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Heidi Schweizer

Marquette University, heidi.schweizer@marquette.edu

Joan Whipp

Marquette University, joan.whipp@marquette.edu

Carrienne H. Hayslett

Marquette University

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Recommended Citation

Schweizer, Heidi; Whipp, Joan; and Hayslett, Carrienne H., "Quality Control in Online Courses: Using a Social Constructivist Framework" (2002). *College of Education Faculty Research and Publications*. 70. https://epublications.marquette.edu/edu_fac/70

Quality Control in Online Courses: Using a Social Constructivist Framework

Heidi Schweizer

*Center for Electronic Learning, School of Education
Marquette University
Milwaukee, WI*

Joan Whipp

*Educational Policy and Leadership, School of Education
Marquette University
Milwaukee, WI*

Carrienne Hayslett

*Educational Policy and Leadership, School of Education
Marquette University
Milwaukee, WI*

There has recently been increased interest in the quality of online courses. Faculty from the School of Education at Marquette University suggest using social constructivist theories in the design and development of online courses and in the training and pedagogy of online instructors to ensure quality in online courses. Quality can be designed into online courses by focusing on complex tasks, using multiple perspectives, establishing a

learning community, encouraging the social negotiation of meaning and providing assistance for learners at various levels. While good design can go a long way to ensure quality in online courses, the quality of the instructor is equally critical. Training instructors to establish a supportive climate, provide constructive feedback, and ask critical and probing questions leads to high quality online instruction.

Despite the explosive growth of online courses in higher education in recent years from 753,640 students enrolled in 1994-95 to 1.6 million in 1997-98 (U.S. Department of Education, 1999), questions about the quality of these courses are only beginning to surface (American Federation of Teachers, 2000; Carnevale, 2000; Robbin, 2000). Much of the popular and practitioner-oriented literature on online courses emphasizes their virtues: quick and remote access to information and instruction, convenience, speed of communication, instant feedback, potential for interactivity, ability to reach large audiences, and cost savings for students (Eamon, 1999; Hantula; 1998; Koch & Gobell, 1999; Pychyl, Clarke & Abarbanel, 1999; Vodanovich & Piotrowski, 1999). This literature tends to minimize difficulties in routinely providing high quality courses or assessing whether students are learning from them (Hara & Kling, 2000; Neuman, 1995).

Research studies have done little more to illuminate the issue of quality in online education because of flawed methodology (Dillon & Gabbard, 1998). Several studies focus on the effectiveness of online courses compared to traditional, face-to-face instruction (Robbin, 2000); however, often these studies rely on standardized tests as the outcome measure, basing assessment of quality on a mere acquisition of facts (Brower & Klay, 2000). Other studies only focus on learner satisfaction, most often determined by student self-reports in end-of-course evaluations.

Further clouding any comprehensive assessment of online course quality are the widely disparate methods, media, and terms used to deliver and talk about these courses. Any review of literature on online learning will call up closely related but dissimilar reports that interchange the terms "distance learning," "online learning," "Web-based learning," "e-learning," and older terms like "computer-mediated conferencing," "computer-assisted learning," and "correspondence courses." Platforms for delivery of partial or completely online courses can vary greatly and include asynchronous course management systems, synchronous Webcasts,

videoconferencing, Web pages, instructional videos, listservs, and/or Web-based chat rooms. Furthermore, visions of learning and instruction guiding these courses can range widely among behaviorist, information-processing, constructivist, and socially oriented models (Koschmann, 1996). It is important, then, in any discussion of quality in distance education to clarify precisely what type of learning at a distance is being discussed and what principles of learning and teaching are guiding design and delivery.

Theoretical Framework for Online Course Design and Delivery

For the past five years we have taught online staff development and graduate education courses in technology, curriculum planning, learning theories, teacher research, and teacher leadership to more than 600 practicing teachers. Typically, these courses meet face-to-face for the first and last sessions; the rest are conducted online in a course management system developed by either Lotus Learning Space or BlackBoard. In both the design and delivery of these courses, we have tried "to create the kind of learning community that can arise in a good graduate seminar" (Hiltz, 1998, p. 2).

To do this, we find that social constructivist theories (Rogoff, 1990; Salomon & Perkins, 1998; Wertsch, Del Rio, & Alvarez, 1995; Vygotsky, 1978), with their focus on complex and authentic activities, social interaction, intentional learning communities, and guided assistance to learners, offer frameworks for course design, teaching, and training of faculty to teach online. In particular these principles guide our work:

1. *Complex environment and authentic tasks.* Learning must take place in rich environments that engage learners in real-world problems and activities rather than artificial exercises (Duffy & Cunningham, 1996). Students need to look at problems in complex ways and use a variety of means to represent their understanding.
2. *Social negotiation of meaning.* What counts as knowledge and how one thinks about and expresses ideas about that knowledge come from interactions with others in a variety of learning communities, both formal (academic classrooms,

3. scholarly disciplines) and informal (social groups sharing a common interest, families, neighborhoods). Putnam and Borko (2000) suggest that these communities “provide the cognitive tools—ideas, theories, and concepts—that individuals adopt as their own and use to make sense of their experience” (p. 5). Through extended dialogue and collective problem solving with others who have both greater and lesser expertise than they do, learners move from what they currently know to more complex understandings (Brown, Collins, & Duguid, 1989; Salomon & Perkins, 1998).
4. *Intentional learning communities*. Building an intentional learning community where there is a shared sense of purpose around the generation and sharing of new knowledge is critical to more formal learning environments. The learners are in control, continually diagnosing their own learning needs and identifying what they will do next. Learning is collective as students jointly create a product rather than simply summarize their individual understandings (Scardamalia & Bereiter, 1996).
5. *Assistance for learners at varying zones of proximal development*. Instead of imparting blocks of knowledge to passive learners, the teacher creates an environment where teachers and learners can jointly construct knowledge and become more self-aware and self-directed in their learning process. Through modeling and feedback, both teachers and learners nudge each other to higher levels of understanding.

In this article, we demonstrate how we are using these social constructivist principles for both design and delivery of an online graduate course, Teacher as Leader. The course focuses on leadership development for practicing teachers who want to remain in the classroom but also assume leadership roles in their schools.

Design of Online Courses

Complex Environment and Authentic Tasks

We begin the course design process with lengthy conversations about what we want our students to know and be able to do when they complete the course. Essential to this conversation is how the

course content can be connected in ways that are meaningful, challenging, and relevant to the teachers who take our courses. Our conversations then focus on the development of clear learning outcomes and authentic assessments that set rigorous expectations. For example, in the Teacher as Leader course we expected the learners to:

1. Describe and critically evaluate the leadership roles they have or may potentially have in the classroom, team, school, or organization.
2. Demonstrate basic knowledge of human relation principles, communication skills, and motivational theory as applied to leadership in several educational settings.
3. Apply the skills of an effective leader to a collaborative group process that results in meaningful change in one's school, district, or organization.

To assess these outcomes, we ask students to participate in weekly discussions that focus on the analysis of readings and multimedia presentations and include applying this information to their own experiences in schools. Additional assessments include collaborative analyses of leadership dilemma case studies and a major leadership project. Students initiate, collaborate, and lead others in the planning and initial implementation of a project that can potentially lead to a significant instructional or organizational change in their schools.

When designing online learning environments, we constantly consider ways to provide a variety of options for students to access information, interact with the information, and finally represent the knowledge they have constructed. Technology in general and the online environment in particular provide unique and ever-expanding opportunities to engage the learner in a learning process that honors multiple forms of intelligence—abstract, textual, visual, musical, social, kinesthetic, and interpersonal. As designers and teachers of online courses, we have learned to incorporate articles, Web sites, guest lectures, textbooks, videos, audio clips, lecture notes, CD-ROMs, music, peer reviews/reactions, interviews, projects, animation, discussions, reflective journals, PowerPoint presentations, desktop publishing, simulations, case studies, and interactive games into our

online courses resulting in a rich online learning environment. An example of an assignment in Teacher as Leader that allows for multiple modes of expression is found in Figure 1.

Establishing a Learning Community

Online discussions and projects. We see the students in the online classroom as a collection of creative “authors” and project teams. Early in the course, student project teams are given the opportunity to name themselves, which they often do with nicknames like Techno Chics, Gamma Quadrant, or Midnighters. Each week students engage in online discussions or projects that focus on problems or situations that they may be facing as teacher leaders in their schools or organizations. They use a variety of course materials to look at those problems or situations from multiple perspectives. At the end of many discussions a student on each team synthesizes the group discussion and “publishes” it in the online discussion room so that other teams can read and react to it. Team projects are also made public in the discussion room and become an ongoing record of the joint knowledge building in the learning community.

Small discussion groups and teams. We divide classes of 15-20 into smaller discussion groups to promote a common belief and experience that “six” minds jointly constructing meaning really are better than one. We encourage each member of the group to take on a specific role in the group, and we also encourage group members to alternate these roles from week to week. These roles can include discussion leader, summarizer, devil’s advocate, technician, encourager, and muse. The discussion leader begins the week’s discussion and periodically poses questions to the group. The summarizer synthesizes highlights of the group discussion at the end of the week and publishes it in the discussion room. The devil’s advocate continually raises questions, challenges assumptions, and poses counter-positions. The technician offers support to those experiencing technical problems. The encourager monitors participation and sends a supportive e-mail to anyone not participating. The muse offers inspiration to the group, whether it be with humor, quotations, or new resources.

Social Negotiation of Meaning

Activities and discussion prompts. We carefully design question prompts, assignments, and activities to create an environment that actively engages students to collectively construct meaning. Through document sharing, asynchronous discussions, and attachments, students debate issues, assume positions and counter-positions, role play, persuade others to take a position, invent solutions to problems and assess the efficacy of those solutions. For example, in *Teacher as Leader* we ask students to debate whether management and leadership are the same thing, to take on the roles of specific types of leaders, to face the challenge of trying to reach a consensus by role playing, and to suggest solutions to problems faced by a school in one of the course readings. We ask students to look critically at relevant literature on topics such as equitable funding in education, academic freedom versus accountability and centralization, and the value of multicultural education. Students assess theoretical and research literature on these issues and then draw connections between readings and their own experiences.

Discussion rubric. It is difficult to design and harder to sustain an environment in which every member of the online learning community is held accountable for advancing the dialogue. To reach this goal, we require participation in the learning community, basing a portion of the course grade on active involvement in the class. Furthermore, to scaffold these discussions beyond simple chat, we use a discussion rubric (Figure 2). The rubric offers the online student specific criteria that address not only the frequency and timeliness of contributions but also the quality of his or her contributions to the discussions. We have discussed this rubric with our students and revised it over time. As we have developed more specific guidelines for online discussions, we have found that the quality of those discussions has improved.

Assisting Learners at Varying Zones of Proximal Development

Throughout our work with online courses, we have surveyed our students about the challenges they face in this learning environment and what kinds of supports they need. In addition to the invariable technical challenges in any online course, our students tell us that procrastination and time management issues, isolation, and writing

anxiety pose the greatest problems. To support our students in these areas of need, we have built several features into our course design.

Supports for time management. We provide schedules, calendars, and time completion charts; these tools seem to assist many students to organize their time and maintain regular participation in the course. We set consistent deadlines for initial discussion input and replies to others during weekly discussions; these deadlines seem to support interactivity and encourage greater depth and breadth in discussions.

Supports to reduce isolation and increase interactivity. We build into all courses an announcement or welcome page for instructors to easily highlight special information and with options for using pictures, jokes, and anecdotes that personalize the course for students. We find that changing this page frequently keeps students appropriately updated and helps to maintain student interest. We include a private portfolio for each student, where instructors can provide constructive feedback about his or her work and notification of current grade standing in the class. In each of our courses we also create a Cyber Cafe as an informal area where students can pose questions, share ideas and resources, or initiate conversations.

Supports to reduce writing anxiety. For all course topics, we provide optional resources such as Web sites, articles, or audio clips that can encourage students with less experience or knowledge to build understanding and write about more difficult topics. For example, in Teacher as Leader, we ask students to debate the differences between management and leadership. To assist them in their discussion, we include optional readings, Web sites, and case studies for those without management or leadership experience. We also include design templates and model projects for major assignments that assist in guiding and encouraging less experienced or more reluctant students to aim for higher levels of quality in their work.

Training and Pedagogy

Good design can contribute greatly to the quality of an online course; however, the quality of the instruction is equally critical (Berge & Collins, 1995; Palloff & Pratt, 1999; White & Weight, 2000). For this reason, we assure that all online instructors have time to practice and reflect on effective online teaching practices.

Before each semester, we conduct a four-day on-campus seminar for new and returning online instructors. In addition, we offer online instructors an optional four-week online course, "Facilitating Your Online Classroom." By asking them to participate in asynchronous discussions, submit assignments, and harness the power of distance technologies, this course encourages instructors to put themselves in the place of online learners and to think about how to teach them.

Again, guided by social constructivist principles, both instructor training experiences focus largely on what instructors need to do to create a complex online learning environment where students actively engage each other in challenging discussions and joint projects and where they are also challenged to become more self-aware and directed in their learning process. In particular, we have found that online instructors need to (a) establish and nurture a collaborative and supportive climate and (b) use probing questions and modeling to scaffold discussions to deeper and more complex levels.

Establishing and Nurturing a Collaborative and Supportive Climate

In an environment where students can initially feel uncertain or isolated, it is critical that online teachers make the environment an inviting one. In our training sessions, we help them create personal Web pages in the course so that they can immediately establish a presence and connection with their students. On the Web page, instructors include a picture; background information about experience, interests, family, and hobbies; and links to other personal information. Figure 3 shows one instructor's Web page created for the Teacher as Leader course.

We use models from previous courses to help each instructor create a welcome letter that is sent out to students before class begins and a "welcome" Web page that becomes the first page students see when they enter the course. We show instructors how they can use color, graphics, and animation on this Web page to create an invitational climate for learning and how they can change this page on a weekly basis. Again, using samples of interactions between teachers and students in previous online courses, we work with new instructors on practicing ways to set an approachable and encouraging tone in their interactions through a friendly, informal writing style that

addresses students by first names and that acknowledges student strengths:

Tina, I want to chime in to support your candor, but I also want to thank you and others who are doing this—for making a direct connection between your experience and specific concepts in the reading. It seems as though we're getting particularly "rich" discussions from people's willingness to share personal experiences that compliment the readings, and people's willingness to voice divergent ideas and personal experiences that contradict the readings. I, personally, find both interesting and illuminating.

Helen, thank you for your honesty and openness. You should not feel any embarrassment at all. You have shown a great deal of courage by coming back to the second face-to-face "help" session and also getting this journal assignment done. Please contact the tech people or me as soon as you feel you might be confused about something so that you don't have to feel frustrated when things don't go the way you anticipated.

Prompt and helpful feedback in an online environment is particularly important because otherwise students can feel alone or ignored. For this reason, we ask that instructors respond to students within forty-eight hours of each posting and to be more specific in their feedback than "nice job" or "I really like what you are saying." Feedback needs to reflect that "students need to know what they know in order to focus their learning. Students need help in assessing existing knowledge and performance, in addition to having opportunities to get suggestions for improvement. They need to reflect on what they have learned, what they still need to learn, and how to evaluate the learning process" (White & Weight, 2000, p. 167).

In the training sessions we offer instructors a variety of additional materials and strategies that they can use to set and maintain a climate that encourages student collaboration and the development of a learning community: icebreaker activities, team building and cooperative learning activities, personal Web pages for students, and private e-mail and phone calls to individual students who need extra support or encouragement, especially during the first few weeks of class.

Using Probing Questions and Modeling

In the design process, we focus on creating question prompts, assignments, and activities that provoke thoughtful and social construction of new knowledge. A provocative prompt is important, but unless it is followed up with prompt and helpful feedback, a learning community is not likely to develop. An important part of providing meaningful feedback includes critical questioning that can help to continually move the conversation to deeper and richer levels and also model for students the critical thinking, social negotiation of ideas, and self-reflection important to the learning process. Using transcripts of actual online discussions, we spend time in these training sessions helping instructors practice posing questions that:

1. *challenge assumptions or sources of information* (What have you seen to support your belief that students learn by doing? Have you noticed a difference in students' understanding or performance on assessments when you use traditional versus experiential learning?)
2. *ask students to ground claims in theory* (Can you relate your comments, "I sometimes don't bring everything I know to the table, sometimes I don't know as much as I think I do, and sometimes I assume that everyone understands" to the discussion of communication styles in our text?)
3. *move students toward self-evaluation and reflection* (You say, "Hmmm, looks like I don't think much about inborn characteristics or authority as sources of leadership abilities." How does this response compare with the class as a whole? What does it say about your own leadership experiences?)
4. *look for further clarification, examples, or more detail* (I'm not following your connection between biblical stereotypes and the Civil Rights Movement. Would you please explain and describe it further? I found your comment about a problem-solver being a person who doesn't start controversy interesting. It seems as though you see problem-solvers as people who do not raise issues that need to be solved, but only apply themselves to issues raised by others. Is that a fair translation of your statement?)

5. *offer contrasting perspectives and counter-positions on issues* (If power comes from the interdependence of a group, isn't it equally likely for anyone in the group to have power? How come it's not uncommon for some people to consistently have power positions and some people to consistently not have power positions if power arises out of group interdependence?)
6. *challenge students to consider solutions* (Talk about direct pressure on dissenters! Your example really illustrates one way a leader can almost guarantee groupthink. Has anyone ever effectively voiced an opposing opinion around this person in your school? If so, how did they do it and what happened?)
7. *ask students to apply what they are learning to a real-life situation* (Do you think this novel idea has any hope of being adopted in education? If it were your job to get parents, other teachers, administrators, and politicians to support this kind of education, do you think you could do it? What might be some obstacles? What arguments might you use to overcome those obstacles?)

We also spend some time with the instructors discussing how they can take advantage of different levels of expertise in their online class and accommodate a wide range of cognitive needs. They can encourage more knowledgeable and experienced students to offer examples, metaphors, and life experiences that will scaffold the understanding of more complex concepts for those less knowledgeable and experienced. Instructors can also assign "expert" or "devil's advocate" roles early in the course to certain students so that they can share with others their knowledge and experiences and model the kind of critical questioning that supports social negotiation of meaning.

Conclusion

Interactive, self-directed, intentional, and complex learning environments set rigorous and quality online courses apart from those courses that require not much more than rote learning in impersonal, isolated, and simplistic electronic settings. In our experience, social constructivist theories have offered useful frameworks for the design and teaching of such courses. However, these theories need to be more widely used to frame rigorous and systematic studies of online

learning and teaching that move beyond the measurement of simple rote learning tasks or learner satisfaction. Some questions that could guide future research include:

1. What are the effects of online discussions, joint projects, or other course activities on individual and collective thinking processes?
2. What is the nature and effect of teacher and/or student modeling and feedback in online discussions?
3. What elements of design and delivery best scaffold individual and/or collective construction of knowledge in the online environment?
4. How do student-to-student or teacher-to-student interactions propel discussions to deeper or more complex levels of thinking?
5. What does "social negotiation of meaning" look like in the online environment? What best supports it?
6. What are effective ways to evaluate levels of interaction in an online course?
7. What strategies for ongoing support do online instructors need to nurture and sustain a more complex learning environment?
8. What strategies help members of an online learning community (individually and collectively) become more self-aware and self-directed in their learning process?

Designing and teaching online courses that are grounded in social constructivist theories certainly begin to address concerns raised about quality in the online learning environment. However, only as we study our own practices, continually testing the effectiveness of what we do, will we be able to uncover the richness of the online environment and its potential to provide powerful learning opportunities to an ever-expanding audience.

Authors

Heidi Schweizer is Assistant Professor of Education and Director, Center for Electronic Learning, Marquette University, School of

Education, P.O. Box 1881, Milwaukee, WI 53201 (E-mail: Heidi.Schweizer@marquette.edu).

Joan Whipp is Assistant Professor of Education and Co-Chair, Educational Policy and Leadership, Marquette University, School of Education, P.O. Box 1881, Milwaukee, WI 53201 (E-mail: Joan.Whipp@marquette.edu).

Carrienne Hayslett is a doctoral student, Educational Policy and Leadership, Marquette University, School of Education, P.O. Box 1881, Milwaukee, WI 53201 (E-mail: Carrienne.Hayslett@marquette.edu).

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Appendix

Figure 1: Online assignment.

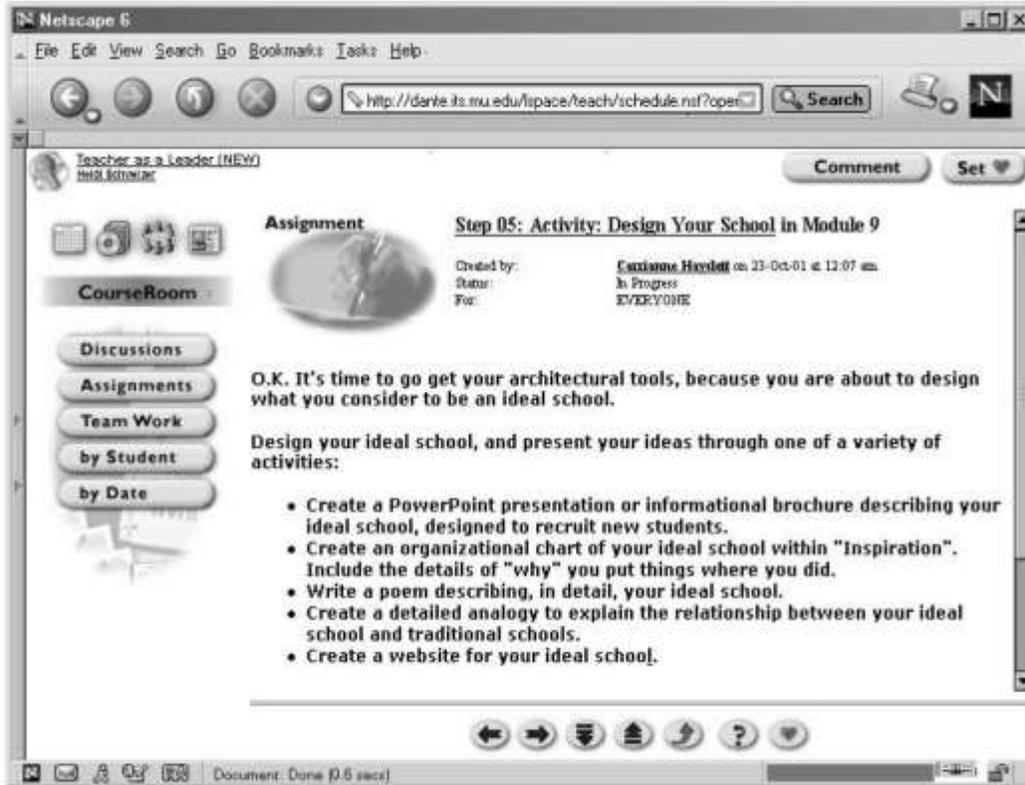


Figure 2: Rubric for asynchronous discussion.

Discussion Rubric

Frequency of Discussion Responses

- __ (5) interacts at least three times with instructor and/or other students
- __ (3) interacts at least twice with instructor and/or students
- __ (1) interacts once with either the instructor and/or other students

Timeliness

- __ (5) All three entries submitted on time (1st by Wednesday; remaining by Saturday)
- __ (3) All submitted but some submitted late
- __ (1) All submitted late or at least one not submitted

Evidence of Critical Thinking

- __ (5) Takes a fully developed critical position; analyzes, synthesizes, or evaluates information or responses of others
- __ (3) Some evidence of analysis, synthesis, or evaluation but not fully developed
- __ (1) Summarizes information or response(s) of others

Development of Ideas

- __ (5) Well-developed (at least a full paragraph) and introduces new ideas; uses specific details from readings/experience as support
- __ (3) Some weakness in development/use of supporting detail but introduces new idea
- __ (1) Very weak development/use of supporting detail; does not add to discussion

Interactivity

- __ (5) Makes specific reference to one or more postings and presents counter-positions to issue raised by others
- __ (3) Makes some reference to one or more postings of others
- __ (1) Makes no reference to other postings

Figure 3: Personal Web page for an instructor

