

Essays on Teaching Excellence

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Writing to Learn

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It is important for the university through its instructors, particularly in introductory courses, to teach its students to critically examine their view of the world. Students frequently hold views different from or alternative to those to which they will be exposed in their courses. This discovery about students has roots in Piaget's early studies of the way children explain natural phenomena (1929). Moreover, as Pintrich, Marx and Boyle (1993) point out, the modern theory of conceptual change assumes that bringing about changes in an individual student is analogous to the nature of change in scientific paradigms proposed by philosophers of science, particularly Kuhn and Lakatos. A good discussion of this idea is found in Duschl and Gitomer (1991).

With these theoretical underpinnings, conceptual change models have become the norm for research on learning in physical and social science and mathematics. Thus, for example, in the in-depth analyses of student attitudes in physics undertaken by Halloun and Hestenes (1985a, 1985b) it is shown that students enter introductory courses with viewpoints differing significantly from paradigms that will be taught them; and, as they progress through the courses, these same students go to great lengths to maintain their original viewpoints. What is required is for students to understand the conceptual framework underlying the course. Helping students to do this involves initiating a growth process which can easily span the entire course.

Conceptual Change How do we produce conceptual change?

These sorts of insights are arrived at in a learning environment that encourages an interplay of learning models: "In order for reflection to occur, the oral and written forms of language must pass back and forth between persons who both speak and listen or read and write-sharing, expanding and reflecting on each other's experiences" (Belenkey, 1986). Writing to learn, with its emphasis on free writing and peer feedback, can be a large part of our technique in teaching our students these vital conceptual skills. As James Britton frames the problem: "In every kind of writing, defining the nature of the operation, devising ways of tackling it, and explaining its meaning and implication to oneself are essential stages that the mind engages" (Britton, Burgess, Martin, McLeod, & Rosen, 1975 p.90).

Writing in courses allows students to mediate their own "knowledge" with the new knowledge which the course presents to them. Writing to learn and learning to write allows exploration of the student's own doubts, gaps in knowledge, and gropings for the answer. Prewriting, drafting, and rewriting are integral to any successful piece of writing; what is so often not taken into account is that we never can "get it right" the first time that we put pen to paper.

The Process of Writing Peter Elbow (1973) explains the process in this way: "Just write and keep writing...It will probably come in waves. After a flurry, stop and take a brief rest. But don't stop too long. Don't think about what you are writing or what you have written or else you will overload the circuit again" (p. 61).

As Elbow demonstrates, writing is a recursive process, one that goes backward and forward and backward again, from jotting down initial conceptions to drafting the work to generating new ideas and new formats. When students are writing within their discipline, opportunities to discuss work with instructors and peers, and occasions to reevaluate and rewrite their initial work are crucial to the success of the project and to the development of students' sense of themselves as both writers and members of their disciplinary communities. In many ways, this parallels the process of reflection in which a writer engages when confronted with the referees' comments on an article submitted for publication.

Elbow rejects the notion that a writer must move from the beginning

of a piece of writing to the end in a linear fashion. Instead, he looks at writing as holistic. One goes through successive drafts of a piece of writing, moving from an imprecise picture through progressively complex, lucid, unified, and coherent interpretations. Out of the interaction of the various components of the piece, the student achieves a convincing piece of work (pp. 29-30).

The student is looking, throughout this process of writing, for the unfolding of a focus or a theme. The student reaches for that point at which chaos gives way to a centred focus: "What this means in practice is that in a piece of writing you must force yourself to keep getting some center of gravity or summing-up to occur. Let the early ones be terrible. They will distort your material by exaggerating some aspects and ignoring others" (Elbow, 1973, p. 36).

Adapting Writing to Learn Writing to learn, a technique which is not new and has proven adaptable to different learning styles and situations, is adaptable to all disciplines. It is a method that ensures students' awareness of the concepts underlying the topics being discussed and discourages the viewing of material as an agglomeration of disembodied facts and formulae to be learned.

Before the class students freewrite in their journals about material in order to be able to analyze it not only by developing questions, but also by answering these questions before the class. They might be asked to analyze a text covered in class, to connect it to other reading they have done and to their own experience, and to formulate a possible general statement from these writings. Students can also produce a presummary of the material to be covered in the next class, based on the ideas they develop in their reading of course material and their freewriting as well as write a postsummary based on the concepts they have come to understand after the week's classes. In smaller, higher level courses, the full recursive and interactive approach to writing can be employed by means of a course dossier in which students develop an overview of the course with the assistance of two student reviewers. They can address such questions as what the main concepts of this course are, how they fit together, and what the implications of these concepts are for the development of the general principles of the discipline? (For more details see Kalman and Kalman, 1996).

Exciting as the idea of writing to learn may be, one of the concerns expressed by teachers in all faculties is the need for a balance between our desire to enhance teaching effectiveness by using techniques other than the lecture and our responsibility to cover obligatory course material. Yet writing to learn activities can be incorporated within the course structure without losing a significant amount of teaching time. As little as ten minutes of class time on a regular basis will add significantly to the students' ability to assimilate and think critically about the concepts introduced in class. Some writing can be incorporated into the course in the form of outside assignments, such as journals.

By expending some time in writing to learn techniques both inside and outside the classroom, we actually save time. The interval spent answering students' questions will be more meaningful as the students write their way into a more sophisticated understanding of the course material. Writing will often avert the "dead space" of fear, those times when students' anxiety blocks their ability to think in an exam situation, to produce a reasoned and competently written paper, or to solve problems efficiently and creatively. Writing to learn reduces the paralysis of apprehension and leads students into the discovery of their own questions and solutions.

Conclusion With this technique we can circumvent the attempt by students to regurgitate lecture material and can discourage them from simply manipulating the prevailing models and formulae of their disciplines. It enables students to achieve necessary critical thinking skills as well. With writing to learn, students can write their way into an understanding of difficult concepts which they have not grasped before.

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