

The Potential of Jigsaw Role Playing to Promote the Social Construction of Knowledge in an Online Graduate Education Course

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Many online courses fail to promote the active construction of student knowledge or camaraderie among student peers. Accordingly, online course designers and instructors are challenged to promote purposeful peer student dialogue and establish a sense of belonging where all learners perceive themselves as stakeholders in the course community. Online role playing is not a common activity, and electronically networked jigsaw role plays appear to be rarer still. In this article, we describe the transition of a face-to-face jigsaw role-play exercise to a primarily asynchronous graduate-level online course in education. Data collected from various sources suggest that students enjoyed online role play and valued it as a learning experience. We conclude with reflections, lessons learned, and future plans as we continue to explore the challenges and benefits of online role-play in graduate level online courses that serve adult professionals.

Recent years have seen a massive proliferation of higher education courses on the World Wide Web (Blumenstyk, 1998; Lewis, Snow, Farris, & Levin, 1999). Some of these courses are offered in conjunction with wholly Internet-based degree or certificate programs, others as particular courses supporting otherwise traditional classroom-centered programs, and still others as stand-alone courses provided through continuing education units or as academic outreach not tied to a formal academic strand of study. Some scholars have observed that Web-based courses lack the interpersonal instructional support considered so critical to reflective learning (e.g., Noble, 1998). For example, a live Internet “chat” is deemed to be no substitute

for the give-and-take of a classroom debate. Weigel (2002) suggests that some of the anti-online rationales offered by postsecondary faculty mask a fear of pressure to transform long-standing face-to-face teaching practice.

Notwithstanding the improving technical capacities of user-friendly, intuitively operated online learning platforms, many courses fail to incorporate protocols that capitalize on them for the active construction of student knowledge. Better-designed courses include multiple assignments and activities that promote asynchronous reflection and synchronous conversation. Other effective courses offer a variety of media that support diverse learning styles. It is therefore incumbent on course designers and instructors to devise deliberate techniques for ensuring interaction between them and their students, to promote purposeful peer student dialogue, and to establish a sense of belonging where all learners perceive themselves as stakeholders in the online course community.

In this spirit, the designers and teachers of a new graduate-level Web-based course, *Theory & Research in Curriculum*, deliberately embedded several community-building tactics into the course. *Theory & Research in Curriculum* was designed, authored, and offered on the *Intralearn* online course platform. Although this article focuses primarily on the challenges of an online jigsaw-type role play piloted in spring 2002 and implemented as a graded assignment in fall 2002, other community-building tactics are outlined as backdrop to the main discussion.

Theory & Research in Curriculum is a graduate professional education course, the online version of which is offered as a core requirement in the University of Massachusetts Lowell's recently launched online master's program in educational administration. The principal course goal is for students to examine the application of curricular theory and research to educational transformation in leadership and instruction. Since this course focuses on the leadership implications of theoretical and philosophical research about curriculum, the subject matter can be dry and dense whether taught online or face-to-face. When the online role play was pilot-tested in spring 2002, the course served 19 students (12 women, 7 men) between late January and early May 2002. Most students were midcareer K-12 educators representing states from Maine to Virginia. A smaller number represented the for-profit sector, enrolling in the course to explore the prospect of formal matriculation study in a graduate professional education program. For the following fall, when the role play was offered as an assessed assignment, the course comprised 17 students (6 women and 11 men), with representation from several states and one foreign country (Brazil). Fourteen reported their main professions as K-12 teaching or administration, with three representing higher education, clinical health care, or public social service.

Teaching techniques designed for learners to connect theory with authentic school-centered situations not only enhance conceptual mastery, but also promote meaning making in the context of students' own professional experience. Because most of the students entered the course as working professionals, one of the best sources of authentic familiarity rested within their own collective professional experience and expertise. This reality prompted teaching activities early in the course designed to produce a sense of community among the participants, especially since Theory & Research in Curriculum was offered to students who never encountered one another in person.

Despite recent advances in network bandwidth and computing power, most online courses depend primarily on text-based communication and display of content (Tello, 2002). Communication typically occurs in synchronous chat areas, via asynchronous issue-centered threaded discussions, or by private e-mail. Tools for such communication are typically embedded inside the learning platform. Theory & Research in Curriculum was no exception. To overcome and capitalize on these platform attributes, this course incorporated the following customized components to help establish a course community in which students would feel comfortable interacting with their peers and the instructors.

AN EXPANDED, ILLUSTRATED STUDENT ROSTER

Distributed courses generate unique community building challenges. Upon enrollment, *Intralearn* courses provide a default student roster consisting of each student's name, hot-linked e-mail address, and hometown. For example, when dealing with different geographical locations and cultures, learners benefit by sharing personal information about themselves so their peers can associate human identities with their online communications (Klobas & Haddow, 2000). Since the instructional team considered the student data presented by default in the standard course platform to be much too sparse to promote mutual acquaintance, an early course assignment required students to submit more detailed biographical data via a hot-linked browser-based form. Students were asked to list their primary professional and recreational interests and provide more detailed contact information than a simple e-mail address. Most students also capitalized on the option to file attach a personal photo. This information was posted on a separate course page.

THE "ICEBREAKER" ASSIGNMENT

Based on these online biographies, students were required to undertake a simple "get to know you" assignment within the first 2 weeks of the course.

John Cowan, a professor known for his work at the British Open University on student-centered online learning, has advised that everything an instructor truly values should be assessed as part of the overall calculation of student performance (personal communication, June 10, 2001). Therefore, 20% of the course grade was attributed to the completion of this assignment, even though it was not directly ascribed to the course content. Students were required to review the online student biographies and begin a dialogue as described below.

- Select any student peer from the course based his or her professional status and/or recreational interest.
- Initiate communication with that person in the initial threaded discussion forum for the course.
- Tell him or her the thought that immediately came to mind when reviewing his or her declared professional and recreational interests.
- Ask him or her questions about both a recreational and a professional interest.
- Respond to any questions posed by a student peer.

MULTIMEDIA INSTRUCTOR/TUTOR BIOGRAPHIES

Under the introductory unit of the course outline, the instructor and tutors posted short biographical sketches, illustrated by photos and self-opening audio messages introducing the general course aim and content.

WEEKLY AUDIO/VIDEO GREETINGS

At the beginning of every course week, the instructor posted brief audio greetings, prerecorded as WAV files (subsequently reconfigured either to streaming, Real Media audio or video files), introducing the current content topic and placing it in the context of the whole course.

INSTITUTIONAL BACKGROUND

Online learning models in higher education appear to have entered a shakedown period, with some ambitious initiatives of the late 1990s shutting down and new ventures starting up (Boettcher, 2002). Postsecondary developments might be categorized as “upstart” versus “establishment sanctioned.” The “upstart” category includes colleges and universities that, though not necessarily new, have traditionally operated outside the circle of academic establishment. For years, academic traditionalists have derided

programs such as these, stigmatizing them (unfairly for the most part) as “diploma mills” (Noble, 1998). The Western Governors University and the University of Phoenix are well-known exemplars.

Within the academic establishment, Stanford University offers a full-scale online graduate program in electrical engineering. Taking a different approach to networked learning, in June 2001 the Massachusetts Institute of Technology announced it will make nearly all of its course materials available free of charge over the Internet through its OpenCourseWare project (Massachusetts Institute of Technology, 2001). Penn State’s online course offerings include computer-networked programs in a variety of disciplines. Students may pursue an online master’s in business administration at Duke University. Comprehensive degree programs are underway in the University of California and North Carolina systems and other major American universities. These well-established institutions are among the early leaders within traditional academe to offer formal education via networked computing.

Burbules and Callister (2000) discuss the pressures confronting postsecondary education from the shifting technological landscape and the concomitant globalization of teaching and learning. They decry the counterproductive tone of an unenlightening debate that, to date, has pitted the “boosters” against the “rejectionists” of online learning. While acknowledging the damage to good teaching that excessive instructional commercialization can wreak, they also posit that effective online designs supported by good teaching offer possibilities not available in traditional face-to-face teaching (e.g., entry to a global range of resources, 24/7 interaction within a purposeful learning community, convenience of access, opportunity for reflective dialogue.) Burbules and Callister suggest that rather than asking “which way of teaching is better?” the higher education community should be asking “which way of teaching is better *for whom?*” Noting that increasing numbers of students are clamoring for online learning opportunities, they urge postsecondary faculty to take charge of the external technological realities that threaten to sweep them under a tidal wave of inexorable change.

Ample evidence has shown a positive relationship between active student-faculty interaction and student satisfaction and retention in undergraduate collegiate settings (Kuh & Hu, 2001; Tinto, 1987). In online course environments, however, the research is less compelling. In a recent doctoral study, Tello (2002) found a positive correlation between certain types of faculty interaction and positive student attitudes toward their Web-based courses and a corresponding correlation between positive attitudes and student retention. Tello’s sample population comprised graduate and undergraduate students across several fully online courses in a variety of disciplines. Although cause-and-effect in these relationships is not conclusively proven, experienced online practitioner-researchers (Woods & Ebersole, 2003; Jonassen, 1996; Kearsley & Schneiderman, 1999) call

persuasively for high levels of in-course interaction and active student engagement to promote learner construction of authentic knowledge.

Brookfield and Preskill (1999) describe the jigsaw method of cooperative learning in this way:

Teachers and students begin by generating a short list of topics they would like to study. Each student becomes an “expert” on one of these topics . . . in discussion with other students who are experts on the same topics. . . . Once all the members of each group have mastered their chosen subject, [they] form a second set of small groups, containing one representative from each of the expert groups. (p. 141)

Lindquist (1997) distinguishes between passive (e.g., traditional lectures) and active (e.g., activities that engage learners dynamically in cooperative problem-solving) learning strategies. Jigsaw method learning is effectuated by asking learners to interact with one another for predetermined tasks and time periods in multiple phases. In the earliest phase, learning groups become experts on particular issues by working consensually within their assigned roles. In later phases, individuals are reconfigured into different task groups across roles so that each individual contributes the expertise developed during the earlier phase to the solution of a problem requiring the diverse expertise of representatives from the various Phase 1 groups.

CHARACTERISTICS AND BENEFITS OF ROLE PLAY

Properly orchestrated, role plays offer the essence of socially constructed, authentically applied, collaborative knowledge construction. The use of simulations, role plays and other student-centered collaboration is hardly new to teaching. Online role playing, however, is less common, and electronically networked jigsaw role plays appear to be rarer still. According to Ciardiello (1993) and Tannenbaum (1996), the purposes of collaborative educational role playing include the learner promotion of (a) critical thinking capacities, (b) cooperative skills for learning and interpersonal interaction, (c) reflection on theory as it applies to practice, (d) construction and testing of personal theories in problem-based contexts, (e) exploration of the relationship between substantive and symbolic questions, and (f) understanding of diverse perspectives on an issue.

Successful role playing requires careful design and execution if learner benefits are to be optimized. Garry Shirts (1976, 2002) recommends that any such activity, especially if it carries high-stakes assessment consequences, requires careful planning and field-testing prior to “prime time” use in practice. The design of a simulation should account for divergent thinking

and the interpersonal “messiness” that usually characterizes real life human interaction. Although the overall objectives should be clear, overstructuring a simulation can straightjacket students, obstructing the critical argumentation that the simulation was created to promote.

Shirts also suggests that the procedural ground rules for a simulation (e.g., timely communication, interpersonal civility) be clearly articulated at the outset of the activity. A good role play provides enough time for reflection, divergent thinking, self-correction, and the collective resolution of dilemmas. The student roles should be credibly authentic, promoting participant ownership in the assigned role rather than the professional roles and attitudes pursued in the players’ daily professional lives. According to Linser, Naidu, and Ip (1999), students need explicit, clear directions about what they need to do.

Although role plays typically put the participants in potentially confrontational situations, their purpose is not to hone combat skills, but to resolve problems. Thus, an effectively designed role play eschews zero-sum competition and promotes negotiation keyed to the best solution for the situation described in the scenario. To negotiate effectively, students must be briefed properly on the facts of the matter or instructed to research relevant facts for themselves as part of the role assignment.

Alpha and beta field-testing of a simulation is highly desirable; they are essential if students are to be assessed on the results of their participation. Because simulation scenarios tend to be relatively “soft” in the social sciences (including education), assessment of student role play performance should not rely solely on quantitative measures. Shirts (2002) suggests qualitative measures, such as third-party analyses of the process text and the final conclusions of the role players by experts in the field addressed by the simulation.

REPORTS FROM THE FIELD

A few noteworthy descriptions of online interactive simulations appear in the literature. At the University of Twente in the Netherlands, Holsbrink-Engels (1997) describes a computer-based role play designed for interpersonal skills training. Using *HyperCard* software on older-generation (pre-1997) Macintosh computers, an experimental group of students addressed problems regarding the interpersonal skills needed to deliver bad news. Different screens presented information and tools appropriate for each of six role play stages. The activity was incorporated into a conventional classroom course. Holsbrink-Engels indicates that the experimental group of role players outperformed their control group peers on subject knowledge posttests and that the role-playing students favorably received the program.

Ip and Linser (2001) describe another Web-based simulation designed for political science at Australia’s University of Melbourne. Employing network-

capable role play software called *Fablusi*, this computer-networked role play was designed as a supplement to a face-to-face learning environment. Activities were designed to reinforce, and be reinforced by, the course lectures and tutorials. Set in the Kosovo crisis of 1999, the simulation required students to conduct relevant background research on the facts and theory behind their collaborative work and to construct new theory on a base of extant knowledge. Various communication tools were incorporated into the overall simulation scheme to facilitate purposeful student dialogue. Based on student response to a summative questionnaire, the researchers conclude that this Web-based project advanced active, student-centered communication and collaboration and transformed student research techniques from an individualistic to a collaborative mode. Based on end-of-term student evaluations, this simulation was judged useful for developing content understanding and an atmosphere of interactive, dynamic peer communication.

Kent Portney of Tufts University uses the ultra-high-bandwidth capacities of Internet2 to supervise a simulation entitled Crime and Punishment (Bruenjes, Siccama, & LeBaron, 2003). This project examines the question of variability in criminal sentencing by isolating the factors involved in the sentencing process. In this simulation, students are exposed to video representations of courtroom sentencing after which they input their responses into a database. Thanks to Internet2, several users may access the videos simultaneously, and the database allows the instructor to respond to student input graphically as well as textually. Portney intends to create a massively robust database by making it available to teaching colleagues at and beyond his own institution. Pleased with the learning results of this simulation, Portney uses it to link theory with practical issues and to remedy student misconceptions about the matters under study. Portney believes that the design and execution of simulations of this magnitude and technical sophistication require external sponsorship. His project was initially launched with the help of a U.S. Department of Education FIPSE grant.

Each account appears to indicate that these initiatives were sufficiently successful to be considered viable vehicles for the construction of knowledge and skill through cooperative online role playing.

THE ONLINE THEORY & RESEARCH IN CURRICULUM JIGSAW ROLE PLAY

BACKGROUND

Burbules and Callister (2000) promote educational use of the Internet as “working space” where shared knowledge is “co-constructed” in a com-

munity of learners rather than “delivered” from a sole instructional source. The online Theory & Research in Curriculum role play was designed to promote such co-construction in an environment requiring high levels of multimodal student interaction. Although the simulation sought engagement in an authentic professional, institutional problem, the scenario was contrived to symbolize reality. As a jigsaw role play, it added a second step to the more straightforward one-stage model. The initial teams worked toward consensus within their role groups; new teams were then formed to confront and negotiate solutions among the roles whose stakes were established in the first stage of activity.

Beyond the more comprehensive aims of role playing presented earlier, the particular purposes of this activity were to (a) promote the application of course theory to certain realities of schooling; (b) promote the construction of knowledge through peer interaction; (c) address a general, common problem from diverse problem-solving perspectives; (d) tackle issues in modes demanding consensus building and confrontation; (e) promote a sense of community among the student role players; (f) promote student awareness of the possibilities of peer interaction in online learning; and (g) promote enjoyment of the course. For members of the instructional team, an additional purpose was to test the viability of a jigsaw role-playing model as a learning tool in a fully online learning environment.

The interactive, online student role play was initially piloted over 2 weeks midway through the 14-week *Theory & Research in Curriculum* course in spring 2002. The pilot effort was an ungraded, optional activity in which 9 of 19 students opted to participate. We fine-tuned the role play as a result of the pilot effort and offered it as a voluntary graded course exercise (with an alternate assignment available) in fall 2002. Participation was made voluntary for two primary reasons:

1. Although similar role plays had been carried out successfully several times in the face-to-face version of the Theory & Research in Curriculum course, this was the first attempt at adaptation to an online setting. It did not seem fair to base a formal student assessment on mandatory participation in such an experimental activity.
2. Mathieu, Tannenbaum, and Salas (1992) suggest that learners who voluntarily attend learning sessions react more positively and may even perform better than learners who are required to attend. Once committed to the role play, it was imperative that all participants follow through on every aspect of their role assignments. The instructor believed that voluntary engagement would better ensure the necessary student follow-through than would mandated participation.

THE OVERALL ROLE PLAY SCENARIO

Students were asked to imagine that one of them (a K–12 teacher, perhaps) had just been invited by the district superintendent to become associate superintendent for curriculum. The superintendent had invited this teacher as an “inside the system” candidate because of her or his demonstrated commitment to teaching and a stellar reputation as a local and regional curriculum leader (whether or not this invitation followed an open, widely broadcast search process was left unstated). Within 4 years, the appointee would be held accountable for transforming the district’s curriculum from one that, for want of a better word, might be described as “perennialist” to one that reflected emerging state and national policy, produced improved standardized test results, and systematically anchored curriculum transformation on research and theory. Some of the pitfalls involved in the acceptance of this invitation were included in the scenario description.

ROLE ASSIGNMENTS

Each member of the role-playing team assumed one of the following roles to be carried through both stages of the simulation: (a) associate superintendent for curriculum—designate (i.e., the individual to whom the superintendent’s job offer was made); (b) superintendent who made the offer; or (c) president of the local teacher’s union, who may or may not welcome the prospect of this new emphasis on curricular transformation based on theory and research.

ONLINE IMPLEMENTATION

The pilot of the online version of the role play took place in spring 2002. Students were asked to complete all steps of Stages 1 and 2 over a 2-week period. In fall 2002, Stages 1 and 2 were spread out over a 3-week period. Students used private e-mail, chat, and threaded discussion within their respective teams to interact with peers and to make decisions. They used an “outside-the-team” general-course threaded discussion forum to post the results of their deliberations to the whole class. More specifically, role players used the following course tools:

1. “Inside the team” e-mail to schedule a mutually convenient chat time to “talk” about the issues related to their role(s) and to exchange resources (e.g., file attachments, web links, etc.) among themselves. (“Inside the team” tools were viewable only by team members and by members of the instructional staff.)
2. “Inside the team” chat to conduct a synchronous conversation about the issues and challenges associated with each role. Team members were

urged to conduct as many chat sessions as necessary to reach consensus on their position.

3. “Inside the team” threaded discussion to post more reflective, in-depth asynchronous messages related to each role discussion. Each team was asked to select a “scribe” to keep records of the dialogue, summarize it, and post his or her concluding summary of the team’s discussion prior to making it public for the whole course.

4. Each team scribe was then asked to use the “whole-course” threaded discussion forum to post the results of the team’s deliberations for everyone in the course to read.

SETTING FOR STAGE 1 (1ST WEEK)

All individuals met in groups with other individuals assigned the same roles. Participants “met” online synchronously and asynchronously as needed to carry out a focused conversation that fulfilled the tasks described below. This stage of activity was meant to brainstorm ideas and to build team consensus in anticipation of the more confrontational Stage 2, when the players would be reshuffled into different teams negotiating across roles.

ROLE TASKS FOR STAGE 1

The individual role tasks are described below.

1. *Associate superintendent for curriculum—designate.* This role player needed to consider the three most important questions to ask the superintendent before deciding whether to accept this job offer. One of these questions was to address the job expectations regarding curriculum research and theory. Members of this team were asked to discuss the pros and cons of the job offer with the other “teachers” in the group and publish notes on the conclusions reached.

2. *Superintendent who made the offer.* This role player needed to think *not only* about what she or he expected in the way of job performance from the newly appointed associate superintendent for curriculum, *but also* the support that she or he would need in order to fulfill the job effectively. Where would the resources be secured to provide such support? Members of this team were asked to discuss these challenges with the other “superintendents” in the group and publish notes accordingly.

3. *President of the local teacher’s union.* This role player needed to think *both* about the potential dangers *and* the opportunities of his or her colleague’s new job offer, not only for the colleague, but also for the interests

of other union members. Members of this team were asked to discuss these challenges with the other “union heads” in the group and publish notes accordingly.

4. *Everybody*. All role players were asked to undertake discussions about the issues related to each role within the coming week and to report their team’s conclusions online. Within each role group, a scribe reported each team’s conclusions in the designated whole-course discussion forum.

SETTING FOR STAGE 2

At the end of the first stage, the outcomes from the three “role teams” had been reported online in a whole-course discussion thread. Role players were now placed into “negotiation teams” whose members were taken from the roles established during Stage 1. In other words, each group consisted of (a) one associate superintendent for curriculum–designate, (b) one superintendent, and (c) one president of the local teacher’s union. In their negotiation groups, role players met online synchronously and asynchronously as needed to carry out a focused conversation that fulfilled the jobs shown below.

ROLE TASKS FOR STAGE 2

Individual role tasks for Stage 2 are described below.

1. *Associate superintendent for curriculum–designate*. This role player had two primary tasks. Prior to negotiation, she or he was asked to pose the three questions that developed within the role group in the first part of this role play and indicate why these questions were deemed particularly important. After the negotiation, she or he was asked to decide whether or not to accept this new job and explain the reasons for the decision.
2. *Superintendent who has made the offer*. After having heard the questions from the associate superintendent for curriculum–designate, this role player was asked to answer the questions and explain his or her answers fully and carefully. He or she was also required to provide credible evidence that the requisite resources for success in this new appointment would be made available.
3. *President of the local teacher’s union*. This role was required to raise questions to the superintendent and give advice to the associate superintendent for curriculum–designate throughout this conversation. Then she or he was asked to give at least two important reasons for the associate superintendent for curriculum–designate either to accept or decline the superintendent’s offer.

4. *Everybody*. All players were asked to take notes on their deliberations and to identify a scribe to summarize and report the group's findings to the whole-course group.

POSTSIMULATION DISCUSSION

All students, including those who did not take part in the role play, were asked to read Stages 1 and 2 of this simulation. They were asked to monitor the resulting publicly posted discussions at the end of each stage and contribute comments about the simulation's process and substance in the whole-course threaded discussion forum. After both stages were completed, all students were asked to discuss the role play during the synchronous whole-course weekly chat session.

PERSPECTIVES ON STUDENT LEARNING FROM THE ROLE PLAY

Literature on the benefits of student cooperation in learning is rather abundant. In a digest of research and practice, Robert Stahl (1994) posits that successful cooperative learning should include the following essential conditions: (a) clear and specific student learning outcomes, (b) student "buy in" to the desired outcomes, (c) clear procedural directions for task completion, (d) heterogeneous grouping, (e) positive interdependence in the pursuit of tasks, (f) face-to-face interaction, (g) positive social interaction, (h) access to information critical to success, (i) sufficient opportunity to complete required tasks, (j) individual accountability, and (k) post hoc reflection on group behaviors and task success.

Stahl suggests that most classroom jigsaw activities do not, in fact, represent cooperative learning because they typically lack some of the conditions just mentioned. Certainly, the Theory & Research in Curriculum role play was deficient in at least one of these conditions (face-to-face interaction). Responding to Stahl's assertions, we suggest that the jigsaw method indeed encourages learner cooperation, believing that most of his conditions were fully met. Nonetheless, many improvements remain needed, not only better to adapt the role play to an online setting, but also to strengthen the procedures and substance of the simulation. This final section of the article outlines some perspectives on student learning from the role play and lessons learned by the designer/instructors.

To help understand the efficacy of this online simulation, the following data sources were consulted: (a) general student perspectives about the online Theory & Research in Curriculum course, gathered through a Web-based form designed and posted by the course instructor; (b) student evaluation of the online role play in particular, gathered through a different

Web-based evaluation form; (c) review of student activity in the role play (e.g., use of chat, discussion threads, file sharing, etc.) at various stages of the online role play activity; and (d) comments about the role play in the whole-course discussion forums and chats.

In an instructor-designed form presenting role players with 10 scaled questions about the exercise, students expressed considerable satisfaction with this assignment. The first five questions addressed the specific instructor goals for this exercise. To reiterate, the goals held for the role play were to promote:

1. the application of course theory to certain realities of schooling
2. a sense of community among the student role players
3. the social construction of knowledge through peer interaction
4. enjoyment of the course
5. student awareness of the possibilities of peer interaction in online learning

On a 5-point scale students unanimously responded with positive assessments about all five goals (*very much* or *somewhat* as distinct from *neutral*, *not much* or *not at all*).

Participant responses to the three open-ended questions generated deeper insights about the role play. For example, when asked what single thing they liked most about the exercise, several individuals focused on peer interactivity and information sharing; a smaller number cited the authenticity of the scenario and the opportunity for full immersion in the role from two different task perspectives. Asked what they liked the least, several participants felt that the simulation time frame was scheduled too tightly. Fewer lamented the absence of face-to-face contact. Fewer still suggested that the assignments should have provided a more explicit incentive for the players to compromise in the Stage 2 negotiations.

Student comments were also solicited in several of the whole-course weekly discussion threads and chat sessions. Keeping in mind that these particular student discussions lacked anonymity, comments were nonetheless frank, containing good ideas for future improvement of the simulation. The overall sense of discussion indicated that the role play was enjoyable, advanced learning, and was appropriate to the aims of the course. One student remarked in a discussion thread that the role play “helped give the course a more ‘in-class’ feel,” while another reported feeling a “sense of unity and belonging” among role players. In one postassignment chat a student wrote, “It was great to consider all of the different possibilities, all of the factors that went into the position of being a superintendent trying to head in a new direction in the district. I thought it [the role play] was very

useful.” Another opined, “[Prior to the role play] I never fully realized the complexity of the Superintendent and ASC jobs, the scope of the things they need to consider.” Students have consistently expressed curiosity about the work of their parallel teams.

Evidence of actual student knowledge construction comes from the dialogues and discussions actually undertaken by the participants. Was knowledge socially constructed? The following excerpt from two (of three) students in a Stage 1 “inside the team” superintendents’ chat suggests that it was:

Student 1: So. . . , I got a copy of the superintendent’s job description from my school today, and I figure we can use that as a basis for creating an Assistant Superintendent of Curriculum position. What do you think?

Student 2: Sounds good. I printed out several job descriptions for Assistant Superintendent of Curriculum to use as a reference as well.

Student 1: Did you have any preference about which approach to curriculum we use—behaviorist, social reconstruct, etc.?

Student 2: I understand the job description part, but I’m having trouble with the resources part.

Student 2: Are we listing the things that [as a superintendent] we can provide or are we talking about the things that ideally the person in the position would need?

Student 1: I am having some difficulty also. [Student 3, the third team member] suggested we use a turnkey curriculum, but I don’t want to make it too easy for our job candidates.

Student 2: Turnkey?

Student 1: I think some things are the things we, [as superintendents], provide. Others, they would have to provide.

Student 1: When I say turnkey, I mean an already made and printed text, or a set of texts that follow a philosophy.

Student 2: Your initial list of resources made a lot of sense. But things like community support we can’t guarantee to a job candidate.

Student 1: That is true. Maybe we just inform the . . . candidate of the atmosphere.

Student 1: Which of the philosophies do you feel you can support?

Student 2: That's a hard question. I hate picking one point of view and being married to it. I like to take the best from many views. However that may be too complicated for this task.

Student 1: What do you like from the different schools?

Student 1: Schools of thought, I mean.

Student 2: The idea of these different theories and view points is new to me, so I tend to think about the specifics of what is important to me. For example, implementing research based curriculum, using prior knowledge to activate learning. I don't know which school of thought my ideas fit best into.

Student 1: What are some of the books you like best to use in teaching?

Student 2: For math I have a book by Van deWalle?? I teach math with a developmental approach. Building on concepts. Letting the students discover patterns and algorithms.

By the same token dialogue taken from a team discussion thread during Stage 2 of the role play offers additional evidence of knowledge construction. The postings show a sequence of correspondence as the associate superintendent for curriculum-designate mulls over his union representative's counsel in deciding whether to accept the job offered him. As shown below, the associate superintendent for curriculum-designate followed his own independent judgment based on his instincts, his data, and the union representative's advice. The union's advice is considered, but not taken in its entirety. Indentations in the following communication thread show the discussion levels where the particular postings were situated in relation to other postings, presented in the same sequence as they appeared in the actual course discussion board. Some of the postings are edited for brevity.

ASC [Associate Superintendent for Curriculum] Letter (ASC designate): Nov 3 [final top-level thread in this team negotiation]

After reviewing your offer and responses to my concerns regarding this position, I am pleased to accept the offer you made me for the ASC position. I am looking forward to working closely with administrators, teachers, and parents to make this next step in the evolution of our school system a successful one.

I am pleased that you have taken the time to answer my questions fully and carefully. I understand your limitations in view of the budget difficulties, especially considering the state of the current economy. . . . I needed to

understand that the ASC office and mission is and will be a priority in our system.

In regard to support systems, this is clearly spelled out in your proposal to the School Committee. A long term plan involving teachers and principals has my full support. I greatly see the benefit in principals as instructional leaders. This is so important in a plan like this which needs not only cooperation from all involved, but also a sense of mission. I see that in this plan.

I am relieved that I will be able to hire “coaches” to fulfill many of the duties necessary for the ASC position. It is important to have not just one voice on this matter, but many, spread over all of the system. In conclusion, I am excited to be working toward a positive future in [this] system. . . . I am intrigued by the prospect of working to see the future of our system flourish.

Suggestions for ASC designate (Union head): Nov 23 [top-level thread]

Let me congratulate you on the offer of new ASC [position]. Please know that the union will support you in whatever decision you decide to make. I have spoken with the District Superintendent about the offer and the goals of the ASC position and the district. As you know, the district will be focusing the curriculum on multiple intelligences and they will be training staff almost immediately.

I did have some concerns which I expressed to the superintendent regarding your current role as a teacher. I feel it is important for you to have the opportunity to return to teaching, if the ASC position does not meet your expectations. I am still waiting for a response from the Superintendent, and will let you know what he communicates to me. The Four-Year District Improvement Plan is clear and seems to be well thought out. The only suggestion I have for you, is to investigate how evaluation of the goals will be conducted. Will the ASC be responsible for such evaluations and what will be the next step after the results are compiled? I also wanted to stress the hiring responsibility that you will have. Not only will you be responsible for filling new positions, but you will also hire teacher coaches both from inside and outside the school system. These coaches could determine the success that you have as ASC.

As ASC, you will be in a position to promote collegiality among your present school staff and the district as a whole. The district's offering of such a position, shows a level of good faith in its teachers. . . . Whatever decision you decide to make, please remember the union supports you. Please feel free to contact me with any concerns or questions you may have.

Questions for the superintendent (Union head): Oct 30 [top-level thread]

1. How much involvement will the ASC have with curricular decisions?
2. How much freedom will be involved with the ASC's role in regard to choosing curriculum?
3. Will the new ASC be able to go back to his former teaching role, if for some reason the new position does not work out?
4. Will the teacher's seniority and step rate be the same?
5. What kind of training support will be provided for the new ASC?
6. How much training will be given before the ASC becomes involved in the work itself?
7. What level of communication will the ASC have with the rest of the school staff?

Re: Questions for superintendent (Superintendent): Oct 30 [secondary-level thread]

Thank you for your questions. They are very thoughtful. I think the supporting documentation posted in the discussion board answers questions 1 and 4, so I refer you to them.

In regard to question 2 it is my firm belief that when someone makes a major career decision it should not be on a conditional basis. If [the ASC-designate] has any doubts about taking on an administrative role then he should seriously think about not making such a big step at this time. As the position the ASC is leaving will be immediately filled by a new hire there will be no position to go back to. The Personnel Director, School Board and I will be reviewing [the ASC job performance] on an annual basis so we can give [the incumbent] feedback on his progress. . . .

I would like to point out that [the ASC-designate's CV] meets most of our requirements for the position. His long relationship with other members of the school system as well as his demonstrated ability to work well with others, find common ground and move his present school in a very progressive direction tell me that [the ASC-designate's] skill set fits perfectly with our requirements. . . . Unfortunately, as the union representative you seem to be focused on and planning for [the ASC-designate's] failure. I wonder if this is the best way to support him in deciding about this wonderful career opportunity.

You raise an interesting question about the relationship between training for the job and doing the job. [The ASC-designate] has shown a keen interest in MI as a philosophy and already implemented many of its aspects in his school. We feel that his current knowledge base, which he has developed over the past few years, makes him one of the most qualified candidates to become ASC in our district. . . . Keeping up with trends in any field is an ongoing part of a professional's job. Working and learning proceed together.

I have answered your questions to the best of my ability and I hope you will decide to support [the ASC-designate] in this career move as much as the School Board and I intent [*sic*] to support him.

Re:Re:Questions for superintendent (Union head) Nov 2 [tertiary-level thread]

As union head, I feel it is my responsibility to support and protect all of my teachers. That includes [the ASC-designate]. I do not want to see [the ASC-designate] fail, nor am I setting him up for failure. I do think it is important for [the ASC-designate] to know the finality of this position and the seriousness of this career move. My point is if [the ASC-designate] changed his mind about the position or felt it was not living up to the description that was given to him, he should be able to go back to the role of teacher, staying with the present school district. [*Author note: The ASC-designate overlooked this particular concern and accepted the job as offered.*]

REVISIONS BASED ON LESSONS LEARNED

The observed benefits of the pilot role-play exercise encouraged us to improve the exercise for future course offerings. The most significant change was to include the role play as a graded assignment during the fall 2002 semester. The exercise remained optional, however, with an alternative assignment available for students opting not to attempt the cooperative learning setting of a role play. The following lessons learned guided our revisions:

1. *Allow more time to complete role-play activities.* While a benefit of text-based interaction is the opportunity for more thoughtful discourse, a drawback is the time it takes to type one's thoughts and then wait for peers to read and respond to them, as compared to the relative immediacy of a face-to-face discussion. In spring 2002, participants almost unanimously indicated that 2 weeks was insufficient for the role play. The most common complaint was the difficulty in scheduling meeting times (i.e., for synchronous chats) convenient in groups of three or more. Therefore, we added another week to the role-play schedule. We were hesitant to add any more time for fear of a potential loss of momentum among participants once the role play activities began. We also provided a form through which participants could identify their preferred online meeting times. To the extent possible, scheduling preferences were taken into account when setting up the fall 2002 teams.

2. *Provide improved context for the role play.* Although respondents indicated that role play instructions were generally easy to follow, a review of the

course chat archives and team interactions revealed areas where clarification might enhance the experience of future role players. Some specific suggestions included providing more context up front, to “set the scene” for the players, such as describing the school system at issue, describing the personalities and expertise of the three personas of the role play, and better articulating the resources which could be assumed by the participants (e.g., provision of a curriculum budget, salary for the associate superintendent for curriculum, etc.). While our intent is to keep the role play as unstructured as possible so as to avoid “pigeonholing” the participants, we appreciate their need to feel adequately informed in order to “buy into” their roles. Additionally, we reviewed the course textbook with respect to the role-play topic and cross-referenced relevant sections of the text to various parts of the role-play description. For example, a chapter of the text described the various stakeholders in the curriculum decision-making process. We also provided a set of Web links relevant to each role (e.g., teacher unions, sites describing various educational policies and standards, etc.).

3. *Provide an orientation period for participants.* In the pilot effort, role play materials were not made available to students far enough in advance (they were made public just prior to the start of the exercise). In retrospect, it might have helped students to provide them with an opportunity to review the materials and ask questions long before the role play actually began. Therefore, we decided to post the role-play description “up front” in the fall 2002 course syllabus, giving students the first several weeks of the course to think about the exercise and ask the instructional team questions about it. Several students took the opportunity to e-mail the instructors with questions about the exercise. The topic of the role play was introduced in the weekly chat sessions beginning a few weeks prior to the start of the effort. The instructors fielded questions and provided information to those contemplating whether or not to participate.

4. *Clarify expected outcomes.* We reviewed the results for each stage across roles with respect to written outcomes, as well as participation. We found that the level of participation and the substance of written outcomes for the union role was not as substantial as the level of effort put forth within the teacher and superintendent roles in the pilot effort. In an attempt better to balance the workload across roles, we specified more explicit requirements for the union members’ written outcomes and defined clearer expectations regarding union participation (in a more active versus passive role) in the Stage 2 negotiations. We then developed a detailed role-play rubric describing our expectations for written outcomes for each role at each stage.

CONCLUSION

We are encouraged by these early efforts in promoting cooperative learning through online role playing and plan to continue refining this exercise. In both the pilot and graded efforts, participants overwhelmingly indicated that they enjoyed the ability to interact more personally with some of their peers, thus giving the online class a more personalized “in class” feel. Students reported that the exercise did provide an opportunity to apply the theories learned in class to a realistic situation. Review of the team chat and discussion archives supports this claim in both the pilot and graded efforts.

The jigsaw design provided students with an opportunity to come together, drawing on their unique experiences and knowledge to address a common problem, followed by an opportunity to capitalize on their expertise during the negotiation phase. Reviews of the discussion and chat archives revealed that students actively constructed knowledge through interaction with peers. This is also substantiated through student feedback. Some students in Stage 1 initially commented on feeling “out of their element” with respect to their assigned role but reported coming away from the experience grateful for an opportunity to learn from the perspectives and experiences of their teammates.

Mirroring a point made by Linser et al. (1999), there is little question that a live conversation via text-based chat fails in some ways to replicate face-to-face “eyeballing” in confrontation or consensus building. On the other hand, the asynchronous threaded discussion board provided students with a tool to communicate in detail after significant reflection on questions posed or propositions posited by peers. In a sense, the online setting leveled the playing field in that all participants could put forth their comments and contributions with little fear of anyone’s monopolizing the conversation or of time’s running out. As with most online learning platforms (whether online or face-to-face) one must make do with the limited tools at hand. In the role play evaluations, students indicated that the basic tools at hand were sufficient for them to fulfill their roles. The students’ responses to this particular exercise suggest that they found it valuable, not only as a learning experience, but also as a vehicle for scholarly enjoyment and peer community building.

In recent years, Internet users have seen exponential advances in networking capacities as a result of hardware, software, and bandwidth advances. The pace of advancement is likely to increase. Thus, it is quite conceivable that improved future network access will combine with other forms of technological progress to make live one-to-one and one-to-many videoconferencing commonly available for learners accessing their online courses from home. For rich, deep student interaction in online learning

environments, however, this article strongly suggests that instructors and course designers can do much with the relatively more limited tools at our disposal today.

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