Bridging Disciplinary Divides in Writing Across the Curriculum

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Abstract: The purpose of this longitudinal study was to assess whether faculty writing workshops could facilitate writing in heterogeneous disciplines by linking specific, workaday writing activities (Tschudi, 1986) with Bloom's taxonomy of educational objectives (1974). Multi-disciplinary faculty participating in writing-across-the-curriculum workshops reported improved teaching of writing and an increase in available teaching strategies. The results extend previous research of this kind of approach (Sipple and Stenberg,1990). The approach of The University of Louisville described here is in many ways similar to the groundbreaking approach used by Robert Morris College but reduces the necessary contact time from 45 hours to 10 hours. Fifty-two faculty representing 24 disciplines participated; data included interviews, surveys, and comparison of before and after syllabi. Many faculty reported an increase in reflective pedagogical practice, more critical selection of writing activities appropriate to achieve their objectives, and less time required to construct writing strategies to achieve discipline-related instructional goals.

I had a vague idea in my mind what students should know [about writing] so I put that in the syllabus. Then, I ha[d] a vague idea that students need activities and exercises. So I assigned them at random, and sometimes they correlate[d] pretty well with the objectives, but not always. Now, I am consciously giving assignments with objectives in mind.

In the quotation above, a philosophy professor describes changes in his writing pedagogy after participating in a writing-across-the-curriculum seminar that used selected workaday writing activities linked with corresponding learning objectives from Bloom's taxonomy. The general nature of these tools would seem to belie their usefulness for integrating writing-to-learn into the highly specialized discipline of philosophy. In reality the use of workaday activities to deliver disciplinary objectives recalled or generated after a review of Bloom's taxonomy helped the faculty from numerous disciplines that attended a workshop at The University of Louisville.

Many communication-across-the-curriculum programs like the one at the University of Louisville must work with faculty from numerous, highly diverse disciplines. For one person or a small staff to learn the specialized inquiry strategies, genres, and vocabularies of all of these disciplines is frequently infeasible. What seems needed is a way for disciplinary instructors to attain sufficient reflexivity to identify and scrutinize their objectives so that WAC staff can provide writing activities that deliver them. A growing body of evidence suggests the effectiveness of an approach to writing

across the curriculum using Benjamin S. Bloom's taxonomy, united, in our case, with writing-to-learn activities. The purposes of our article are to present the experience of one university spending six years using this approach, to situate this practice in the growing body of evidence accumulating regarding this approach, to show how modifying this approach formulated at Robert Morris College allowed the staff of The University of Louisville to reduce 45 contact hours of seminars to 10 hours, and to call for more conclusive research to verify the promise of this approach.

Bloom's Taxonomy in Previous WAC-Related Research

Bloom's taxonomy has had an important influence on composition studies since the 1970s. The taxonomy was used to help Britton et al. (1975) identify the different cognitive demands of different kinds of writing (p. 52). Bloom was later used by Rose (1983) and Kiniry and Strenski (1985) to create writing assignments and/or sequences of assignments based upon various "schema"—listing, definition, seriation, classification, summary, comparison/contrast, analysis, and academic argument.

Reviewing Bloom's taxonomy to help disciplinary instructors generate course objectives has also been recommended: In a writing-across-the-curriculum consultation that lasted a year, Richard Young, working with Carnegie Mellon doctoral students and the Robert Morris faculty, collaboratively developed an approach that helped disciplinary instructors facilitate writing in their disciplinary idiolect (Carson, Sipple, Yahr, Marshall, & O'Banion, 2000; Sipple, Sipple, & Carson, 1999; Sipple & Stenberg, 1990).

Each person who completed their 45-hour seminar composed among other things:

- a course rationale explaining its purpose and student benefits
- a set of cognitive and affective goals that state what students are expected to do, know, and feel to realize the overall purpose of the course
- a matrix that brings together course goals and materials to be covered so that activities can be brainstormed that deliver the goals
- the detailed assignments of the course. (Carson, Sipple, Yahr, Marshall, & O'Banion, 2000, p. 14).

To help them list their objectives, instructors from every department were given Bloom's taxonomy of educational objectives, along with a book on how to write objectives (Mager, 1984).

Given the discrete-knowledge concerns of each discipline, this offering of the same taxonomy to all disciplines might seem ineffective. But while there are many different genres across the disciplines, and there are extreme differences in the content of the disciplines, viewed from a higher level of abstraction, the purposes of a course can be generalized. Bloom's Taxonomy of Educational Objectives lists over 24 general objectives, some of which could apply to a course in any discipline (see Appendix I). The taxonomy includes a wide and fairly comprehensive array of mental tasks. One objective, for example, "knowledge of terminology," includes the terms and symbols students need to know. Another, "analysis," is the ability to distinguish and comprehend interrelationships of parts forming a whole. Analysis can be performed in many disciplines. For instance, in the discipline of physical geography, one can analyze the process of Raleigh Scattering—how light provides its spectrum by traveling through clouds that create a prismatic effect, scattering the light into various shades of color. In history, one can focus the analysis on causes of the French Revolution. The "content" of the analysis differs in history and geography, but the mental task remains identifying the parts and how they constitute the whole.

To test the effectiveness of their approach using Bloom's taxonomy to help instructors devise and deliver their objectives, Sipple et al., used attitude surveys of students, administrators, and instructors along with protocol analysis. Protocol analysis was conducted on five participants who took the 45 hours of WAC faculty training seminars and on four non-participants. Subjects thought aloud while creating a writing assignment for a class. Immediately after completing the assignment they were interviewed. The resulting data from pairs of participants and non-participants teaching the same class were compared. The researchers found that participants had more clearly defined strategies for planning the nature, function, use, and variety of the student writing they assigned than did those who did not participate (p. 414). More specifically, "participants [were] more likely than non-participants to develop assignments that further the learning objectives of their courses and that are integrated into the course structure. . . ." (p. 414)

This research of several participants at one site suggested that using Bloom's taxonomy is helpful to disciplinary instructors trying to find writing activities to deliver their courses' objectives. However, faculty attitudes toward the workshops were mixed, at least in part because of the 17-week, 45-hour length:

> The response to the statement, "Overall, the seminars met my expectations" yielded a bimodal frequency distribution with a mean of 3.5 on a 7 point Likert-style scale. Qualitative comments revealed that while many faculty enjoyed the workshops and the sharing of pedagogy, many did not appreciate the 17-week format. The latter assertion was supported by responses to a statement that the 17-week format was the "best approach." Participants clearly would have preferred a shorter format. (Carson, et al., 2002, p. 22)

Adding Corresponding Workaday Writings to Bloom's Taxonomy: The Current Study

The writing across the curriculum program at The University of Louisville used Bloom's taxonomy from 1996-2001 in an approach inspired by that used at Robert Morris, (Sipple & Stenberg, 1990). However, we believed that if faculty were given pertinent writing-to-learn activities specifically chosen to support the objectives they had identified after reading Bloom's taxonomy, faculty would be able to transform these activities to yield disciplinary-specific goals. In so doing, faculty members might be able to spend less time in training to produce the same result. So we modified the approach used at Robert Morris, by coupling learning objectives with writing activities (e.g., workaday writing) that would deliver them. Many objectives can be delivered by workaday writings and some larger assignments that may be used across the disciplines. Workaday writing (Tsuchdi, 1986) has three characteristics that help the instructor meet learning objectives in a "content" course:

- it is short and impromptu, not requiring large amounts of student or class time
- it is written primarily for the benefit of the writer
- it does not require extensive instructive commentary or grading (pp. 18-28).

An example of a larger assignment that could be used differently in various disciplines is the position paper, which can summarize the issues and one's position in any disciplinary controversy.

Surfacing Tacit Objectives and Linking Workaday Writings

But even without the linked activities, simply reviewing the taxonomy of course objectives would appear to be helpful to teachers. As Rose (1983) found after he and his colleagues at UCLA collected 445 essay and take-home examination questions as well as paper topics from 17 departments and analyzed them:

> Our surveys also suggested that various academic audiences write and read with an elaborate and—unfortunately for our students—often subtle, even tacit set of philosophical and methodological assumptions that determine what they will consider acceptable or unacceptable reasoning, presenting of evidence, and inferring. (p. 111)

On the other hand, having teachers inventory their desired critical thinking, knowledge, and affective outcomes for their courses seems to help them reveal all aspects of their curricula, curricula hidden even from themselves. To this end, the University of Louisville's workshops presented Bloom's objectives coupled with writing-to-learn activities and larger assignments in the following manner. After introducing participating faculty to the concept of writing-to-learn, the WAC staff asked them what they wanted students to learn in the course. To help them inventory their course goals, one workshop facilitator briefly discussed each objective in Bloom's taxonomy. Definitions of each objective were also listed in the workshop workbook, and the staff asked faculty members to check off any applicable Bloom course objectives as they were presented. Faculty thus created a record of all their objectives for the course, whether they had previously been listed on their syllabi (explicit goals) or not (tacit goals).

After checking off their general objectives, participants translated them into disciplinary terms and wrote them in their workbooks. For example, for a business writing course, one could translate "knowledge of trends or sequences" into "how human relations managers often read resumes," "how documents are cycled in industry," and "interplay of orality and writing in proposal submission process." Following a break for food and informal discussion, participants and their designated workshop facilitators reviewed a section of their workbooks that linked course objectives (including a few not mentioned by Bloom) with some writing activities that would deliver them effectively.

For the objective "knowledge of trends or sequences," for example, the writing activities were "outlines, summaries, abstracts, annotated bibliographies, flow charts." The WAC staff included summaries and abstracts along with some activities that more obviously supported knowledge of trends because summarization was necessary although not sufficient to provide the knowledge of trends. One summarizes in order to get at the essence of the knowledge. Key patterns across several articles can be identified easily from there.

After they reviewed objectives and corresponding activities, participants began to discuss with their facilitators ways of integrating these writing activities into their courses. For homework, the staff gave participants a handout handbook explaining in more depth 28 kinds of writing activities (Himley, Temes, Wagner, 1986). In Workshop II, participants continued to discuss and select the most pertinent workaday writing. In subsequent workshops, disciplinary instructors adjusted these activities to the goals of their discipline and when appropriate to their objectives sequenced the activities to lead up to larger writing assignments. The feedback we received from participants, although not conclusive, and the staff's experiences conducting the workshops over six years suggested that this approach, modified from the previous approach at Robert Morris using Bloom's taxonomy (Sipple et al., 1990), has merit and deserves further scrutiny.

Context of the Seminar

The University of Louisville is a state-supported urban university (population approximately 21,000). It is ranked a Carnegie Doctoral/Research University—Extensive and, contrary to stereotypes of research universities, strongly committed to teaching.

The Writing Across the Curriculum Program

Since 1988, the University has had a Writing Across the Curriculum program. Until 2002, the program was implemented through the University's General Education Program, which required all undergraduate students to take two writing-intensive upper-division courses to graduate. Rather than being overseen by the English Department, the WAC program was administered directly by the Provost's Office to emphasize its cross-disciplinary character, provide it with more authority, and circumvent perception of the program as a means of extending the influence of the English Department. During the years data was gathered for the study (1995-2001), the number of designated WAC courses on the books nearly doubled—from 151 to 301. In 1997, the program was given a commendation by the Southern Association of Colleges and Schools for its approach to disseminating WAC. Training workshops were held every spring semester to train faculty. Either volunteering or recruited by their chairs, part- and full-faculty were paid $500 for attending the 5 two-hour seminars and putting a new or revised writing-intensive course on the books.

The novel aspect of the program that this study focuses upon—grouping objectives with writing activities that can help deliver them—was developed in the following manner: As coordinator of the program preparing materials for the first WAC seminar, Cross decided to couple the objectives with related activities. This idea was likely inspired by Walvoord's example of how a writing activity can deliver a course objective (1986, p. 8), a work he was reading at that time. He reviewed a large list of writing activities and grouped pertinent ones with objectives they supported (see Appendix II) and then had the rest of the 1995 WAC staff—U of L doctoral students Annie Brush, M. Todd Harper, Mike Jackman, and Melinda Kreth—review the list of objectives and their entailed writing activities. They first reviewed Bloom's objectives and then were given some additional objectives (Walvoord, 1986, p. 7), making sure that the final list of objectives was as comprehensive as possible. After going over these objectives, the staff added another: "To promote collaboration, professional community, rhetorical sensitivity, writing as a professional." The linkages were next discussed, and a few changes made. Also, activities were linked to the non-Bloom objectives. Because of the large number of objectives to review, the worksheet only included Bloom objectives. The 11 non-Bloom objectives were added as something to review quickly after going over the 16 others and translating them where appropriate into disciplinary course goals.

Participants

From 1996-2001, 52 faculty participants—27 women and 25 men—took the The University of Louisville annual writing-across-the-curriculum seminar using Bloom's taxonomy united with writing activities and assignments (see Appendix III). Twenty-four disciplines were represented. Seminar attendance ranged from 6-12 participants in order to provide personalized instruction. Instructional participants included two-five graduate student WAC Assistant Coordinators and Cross, who served as WAC Coordinator from 1996-2001.

Method of Receiving Feedback

To evaluate faculty reception of this approach, Cross and Wills analyzed three data sources from the participants: paper questionnaires (MacNealy, 1999, p. 149); before- and after-workshop syllabi of ten participants; and one-on-one interviews of the 2001 participants. We triangulated our data sources to more accurately indicate the faculty participants' verbally-expressed intentions with their actual implementation of activities and objectives into their syllabi. Data were collected from the last workshop of 1996 through the last workshop of 2001.

Questionnaires

The WAC staff asked participants after each of the five two-hour workshops to complete questionnaires eliciting responses to the instruction. These questionnaires were analyzed by the WAC staff, and any necessary changes made before the next workshop. Because survey results were favorable, no changes were made to the practice of reviewing the Bloom objectives and implementing corresponding writing activities. At the end of the seminar, participants evaluated the complete seminar. A staff member and the coordinator of the WAC program went over these questionnaires and made any changes needed in the program before the next seminar started. Results of questionnaires evaluating the first workshop series were presented at the Writing Across the Curriculum Third National Conference in 1997 (see Kreth, 1997; Jackman, 1997; Stenger, 1997; Cross, 1997).

In 2001, during subsequent data analysis of this material for the present study, Cross and Wills rated the open-ended questionnaire responses as positive, negative, mixed, or not applicable. Interrater reliability was 81%. The results of five years of questionnaires were presented at the Fifth National Writing Across the Curriculum Conference in 2001 (Cross & Wills, 2001).

Comparison of Syllabi

In October, 2000, all workshop participants from 1996-2000 were asked to submit before- and after-seminar hardcopy syllabi. One-third of participants had left the University, however, and 10 syllabi were received from the 30 remaining faculty. All changes added to the "after" syllabi were highlighted and coded to identify any Bloom objectives and related workaday activities. The purposes of this data analysis were (a) to get an idea of whether uniting Bloom with workaday writing activities transferred into their syllabi, (b) to note the degree and nature of any changes after the seminar, and (c) to see whether the self-assessed responses in the surveys were reflected in the smaller sample of instructors' revised syllabi.

Results

Questionnaires

The short-answer 1997-2001 questionnaires completed by 39 participants out of 44 enrolled (88.6%) indicated that a large majority found using Bloom's taxonomy helpful in accessing and realizing their course objectives. Of a total of 58 responses, 78.8% (46.5) were positive, 6.7% (4) were negative, and 7.6% (4.5) were mixed. Four (6.7%) were non applicable (for all scores, the ratings of the two researchers were averaged). Positive comments included "forced us to think more concretely about how course content related to the objectives," "helped me identify my goals," and "in the process of writing down my ideas it made me think about assignments to give that would help

me achieve my goals." Negative responses included "needs discussion." Mixed answers included "there were too many categories, but it was useful, nonetheless."

At the end of each workshop series, in an evaluation of the whole seminar, the questionnaire asked whether the disciplinary diversity in the workshop was a problem. Responding to the statement "the disciplinary diversity of the workshop was a problem," 1997-2001 respondents on average disagreed with the statement, with a standard deviation of .5. The majority of professors from disparate disciplines felt themselves able to develop their individual writing-intensive courses from a common starting point.

The best indicator of whether the workshops with their Bloom approach were useful to instructors in the disciplines was the respondents' affirmation that they would recommend the workshops to their colleagues. The mean score for all respondents from the 1996-2001 workshops was 4.77, a score indicating agreement, but closer numerically to strong agreement. All scores were positive.

Thus the participants' responses to workshops over six years suggested strongly that instructors in the disciplines valued what an outsider might see as a perfunctory exercise of self-inventory. Because no participants disclosed their identities on the questionnaires, it is unlikely that answers were changed to protect the writers. Other programmatic research considered what effect the seminars had on the course designs of participants.

Comparison of Before- and After-Seminar Syllabi

Our comparison of before- and after-seminar syllabi found that several participants added activities to support existing objectives; in addition, several added objectives to justify and contextualize existing activities, and several added both objectives and activities. We also found that several shifted from a product to process-based approach. Forty per cent (4/10) of participants sampled added activities to support extant objectives. These participants were in healthcare and social science disciplines: nursing, health communication, political science, and anthropology. The activities added to deliver (and justify) extant objectives were freewriting, essay exams (two instructors), position papers, and annotated bibliography.

In our analysis of syllabi, objectives were defined and identified as "expected learning outcomes." Fifty per cent of instructors who sent us syllabi (5/10) added new objectives to explain and/or justify old activities. Sixteen of the 24 Bloom objectives that the WAC staff presented were added (66.6%). Objectives added included knowledge of categories, conventions, specific facts, terminology, theory, trends, methodology, and principles; also analysis, selective attention, awareness, evaluation, extrapolation, interpretation, preference for a value, and willingness to respond. Instructors adding objectives were in a variety of disciplines: Spanish, Sports Administration, Computer Science, Pan-African Studies, and Women's Studies. Both activities and the objectives that explained and/or justified them were added by four out of 10 instructors who sent us syllabi (40%). Four of the five that added objectives also added new activities coupled with new objectives. Appendix IV provides four different courses' post-workshop objective, assignment, and activity revisions.

One anthropology participant provided data allowing us to trace the evolution of Bloom's concepts from her WR seminar workbook into her new pedagogy. During the workshop presentation of objectives, the anthropologist made notations on ten course objectives in the workbook. On the next pages of the workbook, she translated the Bloom objectives into objectives for her course. For example, under "Knowledge of specific terms, symbols, or facts," she entered "internat[ional] distrib[ution] of wealth/resources," "institutional map of AID industry (acronyms)." Turning then in the workbook to the next section, "Writing Activities and Genres That Reinforce Learning Objectives,"

she found the annotated bibliography listed as a writing activity to deliver knowledge of facts. This introduction to Bloom resulted in her adding an annotated bibliography assignment to her course syllabus for "Globalizing Inequalities" (Anthropology 333). This annotated bibliography would explore development projects focusing

> on a specific area: for example, HIV education, indigenous land rights, craft cooperatives, gender equality. The idea is for you to become familiar with the kind of work anthropologists and other development practitioners carry out. Your write-up (about 2000 words) will include capsules of at least six projects, plus an introductory overview. First draft due 11/13. (Revised syllabus after seminar)

Before the seminar, the course grading relied on quizzes (30%), midterm and final essays with no drafts (50%), participation and journals (each at 10%). After the seminar, the course grading relied more on writing intensive skills. The instructor replaced the midterm and final essay exams with a developed paper on Colonialism, a bibliography, and an activist interview (55%). This change was reflected in an added course objective, to "emphasize research and writing as a process, with attention to the identification of appropriate source materials, the organization of ideas and information, and drafting, and revision." Prior to the anthropologist's taking the seminars, course objectives were less focused on writing as a process: "Completion of take-home midterm and final will demonstrate your critical understanding of course materials." In their journal writing, students were expected to "comment upon" their course readings. This participant showed a direct application of Bloom from the seminar to her course content, and then into her objectives, syllabus, and pedagogy.

To summarize the syllabus findings, 50 per cent of those responding added new objectives; another 40% added activities. Thus, 90 per cent of those responding made use of the material-added activities and/or objectives—after exposure to Bloom objectives and related writing activities and assignments. Having analyzed six years of short-answer evaluations of the objectives and activities workshops, as well as a sample of professors' revisions, we conducted hour-long end-of-seminar interviews with all participants in the 2001 workshop to understand an entire seminar group's attitudes toward this approach in greater depth, important particularly given accusations of hegemony directed at WAC instruction involving extra-disciplinary knowledge.

Interviews

Shortly after the last seminar workshop, Wills conducted individual audiotaped interviews with the seven participants, from the disciplines of Art History, Philosophy, Photography, Economics, Finance, Communication, and Military Science. The interviews indicated that participants planned to add activities to support existing objectives or new objectives. Several noted an increased awareness of the linkage between objectives and assignments. Moreover, most instructors shifted their pedagogy away from a product-centered course toward a process-based course. The seven participants planned to add 22 activities. Everyone (100%) expected to add at least two new activities; military science planned to add the most (7).

The three most favored activities to be added were journals (4 instructors [57%]) and peer editing and drafting (3 [43%]). Objectives were also mentioned in conjunction with activities. All Bloom objectives were mentioned by one participant. An economics instructor noted that the introduction to Bloom's objectives assisted her in understanding the word "objective" from a broader perspective: "When we talk . . . about objectives within our department, we talk about course content as opposed to what skills do I want students to come out of this with, [i.e.,] critical thinking."

After attending the seminar, five of the seven participants planned to add or in one case enhance a process approach. Three instructors very clearly increased their awareness of linkage between objectives and activities. As one award-winning teacher said:

> Usually I haven't done that in the past [link course objectives to activities]. I just say 'this is what you're going to do,' and now I'm thinking I'm going to be a little more forthright, not only with myself but with students: this is why we're doing what we're doing.' I did that for [Communication] 305. Normally what I would have done, before taking the class, would have been that part [just tell the students what to do].

Thus, these qualitative interviews of instructors from a diverse group of disciplines suggested again that teachers found exposure to Bloom objectives and related writing activities helpful. One hundred per cent planned to use them. Because they were guaranteed confidentiality in writing for their interviews, it is unlikely they misrepresented their true feelings. In the interviews, they indicated they could better teach their content area by teaching these activities, often linked to Bloom objectives. The interviewees indicated that they had become willingly more process oriented, and many said they became more aware of the advantageous linkage between objectives and writing assignments, even though their objectives were geared to the needs of their discipline. A professor of an upper-level art history course said he will add more process work because the writing assignment was

> the most important assignment, . . . 40 percent of the grade. . . . It is their most intensive piece of work, but I feel that a flaw [exists] in the assignment, which I hope will be corrected in the new syllabus: They [students] didn't have enough help during the process of writing before it was turned in—even though I told them I'd be happy to see them any time during office hours.

A finance professor had "almost nothing" that related to writing in his course prior to taking the seminar. The professor described the lack of writing in his syllabus in these ways:

> At the undergraduate level, traditionally my discipline does not put a lot of emphasis on writing. They put a lot of emphasis on calculations, number crunching, and stuff like that. That's finance hardcore. This course in particular lends itself to writing.
>
> As long as they are doing calculations, you are not learning much about them [students]. You are learning about some of their abilities in doing math, multiplication, and division. . . . When they start writing, you can figure out more where they stand in the course. . . . One of my objectives is to push them into articulation.
>
> Speaking the language that is specific to this discipline is very important. Otherwise, people are not clear on things.

After attending the seminar, he added objectives and activities that emphasized writing process: a writing assignment with planning, drafting, rewriting, and proofreading with peer review.

An economics professor tied her objectives with journal entries. She found that the cubing exercise

> works very well in economics. We throw that term "model" around a lot in intermediate classes, and I don't think they really understand what the term means. Looking at a model using the cube assignment will help clarify that this model is distinct.

She could meet her objective to "translate - through language, graphs, and equations" by having students explain equations in a journal. She saw this as another way to "get the material in their heads."

One philosophy professor said he decided to add more writing exercises during the writing seminar. He felt that it helped his students with their final written exams: The students were incorporating all the objectives of the course into the final exam: "I am giving our more As now than ever before. I am feeling a little guilty about this—like I shouldn't be doing this, but they are meeting objectives."

A major in military science said he would change his syllabus to include physical training (PT) journals to learn more about the effectiveness of training with cadets:

> We have our cadets do physical training. I tell them what I felt and how I felt about PT that day. Then, they write back to me and tell me how they felt about PT. . . . So it does two things: it helps me judge their writing skills and also gives me feedback for physical training that I could share with other instructors. We could make sure that when we do physical training, it's more effective.

Discussion of Programmatic Data

The data from after-workshop surveys, before- and after-workshop syllabi, and qualitative interviews were not sufficient for the results to be conclusive, but the extant evidence of our experience working with faculty over six years suggest the merit of using Bloom's generic objectives as a heuristic to help instructors formulate disciplinary objectives in order to then incorporate effective writing activities. These findings support findings of Sipple et al., that participants using an inventory incorporating Bloom's taxonomy of course objectives were more likely to create assignments for their writing-intensive courses that furthered the learning objectives of their courses.

Sipple et al., recommend their 45-hour seminar approach as a WAC model to disseminate across the nation. In 1998, Robert Morris College won an FIPSE grant to disseminate their approach to six other colleges and universities across the United States (p. 416). Our findings support their Bloom-oriented approach, an approach that inspired our own. One drawback to the 45-hour approach, however, is instructor complaint about the length of the seminar. After considering Bloom's objectives connected overtly to writing activities and assignments that deliver them in U of L's 10-hour seminar, many instructors added objectives and/or objective-related writing activities. Instructors also had a favorable attitude toward the seminars and would recommend them to colleagues. Although these results are encouraging, they are not conclusive. Research has suggested recently that having 24 learning objectives can make multiple-choice test assessment of the program difficult (Carson, Wojahn, Hayes, Marshall, 2003). However, it is possible that several of the categories could be combined for assessment purposes or rubric-graded writing assignments could be assessed instead. More research is needed at other sites to determine conclusively whether the approaches work and what amount of training is necessary. There have been enough positive indications from qualitative research, descriptive statistics, and programmatic practice to merit an experimental study.

In the WAC 2001 Conference, Andrea Lunsford called for a national research agenda for WAC. CCCC President Kathleen Yancey has also called for a national research agenda for CCCC recently, and the Conference has allocated funds for research that "document what we know about best practices in teaching composition and what we need to know" (Yancey, 2004). Given the increasing body of evidence suggesting that using Bloom objectives as a heuristic helps instructors across a variety of

disciplines create effective writing-to-learn activities, and given the dissemination of this method, investigating this approach should become one priority of researchers of WAC.

Bridging Disciplinary Divides

Our practice suggests that an approach using generic objectives and related activities can work for instructors across the disciplines when the approach serves heuristically to help instructors identify disciplinary objectives and modify activities to deliver them. WAC instructors are in no way dictating objectives or activities with this general approach. And this is not to say that there aren't disciplinary-specific genres that disciplinary instructors need to teach or that writing across the curriculum instructors do not need to teach them after careful research and reflection.

But teaching a new genre effectively often involves breaking the writing down into several subskills entailed in the larger writing process, as Hillocks noted (1995), drawing on a meta-analysis of over 70 experimental studies of writing students. Appropriate workaday writings can help students hone these subskills. Those activities may be identified when instructors inventory their objectives using Bloom's taxonomy linked with writing activities and assignments. Using Bloom as a heuristic can help instructors to become self-reflexive, surfacing any curricula hidden from themselves. Our experience and research suggest that the assumption that content area instructors are fully cognizant of their instructional methods and objectives is often inaccurate. As a workshop participant from philosophy commented, "Most of us have never taken education courses. So we don't have a didactic or pedagogical background. We just teach and fly." A new awareness of one's expectations can lead to an open-minded examination of disciplinary and any political forces that shaped them. The use of Bloom's taxonomy to surface the assumptions of their local knowledge may encourage in instructors the kind of reflective practice that can form the foundation of open-minded disciplinary self-critique.

We need more research to determine whether using Bloom's taxonomy of educational objectives united with the appropriate writing activities for each does bridge disciplinary divides by providing a general heuristic from which teachers can make explicit local knowledges and practices to which they then could apply selected writing-to-learn and other composition techniques to help students write their way into their disciplines. In our experience, this approach to WAC training seems to allow teachers from across the disciplines, in Angelo's words (1997) but without his irony, to "get together and be diverse."

Appendix I. Inventory of Bloom's Course Objectives—Workbook Pages Given to Instructors in the Disciplines

BLOOM'S TAXONOMY is a system for organizing knowledge that is helpful for identifying course goals. The following exercise has two parts.

First

Place a check next to the items below that best describe types of knowledge of primary importance for the WR course you are planning or revising. Consider the categories as a prompt for thinking rather than as a rigid system. Therefore, don't be concerned if categories overlap a bit (for instance, conventions and classifications). What's important is that it prompts you to make your course objectives more explicit.

Second

Space has been provided for you to write specific descriptions of the types of knowledge you want your students to acquire. Answer the categories that you have indicated are a priority, then you may wish to consider additional categories.

__Knowledge of specific terms, symbols or facts, e.g., H2SO4, rad, clef, the names of all the musical key signatures, ion, verbal, noun clause, names of bones.

__Knowledge of rules, guidelines, conventions, methods, or criteria, e.g., rules of punctuation, guidelines for writing a lab report, dosage guidelines, guidelines for placing an x-ray, ways to solve math problems.

__Knowledge of trends or sequences, e.g., changing attitudes regarding the role of women in American society, the increased importance of electronic communication in business, the changing role of the armed forces in America.

__Knowledge of classifications or categories, e.g., types of courts, types of minerals, types of sports scholarships.

__Knowledge of universal principles, theories, e.g., theory of evolution, ethics, laws of motion, ballistics.

__Translation (i.e., putting communication of one form into another form), e.g., moving from raw data to chart or graph, musical score to performance, patient vital signs to a chart.

__Interpretation (i.e., ability to reorder ideas, comprehend interrelationships), e.g., making a recommendation or writing a report based on evidence.

__Extrapolation (i.e., ability to go beyond data, to develop insight, to infer, to predict), e.g., predicting trends, answering the question "what might happen if . . .?"

__Analysis (i.e., taking knowledge apart and understanding how it works), e.g., understanding bias or logic of an argument, the components of an unknown compound in chemistry, the motifs or chord progressions of a musical score.

__Synthesis (i.e., arranging or combining information into a new whole), e.g., planning a program or panel discussion, writing a comprehensive treatment of a subject.

__Evaluation (i.e., ability to make judgments), e.g., evaluating a work of art, critiquing a draft of a paper.

__Develop attitudes/awarenesses, e.g., recognizing other points of view (religious, ethical, professional, etc.).

__Develop tolerances; e.g., tolerating new forms of music, such as baroque, classical, rap; increasing tolerance for disparate religious beliefs, social theories, procedures, or theories in the sciences.

__Controlled or selected attention: What sort of attributes that untrained observers frequently ignore would you like to encourage your students to recognize? For example, listening for orchestration, key change, or melody shift in a sonata; recognizing subtle differences in the quality of a radiograph.

__Self-discipline: What sorts of habits of self-discipline would you like to encourage in your students? What kinds of habits relative to your discipline would you like your students to adopt? For example, focusing and configuring x-ray equipment every week, wearing dosage badges, having discussion questions ready each class, reading in detail for specific patterns, expressing disagreement in class.

__Values: What sorts of beliefs would you like your students to develop or at least entertain? For example, a strong democracy requires a strong military; the benefits of certain radiological examinations outweigh the risks; religion is the foundation of morality.

Appendix II. Writing Activities and Genres that Reinforce Learning Objectives

I. Knowledge

      A. Knowledge of Specifics

1. Knowledge of terminology--process logs, journals

2. Knowledge of specific facts--abstracts, annotated bibliographies

B. Knowledge of ways and means of dealing with specifics

1. Knowledge of conventions--critical analyses, lab and field notebooks

2. Knowledge of trends and sequences--outlines, summaries, abstracts, annotated bibliographies, flow charts

3. Knowledge of classifications and categories--critical analyses, lab and

        field notebooks; journals; outlines; précis; having students come up with questions before lecture; having students respond to questions about the lecture in the middle of it; having students summarize the lecture at the end of class.

    4. Knowledge of criteria--outlines, summaries, abstracts, annotated

    bibliographies

    5. Knowledge of methodology--process logs, journals, lab or field

    notebooks

C. Knowledge of the universals and abstractions of a discipline

      1. Knowledge of principles and generalizations--outlines, summaries, journals, flow charts, essay exams, microthemes

2. Knowledge of theories and structure--outlines, summaries, journals (in

     lab notebooks), flow charts, essay exams, microthemes

II. Intellectual abilities and skills

    A. Comprehension

      1. Translation--journals, formal translations, summaries, annotated

bibliographies

2. Interpretation--journals, learning logs, critical analyses, letters to editor, editorials, position papers

3. Extrapolation--journals, learning logs

B. Application

1. Analysis--journals, learning logs, essays, essay exams, microthemes, diagrams and flow charts, etc.

2. Synthesis--diagrams linked with journals, hypertext webs, essays

3. Evaluation--reviews, critical analyses, editorials, position papers

III. Affective domain

A. Receiving

1. Awareness--journals, learning logs

2. Willingness to receive--expressive writings, journals, freewrites, summaries, outlines, annotated bibliographies

3. Controlled or selected attention--lab reports, field notes, journals, freewrites

  B. Responding

1. Acquiescence in responding--summaries, lab reports (how to titrate, etc.)

2. Willingness to respond (creative engagement)--journals, publications (newsletters, etc.)

3. Satisfaction in response--journals, publications--essays, stories, poems, freewrites

  C. Valuing

1. Acceptance of a value--guided journals, freewrites, critical analyses

2. Preference for a value--same as above, publications

3.Commitment--same as above, publications (letters to editor, advocacy literature, editorials, etc.)

Appendix III. Participants by Discipline

Allied Health (3-Nuclear Medicine, Radiology, Physical Therapy)

Anthropology (1)

Art (2)

Art History (1)

Biology (1)

Business (2-Equine Administration, Finance)

Communication (4)

Computer Science (1)

Economics (1)

Engineering (1)

Geography and Geosciences (1)

History (2)
Military Science (5)
Modern Languages (2)
Music (1)
Nursing (3)
Pan African Studies (4)
Philosophy (2)
Political Science (4)
Religious Studies (2)
Sociology (3)
Sports Administration (4)
Theatre Arts (1)
Women's Studies (1)
52 Participants

Appendix IV. Additional Examples of Post-Workshop Changes in Objectives, Assignments, and Activities

Three objectives were added to Spanish 370, Latin American Culture and Civilization. These additional objectives exemplify the transformation from generic objective to disciplinary objective:

- To acquire a basic knowledge of Latin American culture and civilization by studying the demographic, historical, political, and socio-economic factors that affect them.

- To analyze from different perspectives the problems as well as the achievements of Latin America, and to adopt a critical stance toward them.

- To improve your command of Spanish through formal and informal writing assignments, small group work, communication via e-mail, and exams.

The following activities and assignments from Spanish 370 exemplify the linkage of adaptable writing activities and the Bloom objectives that they delivered:

- web page- (was used to foster) knowledge of terminology, receptivity, awareness. Students had to use Spanish for the content of the pages, thus had to be aware of and receptive to the language to be able to work with it effectively.

- summaries--knowledge of terminology

- journals--interpretation, knowledge of terminology

- position papers--analysis, interpretation, willingness to respond, awareness, knowledge of trends

- outline for oral presentation--knowledge of facts about website and Spanish language, knowledge of historical trends, categories, principles, theory.

The disciplines of the instructors adding both objectives and their recommended activities were Spanish, Sports Administration, Computer Science, and Women's Studies.

Sports Administration 384, Current Trends and Issues in Sports Administration increased the number course objectives from 11 to 29. In order to meet the new objectives, the instructor increased the number of reaction papers from five to six and the number of written tests from two to three. The new objectives required students to show in writing the following outcomes that reflected concepts discussed in the seminar:

- "...describe methods that could be used to improve the current NCAA enforcement procedures" (methodologies)

- "...discuss the levels of loyalty of athletic fans and athlete participants" (classification)

- "...discuss the ethical relationship with regards to sports and gambling" (values)

- "...discuss the notion of amateurism and the future presence of amateur and professionalism at different levels of competition" (extrapolation).

The Computer Science CECS 364, Ethics, Social and Legal Aspects on the Electronic Frontier syllabus contained only an overview of course topics that lacked course objectives. After the seminar, the instructor added objectives related to mastery of course content:

- ability to communicate both orally and in writing

- problem analysis

- translation of course content through varying media (presentation, research papers tests, team projects), and

- process writing.

The most significant addition to the CECS 364 writing activities was the scaffolding for the research paper. The previous syllabus described the major as assignment as follows: "Students will be required to submit one paper (8-10 double spaced pages)." The instructor revised the syllabus to meet new course objectives with these activities that emphasizes process-based writing: 1) title page, references/bibliography, outline submitted to class members for blind peer review, and 2) draft outline submitted to class members for blind peer review (10-12 pages exclusive of the front and back matter). The instructor now required students to practice process writing instead of assigning the one "blockbuster" writing assignment.

As with the Computer Science syllabus, objectives were added to the syllabus for Pan-African Studies 356, Disease Ecology and Environment Management in Africa. Formerly, course expectations were described under the heading Course Description and some general goals. Now, with the objectives clearly stated, by adding a graded portfolio with reflections, notes and rough drafts, the instructor assessed how well the students mastered the content. The midterm and final tests were dropped and more weight was placed on the research paper (raised from 25 percent to 30 percent), class participation and attendance (raised from 10 percent to 20 percent), critique of an article (10 percent) and two paper reviews (10 percent). The new requirement had students show their familiarity, knowledge and "understanding" of the course objectives.

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