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ONLINE TEACHING: PURPOSE AND METHODS

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Abstract. Education is changing. In a time when demographic, economic, political, and pedagogical reasons are causing a greater number of adults to seek access to larger amounts of quality education in post-secondary settings, research into the characteristics of those settings becomes important. The design as well as delivery of online courses differs from traditional education. Through a combination of survey research conducted by the author, and a review of literature regarding online teaching, this article places online teaching in the larger context of technology-mediated learning and an educational framework of transforming students into self-directed, life-long learners. Examples from the text of the survey responses are given and summaries are made of the main teaching styles used by online teachers: discussion, collaboration, authentic learning activities, and self-reflection/self-assessment. Teachers value these purposes and methods that the online classroom serves as a catalyst in helping to define.

How we shape and engineer the technology, tools, organization of knowledge, and virtual communities on the expanding Internet information infrastructure will directly affect the potential productivity, roles, and equity of opportunity of young people in the near and distant future, and thereby will affect the kind of society into which we evolve ([Hunter and Richards, 1996](#)).

Recent technological advances have increased the access and decreased the cost of information. Combined with trends in demographic, political and economic forces, and changing emphases in teaching and learning ([Dede, 1990](#)), distance education is enjoying a resurgence of interest across all levels of education. Distance education and distributed learning environments use a number of different communication channels, for example, print, teleconferencing, computer-conferencing and fax. One important application

of computer-mediated communication in distance education is its use in the online classroom. This article combines survey research I have conducted involving online, post-secondary education, and a review of selected literature in the field of online teaching and learning within a context of the purposes and aims of education and the changing roles/functions of teachers, learners and educational institutions.

Education is Changing

For perhaps as long as there has been a formal educational system there have been attempts to reform education. Reform efforts usually represent a different model to be used for instruction, often reflecting some new educational insights. Debates about educational reform tend to be impassioned, intense, and repetitive ([Christensen, Garvin, and Sweet, 1991](#)). For the past couple decades, two camps carrying on a debate have been the more traditional, teacher-centered models of instruction versus the active learning approach. While the teacher-centered approach dominates modern education, the learner-centered approach is not new—dating back to Aristotle, Plato, Rousseau, Locke, Thomas Jefferson, John Dewey ([1910](#), [1966](#), [1968](#)), [Alfred North Whitehead \(1929\)](#), and Jean Piaget ([Joyce and Weil, 1996](#)). While the methods described here as used and valued by online teachers may not be unique, they do go against tradition.

I don't know if using computers and emerging technologies in education should be called reform. It may, however, be useful to think how these tools could transform various aspects of the educational environment to include more of what we now know about teaching and learning.

Changing Roles are Transforming the Classroom

With the emergence of 2-way technologies such as teleconferencing, computer-mediated communication, and the web, the image of the independent distant learner is changing ([Garrison, 1993](#)). Rather than a teacher-centered focus on transferring knowledge from expert to novice, the goals of education and the demographics/lifestyles of students are converging to make necessary the transforming of students to self-directed, life-long learners as they construct meaning, both individually and socially. As the skills and knowledge of the student change, [Renner \(1993\)](#) states that so does the role of the teacher:

a "dependent" student..., lacking relevant knowledge, skills, and experience, looks for explicit directions of what to do and how to do it and responds well to demonstrations, informal lectures, and supervised practice. At the other end of the spectrum, "self-directed" students. . . are keen and capable of setting their own goals and standards, with or without help from experts. The appropriate teacher function here is that of consultant and resource person. Problems arise. . . when a chosen teaching style does not match learners' readiness. (p. 6)

Teachers are changing their teaching styles "to be more responsive to how students learn best" ([Magner, 1996](#), p. A13) These teaching methods are labor-intensive for the faculty and demanding for the students, with professors saying they rely less on extensive lecturing and more on small-group learning, group projects, and computer-aided instruction. Of course, this is true of online teaching as well. As one online teacher stated:

This course is probably one of the most challenging classes that I have ever taught. It keeps me thinking and digging constantly as we (the students and myself) interact together. They do not hesitate to post questions at all hours of the day and night and check frequently for my response. I have finally said that I will not respond to any questions between 12:00 a.m. to 7:00 a.m. Some of these kids never sleep! I know that the students are learning based on what I hear and see when they leave this class. I receive reports back from principals, colleagues, etc. indicating that the 'content' has been covered and much more. The course evaluations are excellent. Not because I am a good teacher, but because they are provided the opportunity to truly learn.

The shifting roles that are prevalent in online classrooms pose many challenges to students and teachers. Instructors must often coordinate groups of students, intervene at critical points in new and different ways than in the past, diagnose individual learning problems, and provide the right balance of feedback and ambiguity for students. At the same time, students must take responsibility for their learning, in many cases learn collaborative skills in addition to the individual learning strategies they are most accustomed to, and hone their self-disciplinary energy.

What Do We Value?

Often I have been asked by teachers, "Why should I go online in my teaching?" My response is, "First, tell me what you think teaching and learning should look like, then I will respond to your question." Depending on what the individual tells me, I may say he/she should not use online technology. But if

the person thinks teaching and learning should emphasize such things as the following, my advice is to consider how technology can help her or him with their educational goals: creating an environment for sharing experiences, involvement, teamwork and collaboration; self-assessment or self-reflection; fostering authentic learning activities such as projects, problem-solving, or inquiry; civic responsibility; or if there are access issues demanding distributed/distance education ([Berge, 1997b](#)). Employers are also putting a higher value than ever before on the ability of employees to solve more complex and ill-defined problems. So, the focus in training and education is away from teachers as experts, away from learning facts and knowledge that are wrong or at least obsolete by the time a graduate needs to use them, toward approaches that focus on learning and the learner.

These New Roles Are Appropriate

The goals of many teachers, online or not, include such things as helping students develop an increased interest in several subjects, in increasing learning generally, higher self-confidence, increased social process skills, the ability to work in a democratic group environment, and a sense of their own abilities. In an environment containing decreasing levels of structure and higher levels of dialog that fosters trust, respect for a variety of viewpoints, flexibility, and risk-taking, students can take over responsibility for their own learning and become less dependent on direct instruction from the teacher. Through such processes as application, analysis, synthesis, and evaluation, more powerful ways of knowing are created, new questions are discovered, and significant learning within each student is fostered -- that is, significant teaching occurs.

In the not too distant past, groups of university educators could teach students all they needed to know for their job in life. If that were still the case, efficiency and quick transfer of skills and knowledge would usually be of most importance. To the extent it is realized that we cannot possibly teach students all they will need to know, curriculum-based goals for education become less important as time continues.

Online Teaching Can Help Achieve Today's Goals

If I observe people using a specific method or performing an activity in a certain way, chances are great that they hold complementary beliefs and

attitudes regarding how to solve their problems or perform their duties. For instance, if I go to the swimming pool, I ought not be surprised to find swimmers. And if I go to the lecture hall, I ought not be surprised to find lecturers and an audience--teachers who believe that by expositing they will effect a transfer of knowledge.

When I examine online classrooms in distance education, where teachers use interactive technologies (i.e., technologies capable of 2-way communication such as web-based conferencing), I ought not be surprised to find teachers who believe that interaction with and among students is a valuable method for fostering learning. It is highly probable that these same teachers would use the methods, strategies, and activities that foster interaction, whether teaching a course completely online, in a mixed mode of online and face-to-face, or solely face-to-face. If online teachers did not believe these methods to be best under the conditions which they teach, I assume they would choose to use computer-assisted instruction on the Web, a video or audio tape, print, or some other technology characterized by one-way communication as their sole or primary delivery technology at a distance.

My Place, My Pace

Accessibility is also barrier that technology can help overcome. In the past, professors could say, "students wanting an education can come to me at the university." Likewise, trainers have used a system of gathering students into a central location. Both professors and trainers, using this mass production model, would pace the instruction, with little regard for learning. Today, students place value on part-time study, and study when and where convenient to each of them. Add to this business managers who can no longer afford to have employees leave for days or a week or two at a time for training at a central location. The training must go to the students, and arrive just-in-time. For these and other reasons, demographics and competition won't allow instructors and teachers to insist on "my place at my pace" ([Berge, in press](#)). What is needed is education at a distance, or alternatively a model of distributed or decentralized learning.

Characteristics of Teaching Styles in the Online Classroom

The survey responses reported below give examples of how to achieve the goals mentioned above. The characteristics of online teaching become important in educators' efforts to systematically improve their online teaching. My purpose in conducting a survey and follow-up included capturing a snapshot of online teaching today, to describe the activities, methods and strategies used by some online instructors in their day-to-day teaching ([Berge, 1997a](#); [Berge, 1996](#)). "Online instruction" is defined as limited to computer-mediated online instruction, as opposed to audio or video/TV. Additionally, I limited response to classroom instruction in which the course interaction is conducted completely online, or significantly online (i.e., where at minimum 50% of the graded part of the course is online). While survey results cited here pertain directly to higher education, most of the background and assumptions apply to K-12, training in corporations, and professional development of adult learners.

In general, the online teachers I surveyed^{1 2}, ([Berge, 1997a](#)) seemed to value involved learners ([Grow, 1991](#)) who often showed a lot of self-direction. They also valued, as a goal of education, the development of students as lifelong learners, and viewed learning as an active, constructive and co-constructive process that depends on rich contexts, cooperation and teamwork. While there were notable exceptions, the majority of these online teachers' made statements that appear to follow the description [Mercer, Jordan and Miller \(1994\)](#) gave of constructivistic instruction:

Constructivistic instruction is based on the premise that the student is a naturally active learner who constructs new personalized knowledge via linking prior knowledge and new knowledge. Authentic knowledge provides the content for the instructional process, which involves an interactive and collaborative dialogue between the teacher and the student. The teacher orchestrates the instruction within the student's "zone of proximal development" (Vygotsky, 1978) by providing assistance when the learner seems inefficient or frustrated. This zone refers to the instructional area between where the learner has independence (mastery) and what can be achieved with competent assistance (potential). Constructivists differ concerning the degree of help the teacher should provide; however, some common instructional practices of the teacher include modeling cognitive processes, providing guided instruction, encouraging reflection about thinking, giving feedback, and encouraging transfer. The teacher focuses on guiding the student to achieve success and become a self-regulated strategic learner. (p. 292)

The range of student-teacher interactions was very broad including teachers who stated students should discover new knowledge without explicit instruction from the teacher, to others who engaged in very direct instruction. Still, the most common teaching styles used by the online teachers responding to the survey I conducted were discussion, collaborative learning, authentic learning activities, and self-reflection/self-assessment.

Discussion-Based Learning

Without a doubt, discussion is the primary method of teaching online for these instructors ([Berge, 1997a](#)). Of the forty-two teachers responding to the survey, only one stated he did not use discussion in his online class. Discussion used in the practice of teaching and learning is essentially social interaction that is "a systematic way of constructing a context for learning from the knowledge and experience of students, rather than exclusively from the canons of disciplinary knowledge" ([Christensen, Garvin, and Sweet, 1991](#), p. xiv). Discussion should not be confused with questioning (i.e., recitation). A primary difference between recitation and discussion is the teacher's willingness to encourage students to assume discussion leadership responsibility ([Kindsvatter, Wilen, and Ishler, 1996](#)). The emphases in discussion are on flexibility, drawing out responses, discussing problems, depth of conversation and sharing and supporting learners. As [Jacobsen, Eggen, and Kauchak \(1993\)](#) explain, discussion strategies "are less effective than an expository or guided discovery procedure for teaching specific content because they are typically less teacher-directed and more time consuming" (p. 207). Of course, there are other important goals exist in a classroom that go beyond or are different from acquiring specific content.

[Bellon, Bellon, and Blank, \(1992\)](#), [Brookfield \(1990\)](#), and [Jacobsen, Eggen, and Kauchak, \(1993\)](#) list a number of different intellectual, emotional and social purposes for discussion:

- engage students in exploring a diversity of perspectives
- assist students in discovering new perspectives
- emphasize the complexity and ambiguity of issues, topics, or themes
- help students recognize the assumptions underlying many of their habitual ideas and behaviors
- increase intellectual agility
- encourage active listening
- increase students' affective connections to a topic
- show students that they are heard, that their voices matter, and that their experiences are valued

- help develop a sense of group identity
- practice for when students leave school, given social groups, businesses, families, and churches all negotiate decisions through discussion
- interaction with group members can lead to the development of higher level cognitive skills³ in content area learning
- problem-solving is another high-level cognitive skill that is fostered by discussion
- develop leadership skills
- summarize group opinion
- arrive at a consensus
- become an active listener
- appropriately handle controversy
- develop paraphrasing skills
- develop self-directed learning skills
- develop analysis, synthesis, and evaluative skills

There probably are other that could be listed, such as developing analysis, synthesis, and evaluative skills and developing self-directed learning skills. Still, the responses from online teachers are replete with examples of these goals. One online teacher responding to my survey summarized his online discussion saying:

I think that the major purpose of our discussion is to: explore complex issues from a diversity of perspectives drawing on the experiences of the individual participants and exposing them to the views of others... The flavor of the dialog that we get is more like a barber shop or neighborhood coffee shop. There is a lot of chewing on issues from a lot of different angles. The difference from a barber shop or coffee house is that people do draw on formal sources as well as their own experiences. So, people talk about things from literature-based as well as experiential perspectives. Maybe it's more like the informal bull sessions that develop at conferences.

Authentic Learning Activities

[Means and Olson \(1994\)](#) point out that early efforts to introduce technology in schools failed to have significant effects because those attempts were based on the wrong model of teaching with technology.⁴ These products were Computer Aided Instruction (CAI) focusing on drill and practice in basic skills or materials that covered a very narrow slice of a subject domain and often didn't match with teacher preferences. Today's reform efforts foster a different style of learning. This can be characterized by attempts to move classrooms

away from conventional didactic instructional approaches in which teachers do most of the talking. Students are instead challenged with problem-solving of complex, authentic tasks that involve "lengthy, multidisciplinary projects, cooperative learning groups, flexible scheduling, and authentic assessments" (p. 16). Over the past decade and a half, it should be noted that there has been a significant increased use of authentic performance and the development of student portfolios in schools generally, and to some degree, the accompanying use of authentic assessment and portfolio assessment for formal student assessments ([Suen and Parkes, 1996](#)).

In such instances, technology is a valuable tool in supporting students and teachers knowledge creation efforts when they are gathering, manipulating, and presenting information. Usually the authentic activities are done just at the time they are needed to solve a problem or complete a project rather than in a preset, teacher-decided curriculum sequence ([Hunter and Richards, 1996](#)). [Suen and Parkes \(1996\)](#) describe the authentic performance from an assessment perspective:

The major goal of authentic performance assessment is to assess the ability to apply knowledge to solve real-life problems. Baker, O'Neil, and Linn (1993) listed the following six characteristics of performance assessment: It 1) uses open-ended tasks; 2) focuses on higher order skills; 3) employs context sensitive strategies; 4) often uses complex problems requiring several types of performance and significant student time; 5) consists of either individual or group performance; and 6) may involve a significant degree of student choice. These types of assessment, at least insofar as a general description is concerned, approach the learner as more active. The student must take considerable control over the assessment through planning and applying knowledge in perhaps new and different ways. Proponents of these methods claim, too, that they reach more complex cognitive skills (Wiggins, 1989).

Another important aspects of learning that is more in-depth rather than covering many topics superficially is that the participants in these more challenging tasks complete them for reasons beyond earning a grade ([Means and Olson, 1994](#)). As a way of providing for an environment rich in authentic experiences and co-experiences, the online teachers responding to the survey I conducted focused on inquiry, problem-solving, and project- or case-based teaching.

Inquiry Teaching

[Joyce and Weil \(1996\)](#) describe inquiry:

Inquiry is stimulated by confrontation with a problem, and knowledge results from the inquiry. The social process enhances inquiry and is itself studied and improved. The heart of group investigation lies in its formulation of inquiry. According to Thelen (1960), the concern of inquiry is "to initiate and supervise the processes of giving attention to something; of interacting with and being stimulated by other people, whether in person or through their writing; and of reflection and reorganization of concepts and attitudes as shown in arriving at conclusions, identifying new investigations to be undertaken, taking action and turning out a better product (p. 85)." (Joyce and Weil, 1996, p. 80)

Active practice is a key ingredient for effective online instruction through varying activities, novelty, and the sharing of experience (the instructors, but as importantly, the various experiences of peers). Emphasis is on transferring the learning of skills, knowledge and attitudes to the work environment. The prerequisite knowledge of class participants may be important to many of these instructors, but mostly for advising purposes rather than instructional purposes.

Inquiry teaching is a strategy in which students are faced with a content-related problem. The student, or group of students, "generate hypotheses or tentative solutions to the problem, gather data relevant to these hypotheses, and evaluate these data to arrive at a conclusion" ([Jacobsen, Eggen, & Kauchak, 1993](#), p. 212). [Joyce and Weil \(1996\)](#) warn that activities are not inquiry when the teacher generates the problem, formulates the solutions, and draws conclusions, or when the outcomes/products become more important than the process used in obtaining them.

The model espoused by these instructors responding to the survey was that of information-rich learning. They valued providing support so that students can move at their own pace. Templates and other learning aids are sometimes used, but rather than spending their time in detailed lesson plans or developing learning aids, these teachers spent their time easing the students' path to accessing as many resources and human resources as possible, (e.g., teaching assistants, computer help desk staff and technicians).

Emphases are on making explicit the expectations and goals of the course, actively promoting an environment that is full of trust, fun, convenience, and access (for both students and instructor). There is a conscious recognition that learning is a life-long process. Thirty-three of the 42 teachers (78.6%) used an inquiry approach, with all but 6 using group inquiry at least part of the time.

Problem-based Learning

Effective problem solvers use information processing skills. They monitor their progress as they implement the steps of their problem-solving plan. Flexibility is a hallmark in that effective problem-solvers change when they see they are moving down a dead-end path, or that the activities they are involved with will not lead to an adequate solution. [Bellon et al. \(1992\)](#) suggest problem-solvers:

First, they develop an awareness that the problem exists. Second, they attempt to understand or comprehend the problem. Many problem solvers use pictures, charts, graphs, or concrete objects to represent the problem. Third, they may gather and organize relevant information. At this point several ways to solve the problem (solution paths) are identified. After careful consideration, one path is chosen and pursued. (p. 407)

But facilitating problem-solving of students is not the end state desired by at least some teachers. As one respondent noted, "as students become more proficient, they move from problem solving to problem formulation and solving." In fact, half the online teachers in the survey (n = 21, 50%) mentioned use of problems in their teaching.

Project- or Case-based Learning

Project-based or case-based learning is a method used to simulate as closely as possible an authentic activity. In some cases, projects go beyond close simulation and are indeed authentic, (i.e., not compromised because of the formal educational context). Over half, (n = 23, 54.8%) of the respondents to the survey mentioned they use projects-based or case-based activities, or both, in their teaching.

Collaborative Learning Activities

Collaboration, or the collaborative process, in learning means many different things to different people. By collaboration I mean the joint intellectual effort by students, or students and teacher(s) together, with the emphasis on the students' exploration of the course goals rather than the teacher's presentation or delivery of course materials and content ([Smith and MacGregor, 1992](#)). *Collaboration* is a philosophy whose underlying premise is consensus building through cooperation by group members ([Panitz, n.d.](#)). It is the process of *shared creation* with two or more individuals with complementary skills interacting to create a shared understanding that none had previously possessed or could have come to on their own" ([Schrage, 1995, p. 40](#)).

Most important to this discussion is to realize that not all problem-solving groups are collaborative groups. [Bellon, et. al. \(1992\)](#) list four types of problem-solving groups: cooperative, discovery, inquiry, and critical thinking. Probably the concept most confused with collaborative learning is "cooperative learning." A distinction is drawn in that cooperative learning is only one teaching strategy that may result in improved collaborative skills ([Borich, 1996](#)). There are various (structured) team-oriented cooperative learning activities that have been used and studied, (e.g., Student Teams-Achievement Divisions (STAD), Teams-Games-Tournaments (TGT), Jigsaw II) ([Johnson and Johnson, 1991](#); [Slavin, 1993](#)). I think it is important to note that of the forty-two teachers responding to the survey, not one mentioned using a cooperative learning activity. I would speculate this is either because it is too difficult to manage these types of activities online or, as [Greg Kreasley \(1996\)](#) pointed out to me, these types of structured, teacher-centered attempts at motivation become unnecessary in the very natural, authentic learning environment online.

[Tinzmann, Jones, Fennimore, Bakker, Fine, and Pierce \(1990\)](#) identified four general characteristics of collaborative classrooms: shared knowledge among teachers and students, shared authority among teachers and students, teachers as mediators, and heterogeneous groupings of students. Essentially, collaborative teachers also value and build upon the knowledge, personal experiences, language, strategies, and culture that students bring to the learning situation. These teachers invite students to set specific goals within the framework of what is being taught, provide options for activities and assignments that capture different students interests and goals, and encourage students to assess what they learn. The teacher as mediator adjusts the level of information and support to maximize the ability to take responsibility for learning. Critical to the collaborative classroom is that students are not segregated according to perceived ability, achievement, interests, or any other characteristic so that all students are not deprived of the opportunities to learn from and with each other.

The work of several researchers form the basis for collaborative learning. The theoretical work of Lev [Vygotsky \(1978\)](#) has perhaps the most influence. The research on cooperative learning, dialog, and scaffolding strongly support cooperative approaches to learning compared to competitive or individual approaches. The collaborative activities that were reported by the respondents to the survey I conducted this past year were: group inquiry, peer review of student work, or peer support and sharing concerning learning activities. Of the forty-one online teachers for whom I have complete data

involving collaborative approaches, only three (7.3%) did not use one of these types of collaboration ([Berge, 1997c](#)).

Group Inquiry

Inquiry is a generic term applied to methods that "engage students' critical-thinking skills to analyze and solve problems in a systematic fashion" ([Kindsvatter, Wilen, and Ishler, 1996](#), p. 258). Students involved in inquiry begin with recognition of a content-relevant problem that serves as the focus for research activities. Then students generate hypotheses, evaluate the data, and arrive at a conclusion ([Jacobsen, Eggen, and Kauchak, 1993](#)).

Placing inquiry in the collaborative context, [Joyce and Weil \(1996\)](#) describe group investigation as the direct development of a community of learners by leading students to defining problems, exploring multiple perspectives on a problem, and working together to master skills, knowledge and attitudes along with developing simultaneously their social competence. They go on to identify instructional and social effects of group investigation:

- respect for dignity of all and commitment to pluralism
- independence as a learner
- commitment to social inquiry
- interpersonal warmth and affiliation
- constructionist view of knowledge
- disciplined inquiry
- effective group process and governance

Peer Learning

Of the 42 online teachers responding to the survey, five of the teachers (11.9%) did not answer. Out of the 38 who did respond regarding this aspect of their teaching, 34 (89.5%) stated that some form of peer learning activity (i.e., peer review of others work, peer support, or peers sharing in some significant way) was occurring in their classrooms. Further, the data suggests that an inquiry approach or lack of it, is not a determining factor regarding the occurrence of peer learning in the online classroom. Of the eight online teachers reported here as not using peer activities, four of whom said they did not use peer learning methods and four whom did not say one way or the other, all eight reported using some form of inquiry as a teaching strategy.

One teacher stated the following about peer review:

The manner in which I conduct online classes is to submit to the main forum a lecture series followed by discussion questions related to the "lecture". I ask that students submit their reflections to the main forum for review and comment by the other classmates. In this manner, everybody gets to express an opinion and to have their opinions critiqued. These are adult students so the critiques are generally very value-laden remarks

Another online English and composition teacher stated:

Eight writing assignments reinforce all that the students have learned formally, and thirty pages of private journal entries or electronic mail to peers reinforce experiences informally. Individual and collaborative works are reflected in these.

Although not a primary goal or the content of her online class, one teacher stated when asked about interaction regarding peer support:

There was considerable peer support. Students posted difficulties and heard back from others having the same problems and eventually solutions started to culminate. I would say this was a combination of all of the above, support, inquiry, and problem solving. There was also considerable critical analysis of information postings.

Finally, another teacher describes peer support in her class in part by saying:

I have been truly impressed that peer support develops both in and out of class that I never achieved in traditional classrooms. And my students (mostly nurses and women) learn to disagree and debate in healthier fashion than I was able to achieve in the traditional classroom. To be honest, I wonder how much my own style and personality influence the success of this process. I'm a raging introvert (although you wouldn't know it by my learned behaviors). I am more comfortable when I can carefully think through what I want to say and then post it. And I tolerate a lot of disagreement and criticism when I can sit quietly and reflect on it without having to tune in to others around me. I'm not sure if this is the same experience for extroverts?

Self-Reflective Learning

If one considers teacher-centered activities compared with learner-centered methods, self-reflection and self-evaluation may be the ultimate learner-centered activity. Eleven of the 42 teachers (26.2%) responding to this survey

mentioned self-reflection as a goal/activity in their online teaching. One teacher writes:

During the first two weeks of class, students focus on learning the tools first, and their first writing assignment is reflective of this. The personal narrative "Where I Went and What I Saw When I Got There" allows students to think/write about their learning experiences on the Web and to reinforce and to reflect back on those experiences later on in the semester.

Another teacher said:

I integrate reflective assignments into the course designs. Learning episodes (shared online and privately) as well as interactive journals are effective means to make links between past/present and future.

Conclusions

Education is changing. Teachers need to be concerned with that which adds value to students' learning. By value I mean adding benefits or reducing costs of education. The goals of most of the teachers in this study, what these teachers value, include developing students with an increased interest in various subjects or in learning generally, higher self-confidence, increased social process skills working in a democratic group environment, and a better self-evaluation of their abilities. In an environment that contains low structure and high dialogue, that fosters trust, respect for a variety of viewpoints, flexibility, and risk-taking, students will assume responsibility for their learning and become less dependent on direct instruction from the teacher. The design as well as the methods of instruction for the goals above are different than those found in traditional in-person classrooms. Through such processes as application, analysis, synthesis, evaluation, and attention given directly to these experiences, more powerful ways of knowing are created, new questions are discovered, and significant learning within each student is fostered--an indication that significant teaching has occurred. Technology-enhanced learning and teaching can help.

Endnotes

1. Methodology: Over a period of several years, I accumulated a file of persons who taught, or who I suspected taught online courses. A cover letter and survey was electronically sent to each of the 812 persons whose email

addresses were in my file. That initial contact solicited 174 replies, a response rate of 21%.

One hundred eleven (111) respondents said they did not meet the criteria I had established for online teaching. Sixty-three (63) persons completed the survey and returned it. Of those, 19 did not meet the criteria--either they were not using computer systems when teaching the online portion of their course (e.g., TV), or the graded part of at least one of the courses each person taught, was not significantly online. Two of these 44 teachers taught in middle or secondary education. I have based the results reported here on the responses of the 42 post-secondary teachers, who teach in a formal setting. Responses to the initial survey were received between April 16 and July 10, 1996, with subsequent follow-up questions and responses through the summer.

2. Limitations of the survey: This survey dealt with only a small segment of subject areas. The small, convenience sample made no attempt to randomly select subjects nor are the subjects necessarily representative of all online, college teachers. Therefore, while there were commonalties among these 42 teachers, these findings are not generalizable to other courses, teachers, or even within the formal, post-secondary setting. The self-reported data was not tested. No attempt was made to verify what these teachers said was actually what they did (e.g., through observations, or interviews with learners in their courses). Additionally, my own biases regarding online teaching, educational philosophy, and subjectivity when coding and categorizing responses may have influenced the data analyses. Readers interested in more about these limitations can review the survey methodology literature where these various limitations have been thoroughly discussed (see e.g., [Alreck and Settle, 1995](#); [Dillman, 1978](#); [Rossi, Wright and Anderson, 1983](#)).

3. By higher order thinking I mean what Newmann ([1988](#), cited in [Bellon, Bellon, and Blank, 1992](#), p. 395) defined as the concept:

Lower order thinking demands only routine, mechanistic application of previously acquired knowledge; for example, repetitive exercise such as listing information previously memorized, inserting numbers into previously learned formulae, or applying the rules for footnote format in a research paper. In contrast, higher order thinking challenges the student to interpret, analyze, or manipulate information, because a question to be answered or a problem to be solved cannot be resolved through the routine application of previously learned knowledge. (p. 5)

4. For additional analyses regarding reasons for early efforts failing see [Cuban, 1986](#); [Hurly and Hlynka, 1982](#); and Kell, et. al., 1990.

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