Using Collaborative Writing and Problem-Based Learning in the College Classroom

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Abstract

This paper features two computer supported collaborative learning activities, one that has been used at the undergraduate level and one at the graduate level. The undergraduate learning activity is designed to enhance student writing while the graduate learning activity is designed to augment authentic problem-solving skills. After presenting the assignments, they are placed theoretically as constructivist teaching strategies. A brief description of outcomes of the assignments—primarily anecdotal evidence—and several research issues are discussed. Our purpose in sharing these learning activities is to foster consideration of both instructional and research issues.

Keywords — collaborative writing; collaborative conceptual mapping, problem-identification, and problem-solving; student-centered instruction.

1. Journal Publication Assignment

The undergraduate learning activity is a collaborative writing assignment—referred to as the Journal Publication Assignment—that has been used in an undergraduate educational psychology course that enrolls approximately 125 students per term. The journal publication assignment is presented in the course syllabus for Educational Psychology II, a required course taken by sophomore education majors and minors. The assignment described here has evolved in the course during the past three semesters.

Students are placed by the instructor in heterogeneous learning groups based on past performance in education courses, certification areas, computer skills, gender, and a writing sample. The learning groups are maintained throughout the semester. The assignment per se accounts for 20% of each student's grade. In addition to the journal publication assignment, students are evaluated on their self-designed demonstrations of mastery of 54 principles (which can be done individually or in groups), attendance, an individually written statement of professional commitment, and the quality of their participation. Participation includes the timeliness, completeness, and quality of feedback provided in the course of the journal publication assignment and so increases slightly the contribution of the assignment to a student's final grade beyond the 50 points mentioned below. The following is an excerpt from the most recent version of the syllabus for the educational psychology course under the heading "Journal Publication Assignment".

> Entry into the profession of teaching requires one to take responsibility for the learning of others. The journal publication assignment in Educational Psychology II will hold you accountable for and to other members of your learning group.
>
> **Group Responsibilities**
> Each learning group must meet two requirements in order for each member of the learning group to receive credit for the journal assignment.
>
> 1. The learning group, functioning as an editorial board, will be responsible for "publishing" an issue of a journal. This means soliciting manuscripts by means of a prospectus, reviewing articles, making acceptance and rejection decisions, providing feedback and editorial guidance to authors, writing editorial notes, receiving "camera ready" copy from each author, and, ultimately, producing the final version of the journal issue. The completed issue will be submitted by the group to the instructor for evaluation. The number of articles published by a board will equal the number of members in the learning group.

2. The learning group, functioning as a writing support group, will be responsible for ensuring that each member of the group is published. This responsibility entails consultation among the group members regarding ideas for articles, research, organization, draft development, and editorial advice. Each article will present a plan for a classroom project which the author intends to implement in a classroom at some future time. See the Casebook of Successful Teaching (Chapter 15) for examples of "classroom projects".

The first task for each editorial board will be to generate a journal prospectus that will include (a) the title of the journal, (b) a statement of philosophy that explains why the title was chosen and why it is useful to publish classroom projects planned by aspiring teachers, and (c) a set of guidelines for authors on the nature and format of articles, deadlines, and citation of references in publishable articles.

All boards must conform to two editorial policies. First, all names and locations used in published articles will be disguised to protect privacy. Second, the plans presented in the articles will be explicated in light of theoretical principles. The prospectus of each board will be shared with the entire class.

In response to the prospecti, each author will submit a query letter to one—and only one—of the editorial boards. Query letters provide an editorial board with a brief proposal of the article the author seeks to publish. Editorial boards will decide whether to accept or reject the proposals received and inform the authors who have submitted query letters of their decisions. Once accepted, an author will begin working with the editorial board to prepare the article for publication. If rejected, the author should expect to receive informative feedback that can be used to improve the query letter before submitting to another editorial board. Published articles must be based on readings, field work, field observations, teacher interviews, case reviews, or other research.

Assessment

The journal publication assignment is worth 50 points. Each article in a journal issue will be judged on a 25 point scale by the instructor and by a practicing teacher. The author will receive the points awarded to his or her article. Each member of the learning group will receive the average of the points awarded to each article in the journal issue submitted by the group.

Each editorial board, in addition to their journal issue, will submit their prospectus, the query letters received from authors, and documentation of acceptance and rejection decisions. This documentation will contribute to judgments about participation by learning group members and by the authors who are published by the learning group.

Timeline

The prospectus is due <date> at <time> in <location>. The journal issue is due <date> at <time> in <location>. Other dates on the timeline for this assignment will be determined by each learning group and included in each group's prospectus.
(end of excerpt)

Computer support for the journal publication assignment is primarily in the form of e-mail. Students use e-mail to submit query letters, communicate acceptance and rejection decisions, submit drafts, editorial comments, set meetings, and other intra- and inter-group communications. E-mail is also used to submit group progress reports to the instructor and to receive feedback, memos, and class agenda from the instructor. Some students use the Internet to discover journal prospecti—including graphics for journal covers, classroom project ideas, and educational research.

2. Case Problems Assignment

The graduate learning activity—referred to as the Case Problems Assignment—requires collaborative conceptual mapping, problem-identification, and problem-solving. The case problems assignment is the primary task given to students enrolled in a graduate course called "Alternative Views of Learning" which enrolls approximately 25 students per term. The course is part of a graduate program in Instructional Systems.

The learning activity begins with the development of cognitive maps. Each week, learning groups met outside of class to discuss articles they have read and to find relations among key terms generated by students from their reading. Using appropriate software in a network environment, each group is responsible for constructing a cognitive map of their combined understanding that reflects relations among terms. In doing this, each group enters definitions of terms and descriptions of links among terms. The cognitive maps are used by students to identify, define, and recommend solutions to authentic problems in the field of instructional systems design.

By mid-semester, after considerable social negotiation has resulted in fairly complete cognitve maps, each learning group begins applying its conceptual understandings to an authentic case problem. Some problems are identified by the instructor, who is aware of cases in schools, companies, banks, hospitals, and museums that present particular challenges to conventional approaches and might be amenable to analysis by this class. Other case problems are identified by the students themselves, most of whom work part or full time in some sort of training or education capacity. Once the problems have been identified, in consultation with the client, learning groups use their cognitive maps to help define the problem (and sub-problems) represented by the case and to identify relevant literature likely to be helpful in generating a solution. The goal for each learning group is to develop a set of recommendations that, if implemented, may solve the problem identified in the case. Students are also to provide a rationale for their recommendations that is grounded in the literature read during the course. The report of each group is submitted to the instructor and to the client.

Computer support for the case problems assignment includes concept mapping software used in a networked environment to support collaboration among group members as they construct cognitive maps.

E-mail is also used is to facilitate communication among groups members and with the instructor in ways similar to those described in the journal publication assignment above.

3. A Theoretical Placement of the Assignments

The assignments were designed to foster active learning through student-centered instruction (see McCown, Driscoll, & Roop, in press). Student-centered approaches define the teacher as a "guide on the side" rather than a "sage on the stage" (Johnson & Johnson, 1994). Many student-centered teaching approaches are therefore consistent with constructivist views of learning (Prawat, 1992). There are three benchmarks of constructivism as it is applied to learning (Driscoll, 1994, Marshall, 1992). One constructivist benchmark is that social negotiation is essential to learning. Both assignments clearly rely on social negotiation among learners. For example, the journal publication assignment requires each "editorial board" to produce a prospectus while the case problems assignment requires intense negotiation in the construction of the group's cognitive map.

Another benchmark is that learning is best done in "real-life" environments, complete with the ill-defined problems characteristic of every day situations. In can be argued that the journal publication assignment is not a "real-life" task for aspiring teachers. The nature of the articles generated, however, are action plans for their future classrooms and are often placed by students in their professional portfolios in anticipation of job interviews. The case problems assignment, based on extant problems in the client market served by instructional systems designers and resulting in a report to actual clients, is a highly authentic.

A third benchmark is that ideas and concepts should be learned in diverse ways. The journal publication assignment is one of several learning activities assessed in the context of the educational psychology course. The case problems assignment requires the application of a number of skills in order to complete the task.

The assignments are instances of cooperative learning in that they call for students to be teamed together to attain certain goals (Kagan, 1989; Slavin, 1991). Successful cooperative learning groups show positive interdependence among participants (Johnson & Johnson, 1994; Stevens & Slavin, 1995). Positive interdependence exists when students perceive that their individual fates are linked to the fates of others in the group (Johnson, Johnson, & Smith, 1991). The evaluation of the journal publicaiton assignment holds learners accountable for the quality of the products generated by other learners. The case problems assignment yields a jointly constructed cognitive map and a jointly produced report.

Cooperative learning techniques require teachers to place themselves in an entirely different role than do teacher-centered techniques such as lecturing. To some degree teachers share authority with students over the knowledge students gain. As students become more responsible for their own learning, teachers and students become collaborators, sharing responsibility for determining what is to be learned (Bruffee, 1993). The issue of who determines what is to be learned has been used to distinguish cooperative learning from collaborative learning (Haring-Smith, 1993, 1994a, 1994b). One approach to collaborative learning is called teaching for understanding (Talbert & McLaughlin, 1993). This approach is based on three principles: that knowledge is constructed; that the teacher is a guide, a collaborator in the construction of student knowledge; and that the classroom is a learning community that supports its members. Translated into classroom practice, these principles mean that sometimes topics are generated by students rather than presented by the teacher (Perkins, 1993). Although both assignments are fairly structured in terms of the process by which they are completed, learners have considerable latitude in selecting the substance of their products. For example, in the journal publication assignment, learners select the classroom project they will descibe in their "articles" and in the case problems assignment, learners identify their own clients and the problem they will address for that client.

4. Results and Research

Although comments of our students on course evaluations support the efficacy of the assignments, additional data will be sought. The assignments have evolved to a point where we feel confident in their form and content and are beginning to collect data to demonstrate empirically their effectiveness. What has been clear from the outset, however, is that the assignments have generated considerable effort on the part of students and a clear improvement in the quality of written products in the courses where they are usedConsider that after completing the journal publication assignment last year, a group of undergraduates have formed an editorial board, issued a prospectus and a call for papers and intend to publish the first issue of a jounral they call The Experiential Learner this fall as hard copy. Plans call for the journal to become electronic in the Spring of 1996.

We are confident that efforts to demonstrate the effectiveness of these assignments will be successful. However, one an important question to answer is, What are the effects of audience on performance? In both assignments, people other than the instructor are in receipt of the product. In the case of the journal publication assignment, practicing teachers read the journal issues. Clients read the reports generated by graduate students in the case problems assignment. Do students work harder or more effectively when the audience includes people other thn the instructor? Does audience contribute to the effectiveness authentic assessments? Does the nature of the audience interact with locus of student motivation? We look forward to answering such questions.

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