

# WRITING

# ACROSS

# THE CURRICULUM

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WAC will consider for publication those essays, interviews, reviews, and conference reports which are concerned with the theory or practice of using writing skills as a teaching/learning technique in any educational discipline. It will also consider for publication any fictional or non-fictional materials written by either teachers or students which demonstrate the exemplary use of writing skills within any discipline of the curriculum.

Please send submission, including brief biographical background and recent photo, to Dr. Edward A. Vizzini, Academic Dean, Arts and Sciences, Southern College of Technology, Marietta, Georgia 30060.

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## EDITOR'S CORNER



By Robert C. Wess

I am sorry to say that this issue marks my last effort as editor of *Writing Across the Curriculum*. To all readers, I would like to express a fond farewell.

Of course there are many people to thank. I wish to thank Harris T. Travis, Academic Vice President, for his moral and financial support of the newsletter. The Writing Across the Curriculum Committee, particularly the newsletter staff—Dory Ingram, Library, Susan Morrow, Humanities and Social Sciences, and Associate Editor, Kristine Anderson, Developmental Studies—deserve special commendation for all their efforts on behalf of the newsletter.

I would also like to thank the Humanities and Social Sciences Department for its moral and financial support, especially the Chair, Robert J. Fischer, who contributed departmental resources and personnel to aid the newsletter's publication. Nancy Fairbanks and Judy Waits, the departmental secretaries, gave of their time and energy beyond the call of duty to hasten the preparation and mailing of each issue to our mailing list of over 2200. The Dean of Arts and Sciences, Dr. Edward A. Vizzini, also deserves thanks for offering his administrative support, as well as his secretary, Adele Cash, to type the manuscripts and to mail this issue.

Finally, I would like to thank all our readers for your moral and financial support of this newsletter, especially those of you who have contributed manuscripts for publication. Without your support the newsletter would not be possible.

This issue offers a wide range of topics moving from the specific to the general. The first article is a single short story written by a student writer at Southern Tech whose major is Textile Engineering Technology. Not only is an engineering major writing "across the curriculum" in this creative piece, but his topic also bridges the proverbial gap between technological progress and human adjustment. The next three articles cluster around methodologies which teachers might find useful in teaching content courses: Sid Schuster focuses on physics, Caroline Cranfill and Robert Wess focus on formal report writing in an electrical engineering technology course, and Allen Ramsey provides a method which could be used in any discipline. The next article, written by Roy Stewart, describes a successful writing across the curriculum program at Slippery Rock University in Pennsylvania. The two final essays of this issue are more theoretical and general. In the first of these, Larry Corse

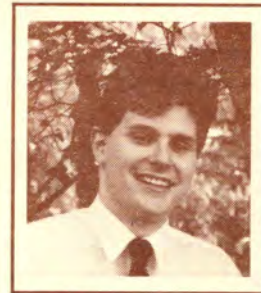
describes two paradigms for viewing the teaching of writing. In the final article, Fay McMillan discusses a range of practices, problems, and benefits related to a wide number of courses across the curriculum.

All future correspondence regarding the newsletter should be forwarded to the following address:

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## NATURAL SURROUNDINGS



By Robert Poe, Jr.

The small campfire lit the clearing and threw strange shadows on Henry Walden's face. He sat alone in the woods lost in thought. A few hours ago Walden was caught in heavy traffic trying to escape the chaos of the city. Not only was Henry leaving the city for the suburbs, this weekend he was leaving the suburbs to return to nature. It was not often that he got the chance to trade his hectic sales office for a quiet tent in the woods.

Suddenly, a stray spark jumped from the fire onto Henry's sleeve. Brushing the ember away, he noticed that the material had not burned but had melted. His shirt was polyester, a synthetic product that intruded on Henry's retreat. He tore it off and threw it aside. Looking around at his gear, he realized that he was still surrounded by man-made products.

Wanting to really return to nature, he left the campsite. He wandered deeper into the wilderness, and was soon enveloped by the darkness of night. Henry sat down to rest, feeling free at last. Glancing at the dark woods, he felt a part of nature. However, as Henry Walden's eyes became adjusted to the dim moonlight, he began to notice the details of the area. To his left rested a styrofoam cup and a candy wrapper. He let out a frustrated cry, as his pulse beat rapidly in anger. Still chasing his freedom, he jumped up and ran through the trees. Along the way, he passed discarded items from previous campers, a tree with lovers' names carved in it, and other abandoned obscenities.

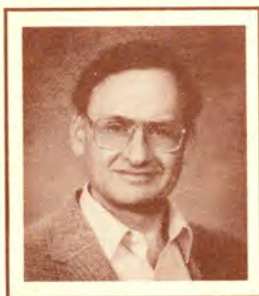
Needing to be even closer to nature, he paused long enough to strip the remaining clothes from his body. Then he blindly propelled himself deeper into the forest. Henry cursed the sound of a jet plane overhead and ran faster trying to escape from it. In his mad dash, confusion gripped his mind; finding nature in its pure form now became his obsession.

Suddenly, he saw the outline of an old shack. Exploding into a blind rage, Henry attacked the building with his fists. He pounded away at this intrusion on nature with a fury that comes only from madness. After trying to beat out his frustrations on the wooden wall, he fell back exhausted. Naked, scratched, and covered in sweat, Walden gazed up at the structure. His sight felt the television waves pulse through his body. There was no place safe! Henry Walden's mind snapped like a dry twig as he reeled away from the cabin. Clawing his way from the shack, he felt the ground suddenly give way beneath him. A bitter cry marked his quick descent into an old abandoned well.

When his stiff body was finally found, he had been dead for several days. Henry Walden's widow had him buried in a stainless steel, reinforced casket. This marvel of technology would preserve Walden's corpse for the next few centuries. After all, everyone felt that he deserved only the finest.

*Robert Poe, Jr., is a senior at Southern College of Technology. Although his major is Textile Engineering Technology, he enjoys writing short stories as a creative outlet.*

## USING WRITING STRATEGIES TO IMPROVE PHYSICS SKILLS



By Sidney Schuster

This essay will describe some writing techniques which are designed to get students thinking about concepts in ways that are complementary to those usually used in physics courses.

These techniques fall under the broad heading of writing techniques, which are not traditionally called upon in physics teaching. It is common to go through introductory level physics courses without a formal writing assignment. Problem-solving skills are the time-honored barometer of a student's mastery of the subject, and mastering these skills leaves little time for writing.

But problem-solving involves reading, concept assimilation, and concept utilization. Graders of physics tests can vouch for the existence of severe problems in a student's handling of concepts. The following discussion will illustrate some examples of significant errors.

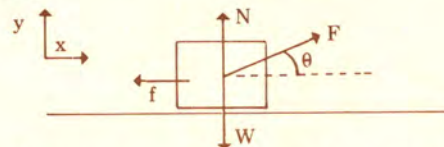
### EXAMPLES OF THINKING ERRORS

#### EXAMPLE 1

Equations for motion problems sometimes contain  $v_0$  (initial velocity) and  $v_f$  (final velocity). Students will confuse the two when inserting numerical values and very often will give the value of zero to initial velocity even though its value is not zero nor does any variable in the problem have a zero value.

#### EXAMPLE 2

From Newton's Law problem, we have the following situation:



The block is in equilibrium under the action of four forces:  $f$ ,  $N$ ,  $F$ ,  $W$ . Newton's Law,  $\sum F_y = 0$ , states that the sum of the  $y$ -components of the forces must add up to zero, giving

$$N + F\sin\theta - W = 0 \text{ or finally } N = W - F\sin\theta.$$

Many students will write immediately  $N = W$  without going through all the intervening steps. They are borrowing a result from a simpler problem, and, of course, it is not correct for the present one.

#### EXAMPLE 3

This final example is a trigonometry problem taken from a physics lab report.

$$\sin\theta = 0.5 = 30^\circ$$

The problem is to find the angle whose sine is 0.5. The answer,  $30^\circ$ , is correct, but the second equation,  $0.5 = 30^\circ$ , is nonsense and is interesting for the glimpse it affords into the inner dialogue going on within the student.

All of these errors provide clues to students' inner dialogue, and in the proper hands provide deeper insights into the problems of learning and teaching. Instructors will have to be content with the assessment that basic concepts are not being assimilated and logical thinking abilities need strengthening.

### STRENGTHENING LOGICAL THINKING

Three methods can be used to aid students in concept assimilation and in strengthening logical thinking.

#### METHOD ONE

Words seem to have a more lasting significance than the symbols in equations. In the classroom, we practice the formulation of definitions and explanations of concepts. I explain that some definitions must be precisely stated with very little variation possible, while others may be built up in a less rigid manner. For an example of the first type we have the definition of average velocity:  $\bar{v}_{av} = \bar{d}/\Delta t$  (the average velocity is the displacement divided by the time interval). Little or no variation in the statement is possible. This is essentially the translation of an equation into words.

Students are urged to attempt a one sentence definition where possible. I also stress that the rules of definition apply and that the first word after the word "is," the classification, is the most important word in the definition. Consider the definition of "mass," a word which we encounter on the first day of the course. I will write on the board: "Mass is \_\_\_\_\_" and ask for the most appropriate next word. We arrive at this definition: "mass is a building block in the science of physics."

A final example is the definition of "resonance." Resonance usually requires a few paragraphs of explanation in a physics textbook and contains several examples for illustration. It is a challenge to pare this explanation down to a single sentence. We might come up with the following definition: "Resonance is a transfer of energy

from one oscillating system to another when the two frequencies are nearly the same.”

While encouraging students to view these efforts as worthwhile, I try to make them aware of the following ideas:

- Some definitions must be committed to memory.
- Others can be built up in steps.
- Succinct definitions are not always available in books.
- Forming a definition can be a satisfying and challenging endeavor.

In a test consisting of six questions, one of the questions will contain about four definitions. Each definition is therefore worth about 4% of the test score. These definitions are graded leniently in the sense that I accept a wide variety of constructions as long as the key ideas are present.

## METHOD TWO

Another class exercise consists in writing on the board an equation from the topic at hand and asking for the meaning of every symbol appearing in the equation. An example follows, along with typical class response and my corrections.

$$d_x = v_{ox} \Delta t = \frac{1}{2} a_x (\Delta t)^2$$

class response correction

distance x-component of displacement

velocity x-component of initial velocity

time time interval

acceleration x-component of acceleration

The imprecisions seen in test solutions by students seem to correlate strongly with those that show up in this exercise.

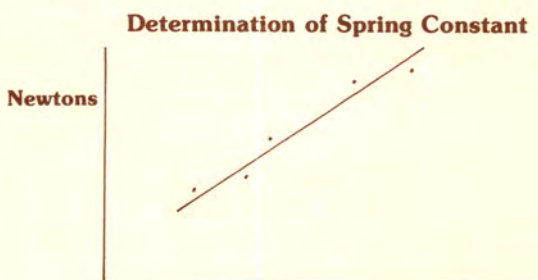
## METHOD THREE

The last technique centers around the physics lab report. Some schools require an extensive lab report consisting of Purpose, Theory, Procedure, etc. This type of report gives ample opportunity to check the writing and reasoning skills of the student. Our report is a more modest display of data, calculations, error determination, and graph plotting. The calculations provide a means of checking the mathematical logic. Units are stressed as necessary finishing touches to data-taking and calculations. The slope of a graph is often given as 9.94 instead of 9.94 Newtons/meter.

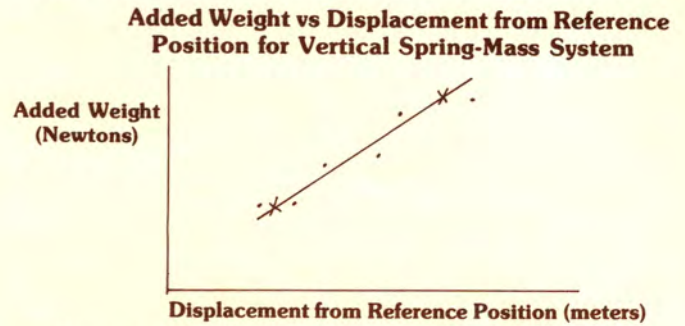
Another area closely related to communication skills is that of graph titles. Minimally, the title must tell the reader what is being graphed.

It is important to use a complete title which includes the names of the variables being plotted, the physical system which the variables describe, and any special conditions which obtained during the measurements. Below is an example of student work with corrections.

Original graph



Corrected graph



Reports are returned ungraded for revision of title in the early stages of the course.

## STUDENT REACTIONS, RESULTS, AND RECOMMENDATION

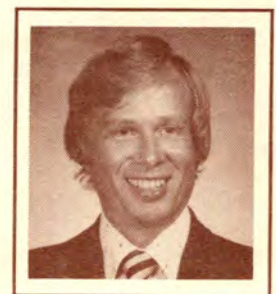
1. Students at first do not react positively to the thought of being tested on definitions. But after the first test, they show an acceptance of the process and may even see the definitions as a way of garnering some points without the ordeal of problem solving.

2. Graph titles for the majority of students, as the course progresses, do seem to improve with time as the course progresses. The number of meaningless equations appearing in calculations gets smaller and smaller.

3. The translation of equations into words has not been incorporated into a test question at this time. I think it should be tried soon.

*Sidney Schuster has been an Assistant Professor of Physics at the Southern College of Technology since 1984. He holds a Ph.D. in Physics from Temple University.*

## USING DRAFTS IN ENGINEERING REPORT WRITING



By R. Caroline Cranfill and Robert C. Wess

“Writing is rewriting” (72), emphasizes Donald M. Murray, a college composition teacher and Pulitzer-Prize winning journalist. Researcher Lillian S. Bridwell, who describes the writing process as prevision, vision, and revision, states: “the composing process is both linear and recursive” (220). Thus, as both these authors attest, in each stage of the writing process, the writer needs to look in two directions: forward to what remains to be written, and backward over what has already been written. The problem with student writers, says Nancy Sommers, “is the inability to ‘see’ revision as a process: the inability to ‘re-view’ their work again, as it were, with different eyes, and to start over” (382).

The engineering teacher, however, might respond: "That sounds all right for English teachers, but it doesn't mean engineering instructors have to teach revision, does it?" To answer this hypothetical engineer's question, the two authors set up a quarter-long study using rough drafts for formal report writing in an electrical engineering course. The study took place Spring Quarter 1987 at the Southern College of Technology, a senior college of engineering technology in metropolitan Atlanta.

By incorporating a rough draft—first voluntarily, then not at all, and finally as a requirement—the authors conducted an informal study of the value of revision for students. The question raised was whether writing rough drafts before submitting final drafts of three format reports in electrical engineering technology was helpful to students or not. The following report summarizes the goals, methods, and results of this study. It concludes with several recommendations.

### Goals of This Project

As presented in the original proposal written during the second week of classes for Spring Quarter 1987, the goals of this project were given as follows:

#### Short-term goals:

1. to improve the quality of students' formal lab reports by
  - a) getting students started on them earlier, and
  - b) helping students understand the steps involved in a report on lab procedures and results,
  - c) getting students to see areas for improvement before turning in the final drafts.
2. to facilitate the professor's grading of these lab reports by
  - a) allowing students to correct their own errors, and
  - b) requiring less teacher time in having to mark such errors.

#### Long-term goals:

1. to develop students' habits of drafting rough copies before turning in final copies, and
2. to improve students' overall precision in the use of the written word by
  - a) increasing their awareness of the weaknesses and strengths of their writing, and
  - b) helping students to understand the importance of the written components of their lab reports.

### Methods

The principal methods for improving the quality of lab reports included preparation of rough drafts, discussion with both faculty members, peer evaluation of rough drafts of the formal reports before submitting final drafts, and preparation of student notation forms which chronicle the changes made from rough to final draft.

1. **preparation:** students will provide a rough draft of their formal lab reports before they turn in the final drafts.
2. **discussion:** the two faculty members representing electrical engineering technology and English will present ideas to clarify the goals and overall organization of the assignment and will answer questions raised by students.
3. **peer evaluation:** students will exchange their rough-drafts (For Lab Reports One and Three only) and offer critical comments, questions, and suggestions on these rough drafts themselves. (See Appendix One.)

4. **student-notation form:** students will complete a form indicating the types of specific changes they have made in moving from rough drafts to final drafts.

### COLLECTED DATA

The data collected came in three forms: 1) student comments, 2) teacher comments, both of which are subjective; and 3) students' average grades on three formal lab reports, which are objective.

As expected, students were not happy about being required to turn in rough drafts in addition to their formal drafts. In spite of themselves, they found the first question-and-answer session helpful. Written comments indicated that students learned how to organize the report in a professional manner and how to include sufficient statistical and written content to demonstrate technical competence in performing the lab. The students also learned about format (outlining, paragraph indentations, and page numbering). The authors demonstrated standards on format and grammatical forms which assisted the students in making their reports more professional.

### LAB ONE

#### Subjective Data

One student after the first session stated, "It was extra work but I'm glad you made us do it. I would have turned in a worse report. Now I know what is expected." When students have a clear idea of required format and content, they perform better. Negative comments—"Why are you making us do this?" and "How much is this going to affect my grade?"—were also given, but these statements were expected.

For the first lab report the authors' principal contribution was providing students with on-target and faulty models for each part of the lab report, all of which were exemplified on transparencies. This information had to do with correct format, appropriate organization and description of material, and placement of headings.

In reviewing these first formal reports, several prevalent grammatical problems were observed, marked on the papers, and discussed by the two professors. These errors included:

- 1) not using the third person consistently throughout the report (review "person" and its appropriate use),
- 2) not being consistent in the use of tense to describe results (review "shift" of person/number/tense),
- 3) not using complete sentences in those parts requiring written documentation (review "fragment/splice/run-on," along with "audience expectations"),
- 4) using the indefinite *this* without giving an appropriate noun referring to the antecedent (review of the "indefinite" and the need for a clear reference),
- 5) inconsistent format for title page, outline page, and other sections of the report; faulty sequencing or omission of steps (review "organization"),
- 6) lack of development in writing out prose sections of the report (review "development" and its use for Introduction, Discussion, and Conclusion), and
- 7) misplacement of words, phrases, and clauses (review of the "dangling modifier").<sup>1</sup>

#### Objective Data

The average grade on the first formal report was 76.7% for the Monday lab and 73.3% for the Thursday lab. (See

the bar graph in Appendix Two for a summary of lab report averages.) From the experience of the electrical engineering professor, both of these averages represented scores higher than the usual first formal report averages, which are generally not higher than 70%.

### LAB TWO

For the second formal report, there was no critiquing or question-and-answer session. The results speak for themselves. The average grade for the Monday lab was 72.0% and 70.9% for the Thursday lab. These numbers indicate that, whether or not the students appreciated the rough-draft session before the first lab report was due, they did benefit from it.

### LAB THREE

By the third session, student comments were overwhelmingly positive. Besides organizational problems many punctuation, spelling, and even grammatical mistakes were corrected in the peer evaluation. One student summed up the effort in this remark:

**Comments:** "The in-class editing concept is a good idea. However, because of the limiting time factor involved, it is often impossible for the editor to analyze and correct more than mere spelling and punctuation errors. Aside from the editing process, the well organized lecture has proved to be quite enlightening in seeing the proper way to write a lab."

On the other hand, students felt they needed more time. The engineering instructor agreed that students could have used more time; but it is doubtful, she thought, whether students would have put that extra time to good use. From this standpoint, one student wrote,

**Comments:** "The rough draft helped me very little because I was not given enough time to really prepare. I felt too rushed in doing both the rough draft and the actual formal." In grading this student's report, like many other students' reports, Professor Cranfill believes that even though the students' attitudes might not change, their performances do change—for the better. One student in particular greatly appreciated all of the sessions. His comments on the third report were as follows:

**Organization/Arrangement:** "I believe that of the three labs I have done, this has the best organization."

**Content/Logical Explanation:** "I tried to explain everything logically without repeating myself."

**Comments:** "I am extremely excited about my performance on this lab. I believe this lab will be the model for all my future ECET labs." This student did, in fact, perform at the top of his class.

Teacher notes and comments on structural and grammatical problem areas apparently were taken seriously by students because in marking the third formal lab reports, Professor Wess found these problems much less frequently than in the first lab report. Students had made definite and clear-cut progress in avoiding those errors noted after Lab One, both in terms of improving overall format and in eliminating grammatical errors. The sessions were beneficial to Professor Cranfill because grading well-written final reports was easy, much easier than grading poorly written ones.

#### Objective Data

The average grade on the third lab report was 84.9% for the Monday lab and 81.3% for the Thursday lab. The bar graph in Appendix Two indicates the improvement of

student grades for Lab One and Lab Three for which rough drafts were used. Lab Two grade averages indicate the result when rough drafts were not used.

### CONCLUSIONS

To conclude, we make the following observations:

1. Sessions One (optional rough draft) and Three (required rough draft) were valuable because they required students to get an earlier start on their reports. Students were not allowed to wait until the last minute.
2. The first and third lab reports were better than usual and thus easier to grade. Students responded well to peer-critiquing and teacher-written comments and suggestions.
3. Several problem areas were prevalent. These included errors in person, shifts, audience expectations, indefinite pronoun usage, organization, and development (See Lab One, Subjective Data). Using this information about "popular" problem areas, the researchers judge themselves better prepared to instruct future students on solving problems involving clarity of thought through their report writing.
4. One drawback is the students' initial unwillingness to submit rough drafts because of their own or the instructor's lack of motivation.
5. Another drawback is the prevalent perception that there is insufficient time to initiate the process of writing drafts.

### RECOMMENDATIONS

Based on the previous analysis, the authors make the following recommendations:

1. More engineering faculty should make use of rough drafts in having students prepare formal lab reports.
2. In sessions using rough drafts teachers should provide a clear explanation of goals, respond to questions, and allow for peer evaluation.
3. Interested departments should allocate some time at departmental meetings for faculty knowledgeable in using rough drafts to present the techniques to their colleagues so others can learn how to use these methods, become motivated to use them, and get involved in helping students learn to communicate more effectively through their use in report writing.
4. Writing across the curriculum leaders at engineering schools should suggest the use of rough drafts in engineering report-writing.

What Donald M. Murray identifies as "internal revision," "everything writers do to discover and develop what they have to say," and "external revision," "editing and proofreading and much more" (77), seems to pertain as much to engineering faculty as English teachers. If engineering teachers wish to have a positive impact on their students' communication skills, therefore, they would do well to use the draft-system identified here in their formal report-writing assignments.

### NOTES

<sup>1</sup>Although this section may seem to many writing across the curriculum advocates to place undue emphasis on grammar instruction, the authors would argue that such instruction is important for two reasons:

1. the grammatical problem areas designated here review aspects of grammatical correctness within the framework of *clear thinking*; this latter aspect is emphasized in discussing these problem areas; and
2. as James Kinneavy has noted, one of the central concerns of writing across the curriculum is "a resurrected sense of the responsibility of entire faculties and administrative bodies for the literacy competence of the graduates of our high schools and colleges" (14).

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## APPENDIX ONE

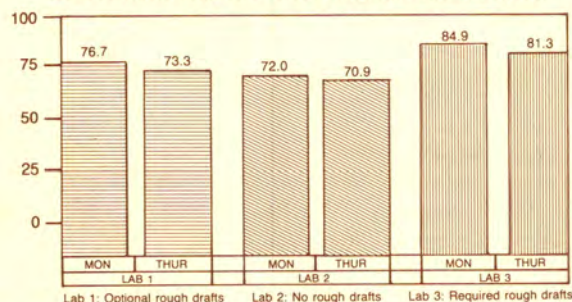
### STUDENT NOTATIONS ON PREPARING LAB REPORTS

Complete the following with data giving specific changes you have made in your final draft as the result of discussing, receiving peer evaluation, and doing work on your rough draft of this lab report.

1. Regarding Organization/Arrangement:
2. Regarding Content/Logical Explanation:
3. Regarding Coherence:
4. Regarding Grammar:
5. Regarding Punctuation:
6. Regarding Spelling:
7. Comments:

## APPENDIX TWO

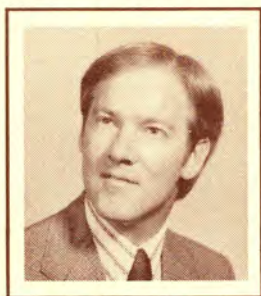
### LAB AVERAGES FOR FORMAL REPORTS



*R. Caroline Cranfill, a former Assistant Professor of Electrical and Computer Engineering Technology at the Southern College of Technology, now works as an Associate Research Engineer at BellSouth Services in the Science and Technology Department.*

*Robert C. Wess, an Associate Professor of English at Southern College of Technology, has directed its writing across the curriculum program since 1983.*

## THE STRATEGY OF THE REVERSED CONFERENCE



By Allen Ramsey

One of the most successful approaches to teaching composition is conferencing.<sup>1</sup> Embracing the popular concept of the student-centered writing program, conferencing gives focus to individual compositions. It also

has an affinity with peer collaboration, brainstorming, and other prewriting activities. Although conferencing is time-consuming, its advantages outweigh the difficulties. Especially useful is a conference which opens channels of communication between student and instructor.

The conference as a pedagogical tool has been discussed at length by Muriel Harris and others,<sup>2</sup> but conferencing as it pertains to WAC presents new problems and opportunities. A promising variation of conferencing is the "reversed conference," which has been a point of interest to the WAC Committee at Central Missouri State University. Reversed conferencing—assigning the teacher's role to the student—is of particular interest to WAC because it assists both teachers and students whose primary fields of study are outside the discipline of writing.

## PROCEDURE

The procedure for developing reversed conferencing in WAC begins with the standard methods of conferencing. We recognize in conferencing that the individual's writing is the focus of attention. The instructor isolates the major problems in the composition, bringing concentration to the conference. Complicated problems involving unity, coherence, or logic can be examined slowly and reviewed to reinforce learning. The instructor can establish rapport quickly and make writing more gratifying.

Reversing the conference shifts teaching from the instructor to the student. In a course in the student's major, the instructor and the student will share content as their principal concern and interest. The second interest may be the conventions of the genre. In both of these, content and style, the instructor can confidently assign a grade. As for the rest of the grading—decisions concerning such things as organization, development, usage, spelling, and grammar, the student can do the explaining. A rapid reading can include minimal marking: underlining typing errors, spelling, and other minor errors; making marginal abbreviations, such as "T.S.," "org.," "unclear," or even a question mark to designate ambiguity, redundancy, or illogic. A few words at the end of the paper may guide the student into revision, a note such as "your first two subtopics need substantial development." Annotations like these are familiar to all teachers of writing, but in reversed conferencing the student must examine these comments and explain to the instructor how to revise the paper. One of the discoveries I have made with reversed conferences is that students often do not understand the abbreviations on the paper—even though we have discussed them in class. The reversed conference forces students to learn what the marginalia mean.

When students receive their papers, graded and marked, they need to know that they will receive an additional grade for conferencing and that their success at conferencing will depend upon their preparation for the conference. Grading standards and techniques vary, and I make no plea for my own, but my guidelines may illustrate the motivational principle involved. A 500-word essay has a value of 25 points and the second grade for the conference has a 10-point value. Mathematically, this means that a 10-point score makes a C paper a B paper (75% becomes 82%) and a B becomes a B+ (85% becomes 89%). In short, the grade is sufficiently small that the paper, not the grade, remains the main concern, but 1) interest does not culminate with the original grade, 2) revision becomes more significant, and 3) the burden of articulating revision strategies rests upon the student.

## PRACTICE

The reversed conference is, among other things, a pleasant change from the usual class hour. Most faculty in our English Department give some class hours and some office hours to conferences. Faculty in other disciplines may want to give only one class hour (or no class hours) to conferences and sprinkle the tutorials out over office hours. My method has been to conduct several conferences early in the semester to provide a model. About midterm I described the reversed conference and set the ground rules. Students have 10 minutes to explain the revisions needed to improve the paper. They may consult anyone (including the instructor) to prepare for the conference. They should have outline notes to guide them through the conference to make good use of the time available.

When the conference occurs, students quickly adapt to the new decorum. I set a student desk next to the instructor's desk and sit in the student's desk. When the student walks into the classroom, he or she sees the empty seat at the instructor's desk and quickly realizes (usually with laughter) how completely the roles are reversed. I do not speak until spoken to. Some students adapt and almost automatically begin role playing. A transcript of a conference follows:

Student: Oh! I really am the instructor!  
Well...Good morning.

Instructor: Good morning. How are you today?

Student: OK. Great. You have a watch right there.  
It's...10 minutes after. I'm going to talk for 10 minutes about this paper...to show you why...how to correct some of the problems...

Instructor: All right.

The instructor's role is to encourage, to listen, and to ask questions. In playing the role of the student, I try to imagine how a student would react to the instructor's commentary on "my" paper. In doing so, I am hoping to provide a model for the student's role. Typically, my response will be something like this: "You say that topic sentence is weak. Why? Could you tell me what I might do to make it better?"

One difficulty with reversed conferences occurs with the best students. An A paper requires few revisions, yet the instructor must strive to make an A student work harder for a second A in the conference. On such occasions the instructor must be creative. A written comment can provide some material for revision: "In revising, try to think of some ways to expand this paper with several more subtopics."

The extent to which reversed conferencing will work varies from discipline to discipline. Small classes are preferable to large classes, of course. The ideal, perhaps, would be the writing-intensive course linked to a lecture hall course. Wherever instructors find a place for reversed conferences, they can employ it. Our job on the WAC task force is to take as many writing ideas to the faculty as possible and hope that some will succeed. Several recent articles have described the decline of WAC after a five or six year flourish.<sup>3</sup> A new idea like reversed conferences may help to rejuvenate a waning program. We believe there exists a variety of opportunities to fit the reversed conference into a WAC program. The real challenge is in finding fresh ideas that can breathe new life into the teaching of writing—and the reversed conference is but one of them.

## NOTES

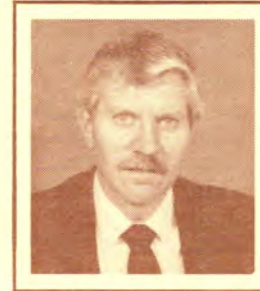
<sup>1</sup>See Charles R. Duke, "The Student-Centered Conference and the Writing Process," *English Journal* 64 (December 1975): 44-47.

<sup>2</sup>See Muriel Harris, *Teaching One-to-One: The Writing Conference*, Urbana, Ill: National Council of Teachers of English, 1986.

<sup>3</sup>See David R. Russell, "Writing Across the Curriculum and the Communications Movement: Some Lessons of the Past," *College Composition and Communication* 38 (May 1987): 184-194.

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## WRITING ACROSS THE CURRICULUM— A SUCCESS STORY



By Roy T. Stewart, Jr.

Slippery Rock University, one of fourteen state-owned universities comprising the State System of Higher Education (SSHE) in Pennsylvania, has a writing across the curriculum program that is the subject of this essay. Although based upon the writing program at Slippery Rock, the essay provides some helpful hints to any college or school system contemplating a writing across the curriculum program.

### THE NEED

Over the past several years, faculty and administrators at Slippery Rock University had expressed concern about our students' writing inabilities. Complaints were voiced over simple matters like poor spelling and punctuation to more substantive matters such as clarity and organization. To address these concerns, we took several steps to improve writing instruction. For example, we instituted the following four measures:

1. All graduates are required to complete two semesters of composition or to demonstrate via a writing sample sufficient competence to be exempt from this requirement.
2. Students are placed into the appropriate freshman composition class based upon SAT and ACT scores and a writing sample judged by faculty.
3. A remedial composition class is taught for freshmen who need it.
4. A writing center is available for faculty and students.

Even with these procedures in place and operating effectively, we continued to find many students who wrote too poorly to be considered "competent." Some perceptive observers told us that such poor writing was evidence of fuzzy thinking, a significant problem needing our attention.



While some argued for more composition teachers so we could teach writing in smaller classes, and some argued for more stringent admissions requirements to keep out the poor writers, our economic reality made these approaches untenable. We opted to plan a writing across the curriculum program that would require students to apply writing in classes in addition to English composition.

### THE PLAN

We inserted into the curriculum-approval process a requirement that all graduates complete three "writing intensive" courses in addition to the two-course freshman composition requirement. Once this proposal passed through the curriculum-approval process at the departmental, school, and university level, the requirement was reduced to two "W" (writing intensive) courses. Before granting its approval, the University Curriculum Committee completed a survey to ascertain the degree of faculty support for writing across the curriculum and determined that sufficient interest existed. Specifically, the approved plan included the following points.

1. The President was to appoint a Writing Across the Curriculum Steering Committee, comprised of four faculty members and one administrator. One faculty representative was to be a member of the University Curriculum Committee in order to act as liaison between the two committees. The charge to the Writing Across the Curriculum Steering Committee was to "...develop appropriate operating procedures and suggest a faculty development program for approval." In addition, the committee was to review, and recommend for approval, courses proposed by departments as writing intensive.

2. To be designated a "W" course, at least 5000 words of composition, in one or more papers, were to be required. A maximum of 25 students could enroll in each "W" course. Our rationale for this limit was that writing is best taught in relatively small groups and that time be allotted for the reading of writing assignments outside of regular class hours.

3. Beginning with the graduating class of 1988, each graduate would be required to complete two "W" courses. The "W" designation was to appear in each semester's published schedule of class offerings and would also appear on all reports of the student's academic record.

Although I have been using the term "W" COURSE, it would be more accurate to label them "W" SECTIONS, because it is possible for one section of a course to be designated "W" while a different section of the same course is not.

The task of soliciting faculty support for the program was undertaken by the Steering Committee. We agreed that the program needed widespread faculty support to succeed. Steering committee members agreed to visit every academic department to explain the program and ask for participation. In these meetings, we emphasized the major tenets of writing across the curriculum. For example, we discussed writing as process more than product, writing to improve learning and thinking, and writing customized assignments for the discipline taught. These meetings were held to convince faculty that writing could be taught in any discipline and to enlist as much support as possible.

We agreed, in the initial phase, that the more autonomy provided faculty and academic departments in the selec-

tion and teaching of "W" courses, the more faculty participation we would receive; therefore, the Steering Committee was reluctant to disapprove proposed "W" courses. This laissez-faire strategy proved successful because almost all departments and many professors agreed to participate. To date, 27 of 30 academic departments have offered "W" courses, and approximately 100 of 350 faculty have taught them.

### PREPARING THE FACULTY

To have a sound program, we knew faculty had to receive some training in using writing in their classes. Merely designating a section as "W" and turning the faculty member loose to do what he/she had always been doing would not result in improved student writing or thinking. Therefore, we planned a series of faculty development seminars, workshops, and meetings designed to attract faculty to the concepts behind writing across the curriculum and to assist them in becoming better teachers of writing.

Over the past few years, we have brought to campus for workshops and training sessions some of the most noted writing across the curriculum proponents, including Dr. Toby Fulwiler, Dr. Elaine Maimon, and Dr. Barbara Fassler-Walvoord.

In addition to bringing experts for workshops and seminars, we have held sessions for faculty to share ideas about assignments, projects, and techniques that have proven successful. We have purchased for our faculty many printed materials on teaching writing across the disciplines.

These conferences have provided specific tips to improve one's teaching and have also created among our faculty an esprit de corps that transcends the task of teaching writing. Finding faculty from disciplines as diverse as natural science, social science, and the arts who exchange ideas on how to improve their teaching is an exciting occurrence. The more we learn from each other, the larger our group becomes, as others realize that they might find something worthwhile in the group's activities.

Funding for our workshops has come from three university grants totaling approximately \$12,000 and one \$500 state grant. The money has been used for speakers' honoraria and to defray the lodging, meal, and registration costs of participants. Our writing across the curriculum workshops have earned a reputation for being enjoyable and educational. Faculty and administrators from area high schools have also attended our workshops, stimulating worthwhile dialogue between university and high school educators.

Last year we published a "Writing Across the Curriculum Newsletter" to exchange ideas among the faculty on our campus, and we hope to continue the newsletter.

### THE FUTURE

We plan to pursue the following objectives in the near future:

1. During the summer of 1987, a group of faculty and administrators from the fourteen Pennsylvania SSHE institutions met to discuss the formation of a state-wide organization dedicated to the subject of writing across the curriculum. We hope to continue such state meetings to promote writing across the curriculum and to form a statewide interdisciplinary association of faculty interested in writing in all disciplines.

2. Our Slippery Rock program has grown to the point that it needs someone to be coordinator/director. We are hopeful of eventually receiving administrative approval for such a position.
3. We plan to continue informal, periodic faculty gatherings to discuss ideas, projects, and techniques related to writing across the curriculum.
4. An ongoing assessment of our program is needed. During the upcoming academic year, the Steering Committee will consider ways to assess the efforts of our program.
5. We need to scrutinize more closely those sections proposed as "W" offerings. Our initial desire to allow maximum autonomy to departments and faculty may now need to be tempered by imposing more specific regulations on "W" offerings.

### SUMMARY

Our Slippery Rock program has been successful. With the assistance and commitment of faculty, administrators, and students, we have implemented a writing across the curriculum program of which we are all proud.

Listed below are ideas that should prove helpful to anyone planning to implement a writing across the curriculum program at his/her institution:

- \* Enlist widespread faculty support. Ideally, the program should be initiated by the faculty.
- \* Secure strong administrative leadership; such commitment is needed to keep the program alive. At least one administrator should be involved with the program on a continuing basis. Do not "pass it around" from administrator to administrator.
- \* Implement, via the curriculum-approval process, a specific institutional graduation requirement of writing intensive courses.
- \* Implement a program of faculty development to assist classroom instructors from a variety of disciplines in using writing in their classes.
- \* Allow a high degree of autonomy and independence for departments and faculty to determine which courses should be writing intensive and what the content should be.
- \* Communicate frequently with faculty about the program. Encourage instructors to meet periodically to share ideas and problems regarding writing.
- \* Be alert for professional development grant money to be used for periodic workshops and seminars to improve faculty members' understanding of, and commitment to, writing in their disciplines.
- \* Maintain a standing committee with the responsibility for monitoring the writing across the curriculum program and for performing a coordinating function within the institution. Continuous assessment of the program is also important.
- \* Emphasize that the objective of the program is to improve students' ability TO THINK and to increase their ability TO LEARN.

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## TWO THEORIES OF LANGUAGE AND WRITING ACROSS THE CURRICULUM



By Larry Corse

For the last several years, the faculty at Clayton State College in Clayton, Georgia, has been developing a new general education curriculum. This curriculum has not been designed by traditional-discipline faculties, but every new course has been designed by multi-discipline committees working with educational outcomes also developed by cross-discipline groups. This cross-disciplinary effort, in part, is why we have been able to put into place an effective and rigorous writing requirement that touches all areas of the core curriculum—all disciplines in general education. "Writing Across the Curriculum" will seldom work and seldom remain if it is what the phrase implies: something that is added on and spread on top of—across—the traditional curricula. At Clayton, we have a requirement that says a student must demonstrate the ability to write effectively in four areas outside of the required writing courses: the humanities, the natural sciences and mathematics, the social sciences, and the general education portion of the student's major. The same criteria are used for defining and evaluating effective writing in every discipline and in every area. Students face writing assessment in most courses, such as literature, biology, music, economics. And the writing assignment is not given just to those students seeking certification; the assignment, by design, is an essential element of the course.

The entire faculty at Clayton, not just the English faculty, has defined effective communication as one outcome that all students must achieve, and the entire faculty has accepted the responsibility of assisting students in their learning to communicate effectively in writing. When students see this commitment to writing, find it an important part of every course, and when they recognize the same criteria for evaluating writing used in every course, the students then become keenly interested in improving their writing. And that outcome assures the success of the writing program.

The criteria we use for evaluating writing provide a key to our program's success. But the theory behind the criteria is responsible for encouraging and enabling faculty from other disciplines not usually associated with teaching writing to integrate writing and writing instruction into their courses, and to do so enthusiastically. It is often easiest to define a concept by opposition, so I will begin by describing the theoretical base we rejected. The teaching of composition in this country has been dominated by a particular theory for the last century—a theory that I believe is fundamentally wrong; it is wrong, at least, when applied to the teaching of writing or other modes of communication.

## THE ROMANTIC-IDEAL THEORY OF WRITING

This theory is based on the nineteenth-century romantic search for an *ideal*. The theory has roots deep in the philosophical and theological traditions of western culture, but only in the nineteenth century with the beginnings of our educational system did this search for an ideal begin to have an effect on the teaching and learning of basic communication skills, especially writing. The effects were not necessarily bad until the mid-twentieth century with the bringing into the educational system masses of people, most of whom had lacked the background needed to accept and work with the concept of an *ideal*. This theory underlies the teaching or writing and is in part responsible for the problems of literacy in this country. It is probably the reason why many are afraid of writing or speaking (except to their peers), and it is probably the reason that many faculty outside English are either skeptical or fearful of bringing instruction in communication into their courses or into their disciplines.

What is wrong with believing in an ideal and searching for it? Nothing – unless it is applied to situations in which serious damage can result. The teaching of writing is one such situation. Yet that is what we as English teachers, mostly unconscious of the basis for our methods, have been doing for a long time: asking students to find the ideal essay in their thoughts and experiences, and then to reproduce this ideal on paper. Or even worse, composition instructors have allowed and encouraged students to search for an ideal way of writing that only the English teacher, as a keeper of the sacred mysteries, understands.

This theory also encourages a belief in an absolute and correct way of writing, which leads us to spend endless and usually useless hours teaching the rules of grammar, an endeavor that countless studies have shown does not result in transfer to the student being able to use appropriate grammar in his or her writing. What it usually does is cause the student to become so concerned about the correct comma, the correct spelling, or the proper use of “who” or “whom,” that the student alters, and thereby restricts, his or her writing to avoid the issues altogether.

This theory also gave to us in Georgia the abomination that is the Georgia Regents’ Test. The essay portion of this test asks students to respond to a surprise topic about which they probably have no knowledge and little interest, and in one hour to reach into the mass of their own experiences, to choose the relevant materials, and then to select the proper pre-extant form and to produce the *ideal* model, hitherto unknown to the students. The standards by which the Regents’ essays are graded are vague enough that each and every grader can and will bring his or her own special *ideal* model to the grading table. The good papers pass, the unintelligible fail, and all the rest pass or fail on grounds that are as predictable as the toss of a coin.

Yet we have allowed this exam to define English, especially the teaching of composition, for many years. At college after college teachers have taught to this test: a practice that is admirable when a test is intellectually sound, but foolish when a test is as questionable as the Georgia Regents’ Test. In a time when most students of writing and most teachers of writing have come to realize that writing is a purposeful act of communication based on knowledge of subject and awareness of readers, we continue to teach the impromptu essay as if it were the basis of all educated writing. When a student writes a paper on a surprise subject with no purpose other than

passing a test by conforming to some little understood *ideal*, I do not know what is being tested; however, it probably is not the possession or lack of useful writing skills.

If you ever remember writing a paper you were pleased with and subsequently had that paper returned with mysterious red marks that revealed how you failed to “discover” the *ideal* model that your instructor knew was there (clear proof that it was there lay in the thorough editing and revision done by your instructor), you know what most students of English suffer and who will do anything to avoid repeating. It is only human nature to avoid pain and humiliation. So we often manage to train students to avoid words they can’t spell and steer them away from complicated sentences, even though such practices thereby restrict the students’ thought-processes.

If you should think I overstate the case about the restrictiveness this romantic-ideal concept creates, let me offer another viewpoint. Every English teacher knows the uncomfortable experience of conversation with a doctor, a mechanic, a bank officer, a store clerk, and the question from these people, “What is your line of work?” The response, “I teach English,” is always greeted with, “Oh, I’ll have to be careful how I speak.” These uninitiated, you see, are aware they are in the presence of one of the keepers of the sacred mysteries of language. Now I am not suggesting anarchy in communication or that some forms of writing and some conventions are not more effective in certain communications than others. We all have the responsibility as educators to assist our students in learning to communicate effectively. What I am suggesting is that a pernicious and mis-applied theory about writing has helped create at least one generation, and maybe more, that largely fears and therefore avoids writing outside of peer groups whenever possible.

Searching for an ideal embodiment of an essay, report, or letter was not necessarily a problem for the elite, bright, and talented students of the colleges in the first half of this century. These facile students, and their present counterparts, intuitively knew how to think through an idea using internal dialog, so that it seemed possible in fact to produce the *ideal* by appearing to *find* with ease the best way of conveying a message through writing. But these elite students, by and large, are not our students; nor are they the majority of the students in higher education today. And yet we continue, both as teachers of writing and as teachers of other disciplines, to believe in the *ideal* and to frighten students with it or to be frightened by it ourselves. No wonder many instructors outside English are leery of embracing the mysteries of language with writing across the curriculum.

## THE INDIVIDUAL/MEANING/CONTEXT THEORY OF WRITING

This brings me to a brief and necessarily sketchy description of the second theory, a simple linguistic theory, but one with broad pedagogical implications. The theory’s principal tenet is that “meaning does not exist prior to language.” For a concept, an idea, and action, an utterance to be understood and interpreted, it must become a concrete linguistic sign in the individual consciousness. Mikhail Bakhtin tells us that the word is, in fact, the exclusive medium of consciousness. In the process of becoming a linguistic sign – a word or words in the individual consciousness – the concept, idea, action, etc., passes through and is surrounded by and is tied to

other experiences of the individual. In other words, every thought of the individual is influenced and altered by the individual psyche even as the thought is becoming a linguistic sign in the conscious mind. This notion leads to the obvious conclusion that all of us understand the world and our experiences in at least a slightly different way from everyone else. Meaning in this definition, therefore, does not exist outside and apart from the linguistic sign in the individual consciousness.

Another part of this theory is the concept that all language is dialogic. In other words, all language is formed in dialog and dialog implies a response. The individual consciousness is almost constantly awash with internal dialogs, and when we speak and write, we speak and write for reaction and response, either real or imagined. It therefore follows that all discourse is always shaped by audience—real, internal, or assumed.

The meaning attached to the linguistic sign is in fact a “bridge” between the individual consciousness and the audience. It is this concept that leads us to the idea that meaning of linguistic signs is derived from social contexts—altered by the individual consciousness, but developed in a dialogic, social context.

From this theory of language comes an important pedagogical concept: verbal processing of any idea is necessary for learning, understanding, and interpreting the idea. In other words, it is necessary for the individual student to take in the concept and bring it to the conscious mind as a concrete linguistic sign, and in so doing, to work that concept through the dialog, social contexts which will give the sign meaning. To a certain extent, this process always takes place when an individual reads, hears, sees, or experiences anything. But in an educational situation, we must enhance this mental activity to increase the opportunity for a student to understand the material being studied.

Writing is a way of externalizing and verbally processing concepts. Consider for a moment how often in order to develop a clearer understanding of an idea for yourself, you discuss it with others, or you write and revise, and then scribble and write some more. Unless an idea is simple and without any implications, it must be worked through in a discussion, either internally, or between yourself and what you write, or with others in an outward social context in order for it to be fully developed and understood.

### COMPARISON AND CONCLUSION

The first theory, the search for an ideal, places emphasis on a final product to be judged and evaluated; the second theory focuses on the process of creating, of thinking, of understanding—it focuses on the process of learning. Intervention in a process is possible; comment alone is possible with a final product. Remembering that meaning is the result of social constructs and contexts, intervention is necessary for the development of understanding and the creation of meaning. Such intervention is the reason why in classes in which the teaching of writing skills is the goal, writing is always revisable, always in a state of process, and always where others can intervene and engage the writer in a dialog to assist the writer in working through the ideas. If, in other types of educational settings, we can create situations in which students can freely, openly, informally, and often discuss and write about the material being studied, learning can be greatly enhanced. Note-taking can be important, if the notes are not just sensory, fragmentary impressions of a lecture, but rather notes that create a

dialog with the material. Students need to be given the opportunity and encouraged regularly to write out explanations of what they are studying, or doing, or hearing, or experimenting with.

Students often have the idea that language is passive and that the college classroom is a place in which they can sit, take in what is being said, and then leave, educated. If we can bring them to see that language and all that we understand about it points to an *active* process, we have a chance to help them toward an education.

The important concept, the point of this theoretical discussion, is this: if this century's studies of the nature of language and its relationships with self, society and reality are valid (and the application of these ideas to a wide variety of fields, especially to the teaching of composition in the last decade, strongly suggests that they are valid), then, if students in our classroom are not writing, revising, and writing again, however informally, or if they are not discussing the work of the class in such a manner that every single student is involved in the questioning, in the thinking, in the processes of developing meaning, in bringing to the conscious mind concrete linguistic signs that attain meaning only in a dialogic context, then the learning we assume to be taking place probably is not.

How many times have we assumed that our students understood what we were teaching, only to have them return to us on exams, especially essay exams in which ideas can be displayed, complete mish-mash? The only exceptions were submitted by the two or three students who asked questions and discussed these ideas in class. This experience, I'm afraid, is far too common. Writing or speaking (in the form of discussions) in all of the disciplines, in all of the classes, is not something to be forced into a course unnaturally; it is something, in order for learning to take place, that must be part of every teaching/learning situation.

Writing within a discipline is not, therefore, tacked on to a discipline; rather, it is so essential to a student's understanding of a discipline that it is, in essence, the discipline itself.

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## WRITING IN DIFFERENT DISCIPLINES: PROBLEMS AND POSSIBILITIES

By Fay C. McMillan



### THE NEED FOR WAC PROGRAMS

Certain ideas are the basis of any successful WAC program. Writing is learning, but if basic writing skills are not constantly practiced and reinforced, they will diminish as does any other unpracticed skill. Since an educated person can be expected to write well, the entire school

shares the responsibility for student writing (Griffin 401-403). When the faculty in the professional fields realize that there is a "decline in critical literacy" and that WAC addresses this problem, these faculty are reminded that "they, too, are responsible for promoting the independent and critical use of language" (Richardson 48).

### INTERDISCIPLINARY WRITING

Once the entire faculty realize this responsibility, they are willing to cooperate in the WAC program. The program involves a cross-curricular collaboration that operates in various ways. Four key areas, however, require consensus: (1) dealing with mechanical and factual errors; (2) agreeing on a common terminology for responding to errors or inconsistencies in student work; (3) setting up a sensible routine for responding to papers; and (4) deciding the whole process is worth the time and effort it takes (Mallonee and Breihan 214).

If WAC involves collaboration with a content course instructor, then the English instructor must expand his/her knowledge of the discipline by investigating its published scholarship and by asking colleagues within that discipline to suggest readings and to provide samples of articles they regard as well-written and informative. The English faculty must better understand the discipline's stylistic chores. Dialogue about the type of writing by name clarifies expectations both for English faculty and students. This procedure also helps the English faculty to avoid mistaken assumptions about writing in various disciplines.

### DISCIPLINE-SPECIFIC ASSIGNMENTS

Although the learning log or journal is a popular writing assignment for many instructors, others prefer a more structured formal assignment. One assignment that works well is the summary. Developmental students can derive special benefit from this assignment, and it does have many advantages for others as well. Learning to summarize main ideas links reading and writing and helps students think through ideas in writing. Students are less threatened by, and more willing to rethink, ideas found in someone else's writing. Since developmental students often lack the vocabulary and habits of generalization but tend to focus on specific examples without seeing relationships, the summary helps them develop these skills that are so adaptable to lectures and reading assignments in content courses (Lambert 10-11, 32).

For content course instructors who feel that their disciplines demand writing competence expressed in a variety of modes, a sequence of assignments is recommended. The sequence of (1) Listing, (2) Definition, (3) Seriation, (4) Classification, (5) Summary, (6) Comparison/Contrast, (7) Analysis, and (8) Academic Argument "corresponds roughly to the intellectual hierarchy of cognitive psychologists" and is "particularly useful in teaching cross-disciplinary writing" (Kiniry 191-202).

Some disciplines have inherent subject matter that can be expressed in writing assignments. Accounting students can learn the basic communication process and use it to explore and interpret the overall process of accounting (Golen and Rao 17-19). The traditional business formats can also be used by accounting students. A memo report explaining basic accounting procedure for purchasing or selling, a proposal to urge a business to adopt a system of accounting, and a letter of transmittal explaining end-of-year accounting procedures are ex-

amples of such writing assignments (Clark 15-17).

Here are some other common writing assignments that can be used within specific disciplines.

#### Math

Some writing assignments can be used successfully in almost every math course. These types of writing do not require consulting or collaborating with English faculty. Learning logs can be used in most of these courses. For example, math students can keep a log of problem-solving steps, a personal math journal including hours spent on homework, and a graph of their test and quiz grades in comparison to study time. One paragraph about math or a math-related topic can be written periodically if students write out a step-by-step analysis of their solutions. Students who are less competent can benefit by using responses of successful problem-solvers as models. The written log can also be a communication tool to reduce math anxiety (Vukovich 19-21).

#### Engineering

Engineering professors can also use journals and periodic reports to help students recognize a problem. If students are also required to review literature in the field of engineering and to write a memo or a proposal to the professor who will respond as an engineer, then the student begins to consider the problem from a variety of perspectives. In addition, articles in professional journals and trade magazines can introduce the student to "professional, practical, and scholarly publications in engineering" (Dorman and Pruett 656-658).

#### Chemistry

Chemistry is another discipline that can use professional journals in writing assignments. Students will respect the "value of making written records as an essential activity of the chemical sciences" as they read and abstract journal articles. Chemistry students can also be assigned "concept" and "project" papers. A brief "concept" paper can be written for a general reader; then a longer, technical "project" paper can be written for a professional reader (Powell 415-416). Most chemistry instructors strongly support writing assignments in their content, feeling that writing competence should be required to earn a passing grade (Atkinson 337-338). Chemistry teachers have also become aware that a student must master material thoroughly to write about it because of the active thinking writing involves. A true comprehension of a subject enables the student to communicate clearly about the subject. Those who have used writing assignments urge chemistry teachers "to incorporate writing in chemistry courses at all levels" ("Writing, Thinking, and Learning" 841). Engineering and chemistry instructors have an additional incentive to require writing assignments because their major accrediting body, ABET (Accreditation Board of Engineering and Technology), "stresses that communication proficiency should be demonstrated through student work in engineering." If short written assignments "designed to develop mastery of engineering concepts and principles," especially with hard-to-learn concepts, are required throughout a chemistry or engineering course, the student's understanding of these design concepts or assumptions improves as the student explains these ideas verbally rather than numerically (Baker 101-102).

## Vocational Education

Chemistry and engineering can be expected to support WAC because these disciplines benefit from students who learn to think better as they write. But what about vocational education? In August, 1986, *The Vocational Educator* featured a special section on "Teamwork" in which vocational education instructors were urged to cooperate more fully with academic instructors so that an increased awareness of vocational education would engender more support. Vocational teachers also were urged to check students' work more carefully for spelling, punctuation, and correct word usage (Hoffman 27-28). This same issue of *The Vocational Educator* had a section on "Learning." One article stressed that a simple assignment of comparison/contrast or summary of the main idea would increase learning skills (Laster 33). Another article by a vocational educator advocated more essay tests because objective tests "measure the lowest level of ability, not a true, deep understanding or the ability to synthesize solutions" (Fitzpatrick 35). A third article noted that students can read and understand material better if they master technical terms used in their area of study (Darlington 38).

## Literature

While scientific, technical, and vocational disciplines have become some of the strongest supporters of WAC, ironically one of the academic areas of greatest resistance is literature. Often the English curriculum is subdivided into composition and literature, and the literature instructor either does not want to teach composition, or wants to use literature classes as a "break" from teaching composition. Students, however, can still become more involved with the material and learn to understand it better by keeping learning journals. The journals are not polished writing, nor should they be graded as such (McMahon 269-271). Content should be evaluated above mechanics in any of these journals or learning-log assignments. Frequent short assignments are more beneficial to many content courses than one long paper would be; and while errors should be noted, the student's mastery of content should be the primary focus (Palmer 11-12).

## PROBLEMS AND BENEFITS OF INTERDISCIPLINARY WRITING

A criticism of WAC, especially in advanced content classes for majors, is that writing assignments tend to focus on the general audience, not the professional one, when students write papers. Another criticism is that students are sometimes asked only to summarize and/or analyze professional writings. These students could benefit more from writing assignments designed to help them write for other professionals. The students should be exposed to the typical rhetorical forms used in professional writing. The collaborating instructor can agree on the content for high-information writing and on the forms of such papers.

## Biology

Some problems can occur because of a conflict in the timing of the course. In biology, for example, a long series of experiments may be necessary as the basis for a scientific paper, and the rhetorical assignment may be difficult to schedule. False expectations sometimes arise on the part of both students and English faculty to know

more biology than they do, so that the English faculty, teaching basic knowledge, find the content of the writing difficult to evaluate. Also, English faculty members sometimes do not recognize the empirical evidence demanded in a valid science paper, nor do they appreciate the time and knowledge necessary to develop a scientific thesis for a research paper.

Despite these problems, there are advantages. The English faculty can gain experience and understanding of rhetorical forms used by science professionals. In addition, students must do concrete, precise writing. And when students write on the same topic, their papers are easier to compare. Students also find discussions about specific subject matter helpful (Wilkinson 160-165).

## History

Because both English and history are part of the General Education curriculum, collaboration involving these disciplines is easier; however, problems in this area have also arisen. History professors expect research papers that reflect an understanding of the way historians write. A student should formulate an hypothesis, collect data objectively, and then construct a persuasive argument to support the hypothesis. History students must learn to evaluate arguments for internal consistency and conflicting argument. A beginning student is not able to do primary research or evidence-evaluation, nor can such a student determine the best presentation of such evidence. One skill must be mastered and the next one built upon it. History courses emphasize skills of analysis and presentation, and stress the ability to differentiate analysis from opinion (Rebhorn 265-268). If English instructors collaborate with history instructors, the history instructors should decide the kinds of assignments the student is capable of writing based upon his or her present knowledge of history.

## Psychology and Sociology

Problems can also arise in the social sciences of psychology and sociology. An English instructor may assign an "A" to a well-written paper, but the psychology or sociology instructor may find a flaw in the basic design of the research paper involved. Too many variables, inadequate controls of experiments, superficial interpretation of a case study, factors that bias the research, etc., can conceivably result in an "F" in the discipline. In contradistinction, an English instructor could assign a low grade because of "jargon" or his or her own failure to understand evidence as presented, while the content instructor whose major focus is on research design and method may rank the paper of high quality. Again, the English teacher must learn why and how subjects are studied in certain disciplines and how writers express themselves in those disciplines.

## Business Education

The Business Education curriculum has been one of the strongest writing supporters of composition skills, and surveys of business have demonstrated the importance of such skills (Sharplin 84). Career educators are often urged to cooperate with the English faculty to learn the communication skills needed for more successful interviews. Business faculty are urged to blend the material taught in English class into assignments, to work with English faculty who will appreciate reinforcements in developing units (Hall 12-13). There are problems in this

area, too, largely because writing as process is viewed negatively by business education instructors whose writing assignments tend to stress functional message and formula writing. This writing also stresses basic language skills, clarity, and achievement of purpose. Business educators urge English instructors not to focus on process to the neglect of product; rather, they suggest both process and product approaches be blended and correlated (Wolf 227-228).

Some business educators are so disapproving of the process approach and the traditional emphasis on literature in the English college curriculum that they feel basic writing competencies are neglected or ignored. These concerned business educators are urging shorthand teachers to stress English-related skills and have even proposed that English credit be granted for shorthand study. Since shorthand courses are providing students "with the English competencies that employers and society at large demand, academic credit in English should be granted for shorthand study" (Condon 6-9). English instructors should be aware of these concerns and their implications.

### PROBLEMS AND ADVANTAGES EVALUATED

Although cross-disciplinary writing poses problems, one of the first programs to implement the idea was begun on a temporary basis at MIT in 1957 with the English and Mechanical Engineering departments. In 1976, the program was expanded to encompass all eight engineering curricula, and since then it has been expanded to the School of Management and the School of Science. The program is highly organized and structured. Participating students are also aided by a Writing Center—not a remedial writing lab—which students use for tutoring and editing. The program not only provides students with an overview of writing skills which engineers need on the job, but it also identifies students who need additional writing instruction (Sides 118-120).

Ironically, some of the problems most often encountered in implementing WAC have arisen from a failure to communicate effectively on the part of English faculty. The program should have a broader concept than "grammar" across the curriculum. Improvement will result from writing practice. However, it is unrealistic to expect beginning students to write like professionals in the discipline before they can write well at all, or "before they have developed the capacity to think well about their subjects." "For such students the learning journal or notebook is more valuable than a research paper assignment because these require only response to, not evaluation of, an intellectual dialogue." For such students writing is a learning tool, and a journal allows them to express their confusions, problems, and uncertainties (Knoblauch and Brannon 465-474).

Just as the English professor may expect a more advanced product than the student is capable of, the content instructor may also be preoccupied by models, forms, and correctness so that the student is not allowed time to learn to think about the subject by writing freely about it. English instructors need to clarify the benefits of "free" or "expressive" writing because outside the humanities these terms are suspect. Related problems can arise if one idea such as a learning journal is oversold. No one idea works well for every instructor in every class. Large classes with great emphasis on content may cause content professors to resent the extra time required to evaluate writing (Fulwiler 113-117). A workshop session explaining peer editing and holistic grading can be

helpful. Also, professors outside English may not realize that frequent, short writing assignments are more beneficial to students than the traditional requirement of a long paper due near the end of the term.

Despite all the problems WAC has encountered, the concept has enjoyed some unexpected benefits. As instructors have interacted with each other, a community of scholars often has developed. The environment improves with a shift in attitude about writing as instructors outside English class gain confidence in writing. The learning atmosphere in class changes, and teaching methods improve as teachers themselves learn from the students' learning logs. For the faculty themselves, there is increased professional development, a large factor in securing tenure and promotion.

Many collaborative projects involving an English instructor and an instructor from another discipline have developed. For example, *Language Connections: Writing and Reading Across the Curriculum*, published in 1982 by NCTE, was a team effort by cross-curricular faculty at Western Michigan University. The college's entire faculty became involved in the collaborative work the book entailed, creating a very positive atmosphere of cooperation among the faculty (Fulwiler 118-125).

Certainly a WAC program can be expected to encounter resistance, and unforeseen problems will arise; but supporters of the program are convinced that benefits to both students and faculty far outweigh any real or potential disadvantages.

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