroom.

To start the process of putting together the content for the technological literacy modules, we provided GTAs with a module template that asked them to think about the reasons for including the specific module into the curriculum, who their audience would be, and what that audience might already know and might need to learn. We also wanted to make sure that GTAs thought about the specific steps that would be necessary to lead students through the module. We provided them with a definition of technological literacy adapted from Cynthia Selfe's (1999) definition as a functional, analytical and critical skill influenced by social and cultural factors. Furthermore, to ensure consistency across modules, we asked GTAs to use specific questions for

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thinking critically about and creating the technological literacy modules (see Appendix B).

With the questions we posed we wanted to make sure that GTAs would approach technological literacy from a critical perspective, moving from "how to teach" to "why do we teach it the way we teach it." We made sure to create groups of three to four that included returning and new GTAs who had large ranges of technology backgrounds. Each group was charged—over a one-week period with lots of meetings and conversations, and while we also learned about teaching methodologies and pedagogies—to provide specific detail for one of the modules that would then be used by the whole group. Then, after conducting usability testing on each module, and revising each module based on the suggestions and feedback, GTAs would be able to incorporate the handouts, PowerPoint presentations, and web pages to teach students about the specific aspects of technological literacy in conjunction with the rhetorical principles addressed during that lesson.

At the end of the two-week period, every GTA had very specific lesson plans in hand that would guide them through the technological literacy modules. GTAs had worked on them with great dedication and much more enthusiasm than we had initially expected. GTAs who worked on Module 5, for example, created a detailed PowerPoint presentation and provided their colleagues with a step-by-step process to answering "Key Questions when Designing a Website," specifically focusing on author, audience, purpose, media, and content. In addition, the group created a website that explained the functional aspects of creating a website. For Module 6, the group decided on creating a presentation titled "An Introduction to the Nature of Visual Rhetoric," including a definition of visual rhetoric, journaling activities for students, images and videos with questions, a brief guide to argument and persuasion in visual media, group project ideas, as well as discussion questions that encouraged students to analyze images. And Module 7

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included a visual presentation of "What Do Documentaries Have to Do with Writing," which specifically focused on exploring structure and organization of thoughts, thesis statements, rhetorical triangle and rhetorical appeals, and the presentation of arguments through multimodal texts. Additionally, for each documentary that we showed in the writing program, the GTAs created a handout that provided specific questions to consider before viewing the documentary, while watching it, and after having viewed it.

GTAs' direct involvement in working on the technological literacy modules contributed much to the initial success of integrating multimodal teaching into the writing curriculum. Furthermore, the collaborative nature of creating the modules, as well as the very detailed lesson plans that resulted from the hard work of every GTA, encouraged collaboration among the GTAs throughout the semester. Because of this collaboration, and because GTAs's were willing to discuss the effectiveness of some modules and the difficulties they had with other modules, we were able to improve our approach over the next years, also taking into account student feedback and changes in students' technology use and knowledge.

Assessing Students' Technological Literacy

We identified functional and analytical technological literacy skills of incoming NAU first-year students over one semester of the composition course, and also compared functional and analytical technological literacy skills of students in Fall versus Spring semesters. We decided to conduct a self-assessment (an online questionnaire for students at the beginning and end of the semester) of students' skills to better understand whether we actually met students' learning needs. We wanted to use GTA survey results and student questionnaire results to make changes to the technological literacy modules and to how we integrate the modules into the writing curriculum.

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The self-assessment outcomes showed us that students improved their functional technological literacy skills in all areas taught, and most significantly in the area of webpage design. Students rated their skills at the beginning of the semester at 1.6 on a 5 point scale, and at 3.75 at the end of the semester. Their multimedia presentation skills improved from 2.8 to 4.2 on a 5 point scale. In terms of students' assessment of their functional technological skills, we saw big improvement in how students perceived their skills. Furthermore, the GTA survey confirmed the vast improvement in students' use of technology. However, in terms of analytical and critical skills, it was more difficult to confirm students' self-perceived improvement. Although the self-assessment outcomes conducted over 40 sections of the introductory writing course showed that students saw themselves improve considerably in such areas as web analysis and analysis of cultural and visual online representation (from 2.8 to 4.0 on a 5 point scale), GTAs did not see consistent improvement of students' analytical and critical skills over the course of the semester.

The results from the GTA survey showed us that many did not see this as a student shortfall, but as a problem with how technological literacy was introduced into the curriculum. Despite many discussions about the importance of teaching critical literacy skills in the practicum course, many of the GTAs were much more comfortable teaching basic technology skills. To them, critical literacy in a wired world was a much more ephemeral concept than teaching students how to create a PowerPoint presentation or webpage. They could see that students embraced the functional skills of the technological literacy modules, and they could see that students were able to create a web page. Interestingly, however, many of them saw a disconnect between analyzing a written text and analyzing a web page, documentary, or news broadcast.

The assessment of the pilot program provided us with many useful lessons. It became

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clear that even though we thought that we did a fabulous job, we needed to provide a more coherent integration of critical and rhetorical technological literacy into the writing curriculum. We also needed to rethink instructional strategies and provide instructors with additional hands-on information on how to teach critical and rhetorical technological literacy while de-emphasizing students' functional literacy in an environment where almost all students were familiar with more programs, web applications, and gizmos than we would ever be. We were especially indebted during this process to the very accessible approach outlined by the Center for Media Literacy's theory, practice, and implementation approach (Center for Media Literacy). When we re-structured the GTA preparation, we de-emphasized the how-to approach and emphasized an approach that stressed the overall applicability of rhetorical principles in teaching technological literacy skills, the similarities between text analysis and website analysis, and the similarities between writing a paper essay and writing/creating a web page for academic purposes.

Future Goals/Future Changes

After integrating technology into the writing curriculum for several years, we no longer have graduate assistants questioning the usefulness of "teaching technology." We have started to address computer anxiety or frustration early on, worked on troubleshooting strategies, expanded our online resources, and focused on developing a teaching practicum approach that fully integrates the technological literacy modules we teach in the first-year writing course. Instead of discussing how graduate students should be approaching technology, GTAs now test every module before teaching it and then discuss what they learned from it. This provides them with an opportunity to anticipate student questions, and it gives them language for addressing student concerns.

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We still have faculty who do not see the connections between teaching writing and "teaching technology," but we have also learned to explain the connections more succinctly. We have participated in many talks, presentations, and discussions at our institution attended by a wide range of faculty and administrators who are interested in improving technological literacy skills of students. Although the integration of technology into a first-year writing course has posed some challenges, our experiences have also been very rewarding. Students' progress in understanding the importance of critical and rhetorical technological literacy has shown us that the writing curriculum was able to integrate a multimodal approach to teaching first-year composition.

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Appendix A: Excerpts from Revised Course Description

English 105 is a four-credit-hour survey course that introduces you to critical reading and writing in the academic community. Throughout the semester we practice the *reading process*: generating questions or deriving answers from written texts, documentary films, and web texts; summarizing texts; identifying examples, drawing inferences, and making logical or comparative connections; organizing information in a variety of ways; seeing and learning rhetorical skills used by effective writers; and evaluating the merits of what we read and see. At the same time, we practice the *writing process*: identifying audience and purpose when using different media; gathering or finding ideas; organizing and interrelating those ideas for readers; drafting in order to develop, support, and illustrate ideas; revising from trial-and-error and in light of peer input; editing for clarity and accuracy.

Course Goals

- To introduce fundamental writing principles used in academic settings.
- To understand the connections between critical reading and writing skills through close attention to the production and interpretation of texts.
- To apply critical reading and writing skills to formal writing tasks, including an extended writing project.
- To develop technological literacy skills to rhetorically analyze online resources based on the audience addressed, the purpose explored, and the language used.

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English 105 incorporates computer literacy as an integral part of teaching critical thinking, reading, and writing skills. The computer modules are not intended to teach you computer skills, but are intended to teach you to look more critically at how technology influences our understanding of the writing process and our thinking about reading and writing in a technology-supported environment. You will create an online writer's profile which includes a reflection on your English 105 experience.

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Appendix B: GTA Questionnaire

What are your aims, objectives, goals:

- What are you trying to achieve? How do your aims and objectives for increasing students' technological literacy fit with the aims and objectives of the course in general and the various lessons/rhetorical strategies/readings you are teaching during that time period?
- What do you want the outcome to be? What do you want students to know and be able to do after they finish the module? How do you want them to be able to apply their technological literacy skills in a writing course?

What do you expect students to know already?

- Why do you think they know this? Can you make these assumptions? What do you need to do to find out whether they already have this knowledge?

What do students need to know from you before you start this module?

- What initial instructions do you need to give them to prepare them for what you want to do?

What do students need to know in order to successfully complete this module?

- What skills do they need to have? What information do they need to have?

How do you ensure that students behave appropriately?

- What are the guidelines you need to figure out? Are you going to establish the guidelines? Do students have input?

What specific steps do students have to go through to complete the project?

- What do they need to know/be able to do first, second, third,…

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How are you going to get them through the different steps?

- How are you going to teach them the skills they need to have to fulfill your goals? Be as specific as you can here. Your students will appreciate it.

How do you introduce the module? How do you round up the module?

- Are there specific exercises that they will do? Are they going to present their acquired knowledge to you/the class?

How do you accommodate different skill levels/different learning styles?

- How do you profit from different skills/learning styles? Can you let students teach other students? How so?

What else do you need to learn about in order to make this a successful module?

- What do you need to do to become more familiar with technology? What are some possibilities for networking with your peers? How might you share your tech. knowledge/ expertise with your peers?

What alternative plan do you have if the technology isn't doing what you want it to do?