Moving On and Beyond

Technical Communication Program Assessment at Michigan Technological University

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Abstract.   In this article we document a history of programmatic assessment in the Scientific and Technical Communication (STC) program at Michigan Technological University (MTU). More specifically, we describe three approaches to assessment used at Tech over the past fifteen years: system-centered, user-centered, and participatory. We provide this history, culminating with our current practices, so that others may benefit from our experience and develop advanced assessment practices compatible with their own needs and interests.

Keywords.   programmatic assessment; system-centered, user-centered, and participatory assessment; formative; summative; portfolios; senior surveys; constructing professional identities; user instructions; portfolio presentations; stakeholders; speech act theory

The increasing dynamism of the scientific and technical communication (STC) workplace, the widening diversity of technology, and growing expectations of STC graduates have always posed practical problems for STC programs. Perhaps because the field of technical and scientific communication is user-focused, programs such as ours have examined how well they prepare students to respond to these changes. This inherent reflexivity serves to set apart the field of technical and scientific communication from many fields in the humanities. That is, programs in technical and scientific communication, of their own volition, took the

business of assessment seriously, before demands of accreditation were brought to the fore.

The nexus of three forces, including rapid changes in the workplace, corresponding shifts in design of undergraduate programs, and increasing pressures for assessment, indicate that attention to not only designing an undergraduate program, but also designing the assessment of such a program, is attention well-deserved. A problem for educators in the field is that the diversity of undergraduate programs does not lend itself to sharing approaches and practices for assessment. Thus, the reflexivity within our many undergraduate programs—a real strength for the discipline—is also a problem for developing rigorous and theoretically savvy approaches to assessment. If specific assessment practices are not easily developed, the next most useful strategy is to develop metalevel approaches to assessment, such that programs across our field might better understand how reflexivity may best be adapted to their particular situations.

In this article, we document a history of programmatic assessment in the Scientific and Technical Communication (STC) program at Michigan Technological University (MTU). More specifically, we describe three approaches to assessment used at MTU over the past fifteen years, each reflecting and inscribing attitudes toward the programs, the students, and the communities in which they reside. We characterize the approaches as system-centered, user-centered, and participatory. We borrow terminology from technology design contexts to describe parallel developments in programmatic assessment at our institution. We provide this historical account of development so others might benefit from our experience and develop advanced assessment practices compatible with their needs and interests.

In the context of this article, we use the term *assessment* to refer to formative assessment. That is, we use assessment to help us better understand the strengths and weaknesses of the existing program. Information collected in the assessment process is used to improve various aspects and components of the program such as course design and redesign, pedagogy, internships, graduation requirements, and extracurricular learning opportunities for students. As such, formative assessment is different from summative assessment, which serves a more evaluative purpose by comparing the performance of a particular program to predetermined standards typically imposed by decision-makers outside the program (Harlen & James, 1997).

With these distinctions in mind, we present the historically situated shifts from system-centered, to user-centered, and finally to participatory assessment procedures.

System-centered Approach to Assessment

To make our historical progression of assessment approaches clear, we first describe exactly what we mean by *system-centered*. Most everyone is familiar with system-centered technologies, even if we don't refer to them as such: if you've ever flown on a commercial airplane, you've realized that the system is the center of each decision-making process and the user is a terminal consideration. Robert R. Johnson (1998) has described system-centered technologies:

> System-centered technology. . . locates the technological system or artifact in a primary position. There is no need for the user to be involved with system or artifact development, this perspective suggests, because the system is too complex and therefore should be designed and developed by experts who know what is most appropriate in the system design. (p. 26)

In system-centered theory, the designers of the system are the only participants in decision-making processes. What about the users? In Michel de Certeau's (1984) distinction between strategy and tactic, users must affect change in a system-centered environment by using tactics. "The place of a tactic belongs to the other" (p. xix), and users are clearly *other* in any system-centered environment. Employers and students, or users of the university system, have needs and certainly interests that diverge wildly from the focus of the system. Any input from the users about the necessity of use must take the shape of de Certeau's tactic. In the first approach toward assessment, system-centered, this tactical approach is evident.

Examining the history of scholarly trends tends to be treated with either literary sentimentality for days-gone-by or resentment about what those darn English teachers did to us. Here, examining the historical grounds of assessment as system-centered allows researchers and program developers not only to judge history but also to gauge current assessment practices within a clear historical context.

What Was the Situation for Assessment in 1996?

In 1996, assessment of the STC program at MTU was driven primarily by the STC committee's desire to enhance the degree offered by the institution; it was an attempt to gauge the strengths of the STC program and address any weak links among the aims of the program and the students' lived experiences in the STC program. Graduating STC students were given two instructions: to put their best work in a portfolio and to turn it in. First, they were told simply, "Put your best work in a portfolio." And as educators

we can see some obvious values in this: getting students to think about what their "best" work was; seeing "best" examples provided a means to assess the rigor of the program; comparing "best" examples helped determine how needs were being addressed for students with wildly varying career goals and other concerns. Unfortunately, "Put your best work in a portfolio" was less productive than one might have hoped. The assignment didn't encourage thinking about what "best" meant: best for what situation? For which audiences? To showcase which skills? For what purpose? In what context? With what expectations? None of these questions were addressed.

The second assessment portfolio directive, simply: "Turn it in," wasn't much help either. Details about the deadline and location for submission were provided. But the real problem was these instructions didn't answer the critical question that rhetors have faced for millennia: What's at stake? The four years of coursework prior to the portfolio had been built on giving students a habit of mind that was critical, that looked deeper into questions, and that encouraged careful analysis followed by clever production. And the terminal assignment was to put work in a portfolio and turn it in—you don't have to know college students well to imagine that their first response was, "Turn it in, *or what?*" Assessment in the system-centered approach was so system-centered that the assessment instructions neglected even to treat the participants as users with a range of choices to make.

What Does Speech Act Theory Suggest about Assessment?

David N. Dobrin's (1989) work with speech act theory as a branch of human relations indicated that a speech act needs to meet two universal conditions (among other specific conditions) to avoid being considered defective: the speech act needs to be nonobvious and it needs to be relevant (pp. 16–20). Because assessment prompts can be considered both instructions as well as speech acts, let's conditionally examine system-centered assessment.

In terms of how system-centered assessment works (or does not work) for undergraduate STCs, the instruction to "Put your best work in a portfolio" violates the nonobvious condition because without any specifics about the audience, purpose, and context for which the portfolio would be reviewed, the student is left to guess that they probably shouldn't put their worst work in the portfolio. In short, not enough information is provided in this prompt to do anything other than literally place stuff in a binder—an instruction that is carried out just as well by a cardboard box with "Course ### Portfolios" written on it in crayon.

The second directive, "Turn it in," violates first the nonobvious condition because what use is an assessment portfolio that isn't turned in? Second, it violates the relevance condition because without any indication of stake, the question winds up being irrelevant not only to the STC students' situation but also to any situation. The directive includes no consequence, such as, "Turn it in or you won't graduate," "Turn it in or you won't fully realize your educational potential," or even "Turn it in so we have something to remember you by." Even good-natured, hard-working students who perceived some use in the assessment exercise were left to ask, "Well, this might be important, but why do it *now*?"

So, What Did the Portfolios Look Like?

The portfolios did not look good. Here's what we mean: some students had been indoctrinated not only with a critical education in STC but also with a healthy fear of institutional hierarchy. These students not only completed a portfolio containing work they guessed was their best—as judged by some universal standard—but they also turned it in for fear that some unseen consequence might exist. But even these portfolios were developed without a sense of purpose, without any understanding of context, and thus they failed to develop any argument about what the students had learned during four years of coursework—except the fear of institutional negative feedback.

More students took the total lack of stake in the portfolios as an indication of the institution's level of interest in the portfolios. That is, if the assessment clearly wasn't important enough to have any consequence, then it wasn't important enough to put thought into. One student in particular took the assessment quite literally when he placed some work in a three ring binder. The binder was borrowed from a ROTC cadet and described the maintenance procedures for armored tanks. Rather than hole-punch his work, the student simply placed the documents within slippery plastic covers. The table of contents was a poem written for a creative writing class. No page numbers were included. In short, the portfolio was an unorganized repository for whatever random STC work had come off the printer in the college computer lab. The student graduated—with honors. After all, the STC program had taught him to assess the rhetorical situation, and here the situation for an assessment portfolio just plain didn't exist.

What Was the Workplace Response?

To some extent, participating in a system-centered environment such as higher education encourages system-centered thinking, perhaps the most insidious affect of getting an STC degree in this precurrent/traditional approach. That is, the formalized procedures for degree earning are regularly

perceived as inflexible systems even in the most reflexive programs. In addition to the structure of the undergraduate degree program, we argue that the system-centered assessment actually served to enhance an understanding perception that the best approach to problem solving was not to consider users' needs. The terminal formal experience in the degree program at MTU is to participate in some sort of assessment process. This process serves not only needs related to assessment but also, we argue, the situation of any assessment processes at the terminal stages of degree completion means that, for students, assessment will be seen as the paramount application of their degree. Put another way, the requirements for assessment have been seen as the capstone, the pinnacle example of what is required of STCs. If our assessment required students to write and act out a soliloquy, then the message sent to undergraduates is that the previous four years of education should prepare one to produce soliloquies as a professional STC.

The same student who turned in an old ROTC binder stuffed with random college assignments took this approach of not considering the user/audience with him to his first job. The work started when the Vice President of the mid-sized Midwestern company invited the STC graduate to identify problems in the company's communication and organization structure. The STC student wrote up a six-page document indicating problems in communication at almost every level in the company. Good work. Next, the vice president asked the STC, because he apparently didn't think the company was doing things right, would he please resign? It's apparent that for this STC *putting your best stuff out there* isn't by itself satisfactory for all users—especially in rhetorical situations with complex purposes and real consequences.

We're not arguing the assessment process that didn't acknowledge users is responsible for this unfortunate chain of events; however, had the STC been encouraged to consider the user more with the terminal assignment, perhaps thinking about the reader would have been a part of his writing in the workplace.

We've learned that the system-centered approach to assessment didn't help the institution because it lacked a rhetorical reason for participants to turn in work that would provide the basis for any assessment. Further, the system-centered approach to assessment didn't use its position as a capstone to reinforce in STC students the attitudes and habits of mind necessary for productive working lives.

From System-centered to User-centered Assessment

With regard to assessment, and perhaps only with regard to assessment, the authors here contend that graduating STC students are *users* of the sys-

tem rather than just students. User-centeredness has been defined as emphasizing "people rather than technology" (Norman & Draper, 1989, p. 2). A user-centered design thus makes it easier for users to learn what they need to know about technology to make productive use of it. Once they learn a technology, people should be able to easily remember how to use it after being away from it and to use it without learning it once again (Nielsen, 2005). User-centered design should provide people with a "pleasurable sense of empowerment" (Norman, 2011, p. 1). But what makes a design understandable, easy to use, memorable, and satisfying? We contend, along with Donald Norman (1990), that one important contributing factor is visibility: "The relationships among the user's intentions, the required actions, and the results are sensible, nonarbitrary, and meaningful" (p. 22). In this section, we describe two steps we took to increase the visibility, thus the user-centeredness, of assessment for STC at MTU.

What Did Portfolio Assessment Look Like in 2004, and Why?

When a new STC program director arrived in 2004, the portfolio assessment remained system-centered. Ironically, however, it did not serve the system or programmatic needs because links between learning outcomes and assessment were invisible. At least one reason for the portfolio assessment's shortfalls was that the process defied an important design principle: visibility. "Everyday things," Donald Norman (2011) argued, should be designed so that they have "an underlying logic, a foundation that, once mastered, makes everything fall into place" (p. 1). Further, users should easily be able to make sense of "this underlying structure" (p. 2)—the parts and how the parts function together to serve the users' needs. Complexity, in itself, Norman posited, is a part of everyday life and the systems that serve its social, political, and economic aims: "We will see order and reason in complexity once we come to understand the underlying principles" (Norman, 2011, p. 1). Making those principles visible allows users to understand, access, and use them to their advantage.

Although Norman's design work commented primarily on manufactured items such as computers and their interfaces, we contend that it offers valuable insights into social systems, such as assessment, as well. A computer consists of multiple parts working in complex relationships with one another. Interface designs serve to make the complexity of computer technology understandable to users by indicating how its functions apply to the users' needs and how users can apply those functions to accomplish their own ends. Programmatic assessment is a system so comprised, the multiple parts being educational goals, learning outcomes, assessment

instruments, and those people who teach and learn. The portfolio assessment practices at our institution appeared arbitrary because no interface existed for administrators, faculty, or students. When complexity appears random, Norman (2011) argued, "we have reason to be annoyed" (p. 1).

Such was the new director's response. She found, for instance, no information indicating connections between programmatic or pedagogical goals and portfolio assessment. She was told the program kept student portfolios for three years after they had been submitted, but was given no reason why they were kept, or for that amount of time. Apart from a list of required portfolio entries inventorying students' writing, design, and oral work, very little documentation existed indicating what skills and abilities the portfolios were to assess, to whom they were to be addressed, or how they were to be organized or designed. In some cases, the list itself was confusing. One required portfolio entry was to demonstrate students' "oral capabilities," though how that was to be accomplished was unclear. Nothing indicated that students should record a speech and include the recording in their portfolios. Nothing indicated that students might prepare presentations for the director, the program's steering committee, or STC faculty. What the director found in the portfolios, instead, were printouts of PowerPoint slides, presumably used in oral presentations students had given as undergraduates.

In 1996, a 27-question, anonymous senior survey was added to the portfolio requirement, the purpose of which, again, was not visible. Here, students were asked, first, to report their demographic information, such as ethnicity and age. No programmatic objectives, however, existed to increase ethnic or age diversity, so answers to these questions appeared useless except to describe and report the status quo. Students were also asked to use Likert scales to quantify their learning, as well as their relative satisfaction with the classes they had taken and the program in general. So, for instance, to the question "What percentage of communication-rhetorical skills that you now have do you consider to have been taught in class?", students could respond "80-100%, 60-80%, 40-60%, 20-40%, 0-20%." But, because no learning outcomes existed for the kinds of rhetorical skills these classes should teach, answers to this question, too, were pointless. The survey did include several open-ended questions, such as, "What do you perceive as the program's strengths," or, "If you had it to do over again, would you major in STC?" But these questions stood alone, without explanation of the program's pedagogical objectives or students' goals. Without visible links between these questions and broader, more conceptual, learning outcomes, the survey offered little useful information to the new direc-

tor about the successes and shortfalls of the program. She also discovered that the portfolio assessment process, with its senior survey, annoyed and alienated students.

Although students' particular dissatisfactions and problems with assessment varied widely, the most compelling explanation for why they persisted was consistent: the links between portfolio assessment and student-user benefits remained invisible. Students continued to meet the requirement to turn in a portfolio of their "best work," but did so without any guidance about how that work should be selected, how many samples should be included, or how the portfolio should look. Because no description existed of what the samples should represent or what purposes the portfolios served, the resulting products ranged from manila folders to scrapbooks or photo-albums filled with what appeared to be unrelated coursework papers of varying lengths and in varying numbers, along with one or two sets of photocopied PowerPoint slides.

In talking with students about their portfolios, the director found, not surprisingly, that most considered portfolios afterthoughts to graduation, an item to be checked off their graduation requirements list for the benefit of the program and with no clear advantages for them. Because portfolio instructions did not ask students to discuss the work they included, they offered students no opportunity to reflect critically on what they included and little opportunity to consider how the activity might have shaped their professional identities. Portfolios were kept for three years, so students could not use them to interview for jobs or graduate school admission. After three years, most program graduates had forgotten about their undergraduate portfolios or had no use for them except as keepsakes, so almost all were discarded.

When interviewing graduating seniors about their experiences in the program, the director identified several other significant effects of the program's system-centered and unexplainable assessment practices—all of these detrimental to graduating seniors and ultimately the program. Without a venue in which to discuss the learning their portfolios represented, students were hard-pressed to explain how they might use them in their lives after graduation. Many described their skills as static and stable, their professional identities as uncomplicated—a Web designer or a documentation writer, for instance. Other discussions indicated that some students did not know how to describe their professional identities. When asked to explain what technical communicators do, one graduating senior said he did not know. Given that the rapidly expanding global and networked economies of the time called for technical communicators to be

problem-solvers, boundary-spanners, and model-builders, such responses fell far short of indicating whether students understood the adaptive and crossdisciplinary nature of their work.

In short, then, portfolio assessment continued to fail in 2004 because its purposes remained invisible to all users. Students viewed the portfolio as benefitting the program but having nothing to do with them or their future lives. Faculty assumed that results would be written up for institutional review, but did not expect any programmatic changes to occur as a result. And the new director had come to realize that portfolios and senior exit surveys functioned only to maintain the program, not to assess its successes and shortfalls and certainly not to improve it.

How Did We Move to User-centered Portfolio Assessment?

Getting from system-centered to user-centered assessment took two distinct steps[1] to make the senior portfolio assessment sensible and meaningful to the users who are most invested in it: the students, the director, and the STC steering committee—thus ultimately the program. The steps were developing user instructions and instituting portfolio presentations.

User instructions

The first step the director and steering committee, comprised as a revision committee, took was to write user instructions. Addressed primarily to students, this document also offers a written record of programmatic practices to program directors, steering committee members, and faculty as they come and go. Faculty may use it as they design and teach their courses because explicit learning outcomes included in the document make visible the interdisciplinary and rhetorical nature of the program. The document thus functions both as instructions in the moment and as a pathway for new continuities in the future. Although these instructions include information about every aspect of the senior portfolio, from when it is due to what consequences ensue if it is not submitted, in this discussion, we focus on instructions about the portfolio itself and a professional development history document.

The revision committee's primary aim in this first step was to make visible the use to which portfolios would be put. But portfolios served two sets of users with two very different applications: the director and steering committee would use portfolios to assess the work of the program and to design new curricular directions; students would use them as a segue

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[1]   A third step, revising the senior exit survey, will be discussed as a move toward participatory design later in this article.

between their academic preparation and their next steps to the workplace or graduate school. If used for programmatic assessment, the portfolios would best be addressed to faculty and would inventory what students had done during their time in the program. Assessment applications also suggested that portfolios might be kept for an extended period of time.[2] If, on the other hand, students used them to secure employment or admission to advanced study, portfolios would need to be returned quickly. They would also need to go further than inventorying skills; they would need to demonstrate how those skills might be applied in the future.

Tapping technical communication's common wisdom, the committee wrote instructions that indicated multiple audiences—primary and secondary—for the portfolios: "The primary audience is the program's faculty and advisory board members. The secondary audiences consist of potential employers or graduate school admissions officers" (see Appendix). The revision committee did not, in any way, view this move as sidestepping the conundrum of multiple audiences. Instead, they saw it as a way to underscore audience complexity and to offer students the opportunity to grapple with it in their own ways. To address issues of timely return, the committee agreed that portfolios would be kept for two weeks, enough time for a group of normed readers to review and score them. At that point, the portfolios would be made available to students. Members of the STC program have been surprised and gratified that many graduating seniors have made two copies of their print portfolios, donating one of them to what has become an ongoing collection, which is displayed publically and is available for upcoming students to peruse as they prepare their portfolios.

Another goal of the revision committee was to make clear that the program and faculty understand the portfolio to be a professional and public document. Describing it as "a compilation of the written, visual, digital, and design work that represents you as a professional communicator" (see Appendix) eliminated the manila folder, scrapbook, or album designs that the program director had encountered early on.

To make clear that the personal infuses the professional, the committee indicated that the purpose of the portfolio is to "demonstrate who *you* [italics added] are as a professional communicator" (see Appendix). An important outcome has been that anyone who looks at current portfolios can conclude that, although the nature of technical communication is interdisciplinary, the field also calls for personalized particularity and

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[2] Although encouraging students to design digital portfolios, the program requires students to submit print portfolios.

specialization. Without a requirement that they submit a certain number of written, visual, digital, or design samples, students proportion their submissions in keeping with their current and future interests. Students who view themselves as website designers submit portfolios proportioned to foreground their skills in this area, though they might also include samples of their digital photography. Other students targeting documentation or writing as a future career might also include samples of their visual design work. This mix represents both the interdisciplinary nature of the program and the field, as well as the particular professional identities of individual students.

Finally, the instructions direct students to include a 750–1000 word description of their growth as professional communicators. Titled "professional development histories," these documents are intended to go further than conventional reflective or transmittal letters by not only confirming what students have learned in classes and other contexts, such as co-ops, but also by encouraging them to consider what they might do with that knowledge. Such analysis offers students ways to assess their work contextually and to view it as dynamic, changing, and expanding over time. They thus gain a fuller and more complex understanding of what they know as they transition from school to workplace or graduate school and a way to articulate the potential applications of that knowledge.

Intended to address primarily students' needs, these professional histories contribute substantially to a programmatic understanding of what is done well and what could be done better. Because seniors describe the contexts in which they have developed professionally, their histories offer otherwise infrequently realized opportunities for faculty to see how the theories, skills, and abilities they teach are used directly or re-interpreted as students apply them in the workplace or professional social settings.[3] Gaining these insights does not mean faculty change their pedagogy to match what industry demands, but rather they can come to a more finely grained understanding of the implications of their teaching, both its successes and its shortfalls. In this way, faculty can infuse the curriculum with fresh ideas and refine it.

Portfolio Presentations

The second step toward user-centered assessment entailed adding portfolio presentations to the graduation requirements. These 20–30 minute taped presentations place student needs at the center of assessment

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[3] Members of the Society for Technical Communication's Student Chapter, for instance, use writing and design in informational projects and marketing campaigns.

because the portfolio is not the subject of their presentations. Instead, it is a means for students to represent their professional identities: who they are as professional communicators and how they embody the skills and abilities that constitute those identities. The purpose of these presentations, in other words, is not for students to walk the audience through their portfolios page by page, listing their projects and confirming the skills they have acquired. Instead, the purpose is for students to demonstrate how their portfolios reflect their growth as professional communicators and how the documents showcase their expertise. Students design the look of their portfolios accordingly, with a resulting explosion of innovative styles and fresh approaches—a far cry from manila folders and scrapbooks. They also chronicle key components of their development by drawing on a range of experiences, including classes, co-ops, internships, and their work with professional organizations or on the job. Students benefit from this experience because it offers them ways to consider their learning in larger contexts than the program and to imagine how they might use it in the future. It encourages them to consider their learning as a complex interplay of many moments, not necessarily as a linear progression from novice to expert.

The nature of these presentations is also informed by an interest in students as users of the program. They have enrolled in the classes, taken program-sponsored co-ops, and participated in its professional social organizations. What have they gained—or lost—from these experiences? And how would they explain that in relationship to their professional preparation?

To answer these questions, the revision committee decided presentations should place students in as realistic a rhetorical situation as possible. Presentations should insist students publicly explain how they understand what it means to be a professional communicator to audiences representing varying knowledge levels about the field and with different backgrounds and interests. The committee thus decided to extend invitations to students' families and friends, along with all interested faculty, students, and the general public. Further, the committee decided, the presentations should be polished but also open to audience interaction. Publicly responding to a parent's question, "What is rhetoric, anyway, and how does it help you be a better website designer," is a far cry from checking an answer to "What percentage of communication-rhetorical skills that you now have do you consider to have been taught in class?" Whatever the answer to the first, it will reveal a great deal more about what a student has learned, absorbed, and can use than any answer to the second. Beyond the opportu-

nity for students to address questions about their learning, the committee saw invited audience members as users, or potential users, of the program. Parents and family are certainly users because they invest in their students' education, whether emotionally or financially, supporting them in a major many have never heard of. They have earned the right to join in a critical discussion of what technical communicators do. Many local businesses already hire STC students, either as interns or upon their graduation, so they, too, are considered users. Inviting them to portfolio presentations acknowledges their investment and offers them insights into why that investment is worthwhile. Interested faculty and community members are viewed as contributors to lively portfolio discussions, as well as potential users of the program. If, as a result of portfolio presentations, faculty across campus and within the program's department[4] come to a more nuanced understanding of what technical communication is, the committee speculated that they might develop an appreciation for the possibilities of joint interdisciplinary projects, both scholarly and pedagogical.

The result of these two steps toward user-centered assessment is that, in four years, the STC senior portfolio assessment began to focus on people. User instructions make it easier for students and faculty to learn what they need to know about the portfolio process and to use it to accomplish their own distinctive—but intersecting—ends. All users, whether inside or outside the academy, have expressed satisfaction with the portfolio presentations because they empower students to articulate their emerging professional identities, faculty to consider their roles in shaping those identities, and community members to make sense of them. Although portfolio assessment is, thus, more sensible and meaningful than it had ever been, and to a larger group of users, in 2008, the program director and committee wanted to push involvement even further. Consequently, the program began to move from user-centered to participatory assessment, and we next turn to that development.

Toward a Participatory Approach to Assessment

What is Participatory Assessment?

Participatory assessment is a model Michael Salvo and Jinfang Ren (2007) proposed as an alternative to the traditional expert review model of writing program assessment. It employs and applies "the methods, processes, and tools of participatory [technology] design to the discursive technological artifact" (p. 425) of writing curricula and programs. Drawing on Donna

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4   This program resides in a Humanities department that represents a wide range of disciplinary interests.

Haraway, Salvo and Ren view the curriculum as "a social or discursive technology" that "creates relationships among stakeholders and formalizes relationships among agents, human and nonhuman factors, within the institution of the university" (p. 425). Salvo (2001) described participatory technology design as a process of designing *with* users rather than designing *for* them. Similarly, central to participatory assessment is the active participation of users throughout the assessment process in both planning and implementation. Participatory assessment is thus firmly contextualized in particular programs and requires that "participants constantly revise their understanding of the current state and desired state [of those programs] based on ongoing conversations among one another" (Salvo & Ren, 2008). *User* here refers to stakeholders, defined by James E. Post, Lee E. Preston, and Sybille Sachs (2002) as the individuals and constituencies that are voluntarily or involuntarily the potential beneficiaries and/or risk bearers of an organization. In other words, thinking broadly about assessment means we also think more broadly about what it means to be users. In an applied field such as scientific and technical communication, program assessment would benefit from the active participation of both academic and industry stakeholders.

Who Are Our Participating Stakeholders?

Because participatory assessment involves more direct involvement with stakeholders, it is worthwhile both in practice and in this article to delineate who we mean to include. When we started to move toward a participatory approach to program assessment in our undergraduate program in Scientific and Technical Communication in the fall of 2008, we included both internal and external stakeholders in our particular programmatic context. Participating stakeholders include the following groups.

Students

The program serves the needs of both STC majors and students from other academic programs and departments. Most students are domestic, though a few are international students. The nonmajors come from a broad range of disciplinary backgrounds, particularly engineering and science disciplines.

Assessment Researchers (STC Committee)

The STC committee is the undergraduate steering committee in our home department. Its main duty is curriculum and program design at the undergraduate level. Assessment efforts are typically initiated by this internal group of stakeholders. In the participatory culture, the committee plays

the role of a coordinator who invites and facilitates participation of other stakeholders. It also engages all participating stakeholders in multivoiced conversations through both direct interactions, such as face-to-face meetings, and indirect interactions mediated by written documents and other artifacts available to stakeholders, such as program brochures, posters, guidelines, and the grading rubric for senior portfolios posted on the program website; senior portfolios from previous years stored in the departmental library; and so forth.

Program Director

The director of the STC program is also the chair of the STC undergraduate steering committee. She leads and guides the committee's collective effort to involve multiple stakeholders in both the planning and execution of various assessment initiatives.

Advisory Board

A panel of technical communication practitioners, the advisory board has actively participated in the assessment of our undergraduate curriculum by offering valuable input and feedback as industry representatives. In addition to meeting with program administrators, faculty and instructors, and undergraduate and graduate students as part of their annual on-campus visits, board members also communicate with the STC committee about current and emerging trends and developments in communicative practices in the workplace.

Instructors

Technical communication instructors in the program include tenured and tenure-track faculty members as well as graduate students in rhetoric and technical communication. Faculty members teach a combination of classes for STC majors and the multimajor technical communication class open to other academic majors. Graduate student instructors teach the multimajor class only. Graduate student instructors are required to take a practicum with the director of the program concurrently when they are teaching the multimajor class.

Why Are We Moving Toward Participatory Assessment?

Participatory assessment does not depart from the user-centered approach to assessment discussed in the previous section; instead, it supports, reinforces, and furthers our collective efforts to place users at the center. It enables inclusion and fair representation of multiple stakeholders' voices in ways that accommodate diversity and address conflicting goals

and agendas (Anderson, 1995). As Kirk St. Amant and Cynthia Nahrwold (2007) noted, professional and technical writing is constantly caught up in the perceived tension between academy and workplace. Academic stakeholders, such as faculty and instructors, and workplace stakeholders, such as prospective employers who hire graduates of technical communication programs, do not always agree on a shared set of criteria for evaluating the practice and teaching of technical communication. Unlike traditional objective-oriented and criterion-based approaches, participatory assessment's collaborative process creates opportunities for two-way exchanges of expertise between the academy and the workplace envisioned by Carolyn Miller (1989), Louise Rehling (1998), Stuart Selber (1994), among others. The program derives authority, agency, and credibility from the juxtaposition of academic and industry perspectives, leading to creative solutions and innovative suggestions for improvement that may not otherwise be possible. Further, when all stakeholders are involved, they are more motivated to effect the proposed changes emerging from the assessment.

Participatory assessment also allows for inclusion of voices that tend to be overlooked in traditional approaches to assessment, particularly the students' voices. Students regularly take tests and surveys as *human subjects*; rarely are they offered opportunities to collaborate with the expert reviewer or panel of reviewers in deciding what should be tested or what questions should be included in performance tests and attitudinal surveys. In short, their voices are either not heard or heard indirectly through the *expert*. By contrast, in the participatory model Salvo and Ren (2007) proposed, students, along with other participating stakeholders, such as instructors, administrators, and industry representatives, "are all participants and therefore experts with differing perspectives on a professional writing curriculum" (p. 426). These participants are considered research partners who collaborate with the assessment researcher rather than "resources the researcher 'taps into'" (p. 436).

What Have We Achieved So Far in the Participatory Culture?

Our program's assessment builds on and extends the participatory model in our particular context. Instead of planning a semester-long or year-long project with a start and end date, we have built a participatory culture in which curricular and program assessment becomes an integral part of the routine operation of the program. Enumerating every aspect of the program that has benefited from ongoing assessment in the participatory culture is beyond the scope of the article. Here we offer two highlights as illustrative examples of the *what* and *how* of participatory assessment implemented in our undergraduate program.

Review of the STC Exit Survey

At the end of their last semester in the program, graduating STC majors complete an "exit survey" that asks about their experience in the program and their future career plans. The survey is part program assessment in that it examines both curricular and infrastructure issues. In fall 2008, two graduate students—one was also the instructor of the multimajor technical communication class serving the needs of students from all over the campus—and the director of the undergraduate program in technical communication started a process to redesign the exit survey with participatory assessment in mind.

The need to redesign the exit survey was identified and confirmed in a series of STC committee meetings in spring, 2008. By that time, the program had made significant progress from system-centered toward user-centered assessment. However, one major instrument used in our programmatic assessment, the exit survey, remained system-centered. As one might guess, the 27-item questionnaire resembled a comprehensive exam testing students' familiarity with various components of the program. Instead of being allowed to answer each question in an open-ended manner related to their own learning experiences, students were required to choose among a range of five-to-eight predetermined options. For example, one question asked, "What do you perceive as the program's weaknesses," but the answer options mandated student responses rather than encouraging them to describe what they felt were real weaknesses of the program. Other questions asking students about their thoughts on the program were all structured in the same way. These questions made it easy for the system designer to code the data collected within the parameter of the existing system, but student responses failed to represent the actual experiences they had as users and stakeholders of the program.

The system-centered nature of the old exit survey was also evident in questions quantifying student learning in an abstract manner. For example, in assessing students' learning of rhetorical skills, one question asked: "What percentage of communication-rhetorical skills that you now have do you consider to have been taught in class?" Options available to students were 80-100%, 60-80%, 40-60%, 20-40%, 0-20%. (Yes, we know such a strangely worded question and out-of-order answer choices seem odd in a STC program.) Again, the system, or existing program, concerns were placed at the center of the survey instead of the actual needs and experiences of student users and stakeholders.

One of the graduate students working on the exit survey revision made the following comment:

I don't remember how I answered these questions. They make no sense. How do I know how much of my rhetorical skills came from my technical communication classes? 60%? 80%? How do I know? And my calculator is not gonna help. Looks like they [designer of the original questionnaire] are more interested in number crunching than in helping the committee get to know their students. I am glad we are redesigning it now.

Redesign the New STC Exit Survey

The exit survey redesign project started at the beginning of fall, 2008, and the current version of the redesigned questionnaire was adopted at the end of spring, 2009. In our newly emerging participatory culture, program stakeholders worked together to develop a shared, negotiated understanding of the project goals *in situ*.

Two graduate students played key roles in coordinating initial discussions. Drawing on resulting stakeholder input, they pinpointed key words—"rhetorical skills," for instance—in the questionnaire identified as representing what the program offered or might offer undergraduates. They then developed a series of short-answer questions prompting students to reflect on what they had learned and should have learned using the lenses of these key words. They followed up with additional questions that opened up other lenses not included in their questionnaire, such as "please share with us your favorite (most important? most vivid?) STC experience."

More importantly, under the guidance of the committee, the two graduate students helped negotiate different—and sometimes conflicting and competing—agendas among the participating stakeholders. For example, all stakeholders agreed that 1) questions about students' knowledge of rhetorical principles should be included in the questionnaire; 2) such questions should be open-ended and solicit qualitative feedback. However, they disagreed on how to find out whether the program has done a good job of teaching rhetorical principles and skills. A few undergraduate STC majors suggested a straightforward question, such as, "Do you feel that you have developed a good understanding of rhetorical theories and principles?"

Althouh the question was easy to understand (unlike most questions in the original questionnaire), faculty in technical communication were concerned that such a question might encourage a simple yes/no answer without much thinking on the part of survey respondents. Several graduate students suggested listing a few rhetorical concepts and asking

students to briefly explain the use of each. Undergraduate student representatives voiced concerns that the task of explaining would be misleading and intimidating because students might feel they were taking an exam on what they knew. Through multiple rounds of face-to-face and email discussions, keeping in mind the educational goal of the program and thinking in the shoes of practice and action-oriented undergraduate students, the two graduate students developed the question about rhetorical skills as follows:

> Please circle the concepts you feel comfortable with, enough
> that you could teach them to another person: subject, audience,
> purpose, tone, context, ethos, pathos, logos, usability, rhetoric,
> persona.

Again, the list benefited from the input of multiple stakeholders. Not only does the question serve the committee's need to find out the adequacy of the teaching of rhetorical terms (if not principles) in our classes, it also encourages students to reflect on what they know, how much they know, and whether they are able to apply what they have learned outside classroom contexts.

Develop Student Panel Presentations to Advisory Board Members

One-hour, student panel presentations to the advisory aboard was an initiative first piloted in the spring of 2010 and hosted again at the 2011 board visit. In response to the director's email invitation, student volunteers participated as panelists from five classes: "Technical Communication in Global Contexts," "Risk Communication," "Organizational Communication," "Multimedia," and "Website Design."

Students from each of the five classes presented one particular project they had done in the class they represented. They talked about the communication problems they had addressed, the intended audiences and users of the project, its context and purpose, how they had engaged with the problem, and what they had produced.

The students' panel presentations helped connect current students with workplace practitioners. Students received immediate feedback from these veteran technical communicators on their work-in-progress. This event and the follow-up conversations with board members also helped the STC committee involve industry representatives in informal assessment of not only particular student projects but also the overall effectiveness of the program's effort to prepare students for production-oriented project work. Conceived broadly, the student panel presentations, along with other events featured in the campus visits, help bridge academic and industry

perspectives in curricular design and program assessment by creating a space for direct contact and responsive conversations among program administrator and educators, students, and workplace practitioners.

How Have Stakeholders Benefited From Participating in Programmatic Assessment?

All participating stakeholders contribute different types of information regarding the relative strengths and weaknesses of various aspects of the program, which leads to specific recommendations for strengthening the program. Central to the process is reciprocity: the growth of the program benefits from the combined expertise of multiple stakeholders, and the stakeholders—brought into conversation with one another about their stakes in the well-being of the program—develop an informed understanding of their own and other stakeholders' needs as well as the values and assumptions underlying these different, and sometimes conflicting, needs and expectations.

Specifically, STC majors develop a critical vocabulary to articulate their needs as users of the program as well as their identities as up-and-coming professionals in scientific and technical communication. Students from other programs and departments gain an informed understanding of the relevance and usefulness of technical communication in their own disciplinary and professional contexts. Program director, instructors, and professional staff get direct feedback from students about their learning needs and experiences as well as input from industry representatives about core competences expected in today's workplace. The academy stakeholders can use this information to help them facilitate students' school-to-work transitions. In short, incorporating participatory assessment into the routine operations of our program as an ongoing collaborative effort has helped us build sustainable programs responsive to the needs of multiple stakeholders as well as strengthen stakeholder relationships in the long run.

Conclusion

The historical progression documented in this article demonstrates how STC programmatic assessment at MTU has moved from an invisible and unresponsive system to one that is visible and sensible, thus addressing the needs of graduating seniors, the program, and the larger community. Multiple stakeholders are increasingly involved in building a participatory culture to open spaces for multilayered and multivoiced conversations and negotiations among stakeholders regarding various aspects of

the program. In this participatory culture, programmatic assessment has become for us an on-going collective effort leading not only to a sustainable program but also to sustainable stakeholder relationships. We plan to continue the participatory movement and to develop strategies to further engage external stakeholders, particularly workplace practitioners. We hope our experiential and reflective accounts of this three-phase movement will offer a model for other program administrators and assessment researchers to develop innovative approaches in their programmatic and institutional contexts.

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