
Constructivist learning perspectives in the online public relations classroom.

**Ann Peru Knabe
University of Wisconsin - Whitewater**

Many researchers and educators use constructivist theory to analyse what works well in online classrooms. Past research suggests successful online teaching strategies involve community learning, shared interactions, and meaningful learning experiences. In this study, educators who taught public relations online, in either graduate or undergraduate settings, were interviewed using in-depth key informant surveys. Most interviewees reported successful integration of community learning, shared interactions, peer activities, real-world problem analysis, and other activities that reflect constructivist learning theory. The majority of online PR educators described themselves as 'guides on the side' or people who facilitate learning, such as coaches. None fell into the 'sage on the stage' category. The findings of this study suggest that constructivist learning theory is a successful framework for online public relations curriculum design.

Introduction: An Explosion of Online Courses

Many higher education institutions tout technological capabilities in recruiting materials to lure students to their universities and colleges. As a result, interactive technologies such as email, websites, and online discussion forums are frequently encouraged in curriculum development. Currently about 75% of colleges and universities in the United States have online courses, and the number "is expected to reach 90% by 2004" (Rudestam & Schoenholtz-Read, 2002, p. 8). The number of institutions with 'web-assisted' courses (classes supported with, but not solely based on, communication and coursework completed over the Internet) is even higher.

Despite the great pressure to generate online courses quickly, course designers and educators

still need to consider principles of learning and teaching in an online environment. The way a teacher chooses to design and facilitate an online class can greatly affect what students learn. Learning theory, therefore, may play a pivotal role in online course development and outcomes.

Constructivism is one of the learning theories frequently embraced by online course developers and teachers in several academic fields. Currently, literature examining the learning theory behind online public relations course development and instruction is limited. Although the number of public relations faculty members who teach online may be less than in other fields, there is still a need to examine what strategies work best in the online classroom.

The purpose of the interviews discussed in this paper was to explore current teaching practices in online public relations courses and identify successful constructivist learning principles used within these courses. This is important to the field of public relations teaching, as the number of online courses will likely increase in years to come, and the impact of what students learn and retain will continue to be critical to their success.

Applying Constructivist Learning Theory to Online Courses

Constructivism is one of the most frequently cited theoretical frameworks applied to online course development and teaching. Constructivism is a learning theory that emphasises the student's construction of reality (Driscoll, 2000). Under a constructivist framework, students are not perceived as vessels waiting for information to be dumped inside their minds. Instead, they are thought to be engaged individuals who seek understanding of the world around them, largely through active learning and discovery. Constructivists assert that knowledge is embedded in activity: not professorial lectures

or rudimentary memorisation of facts. Proponents of this ‘student-centred’ perspective assert that ‘truth’ or knowledge is based on students’ experiences as they learn in complex environments (Koyangi, 2003).

Driscoll (2000) categorised constructivist learning conditions into five recommendations for teachers:

- Embed learning in complex, realistic and relevant environments
- Provide for social negotiation as an integral part of learning
- Support multiple perspectives and the use of multiple modes of representation
- Encourage ownership in learning
- Nurture self-awareness of the knowledge construction process (p. 382)

These constructivist recommendations can be easily applied to the online classroom. In an online environment, the unique structural characteristics of the Internet maximise learning opportunities that can occur within the constructivist framework. Its hypermedia ‘virtual’ framework and nonlinear format of presenting complex information naturally work well with constructivist approaches to learning and teaching (Koyangi, 2003; McManus, 1996).

Some researchers suggest that online environments, coupled with constructivist design, are the key to developing successful courses for the next generation of students. Kirschner (2001) argues that the future of higher, post-secondary education is at stake if universities do not develop constructivist-based courses that emphasise collaboration and cooperation among students. Kirschner (2001) insists that university education “must change” to help maximise graduates’ success in society (p. 8), and proposes electronic learning environments as a suitable framework for diverse, integrated communities of learners and scholars (not bound by distance) where the tenets of constructivism are applied to course design and development to create powerful learning.

Learning Environment

As suggested in Driscoll’s first goal, the Internet provides a format for a complex,

realistic, and relevant learning environment (2000). Students can explore hyper-linked websites, ideas, and concepts in a rich exchange of information, unlimited by geographical boundaries. The Internet also lends itself to display of visual models that deepen students’ understanding of complex concepts, and these visual models can be simultaneously shared with an entire class.

‘Authentic learning’ is also an important consideration in the first goal of constructivism. In an online course, authentic learning refers to students engaged in meaningful tasks, not just hitting a space bar to progress to another screen. Students immersed in authentic learning can manipulate objects or environments, directly affecting what and how they learn.

Authentic learning in an online context allows instructors to engage guest speakers or experts from the field in meaningful discussions. Online courses also allow students to work on projects beyond the confines of a traditional campus setting (Jonassen, Peck, & Wilson, 1999). For example, Moallem (2001) examined a traditional course, ‘Instructional Design and Classroom Evaluation,’ that was moved to an online environment, thus allowing more opportunities for authentic learning. According to Moallem’s account of the online class, each lesson provided students with a real-world problem in the form of a case. Learners also constructed mental images and were encouraged to visualise the activity, extending learning and understanding far beyond the confines of traditional lecture formats.

Social Negotiation

Driscoll’s second constructivist recommendation, the integration of social negotiation into the classroom, also fits well in an online context. Jonassen, Peck and Wilson (1999) described these social opportunities as “cooperative learning” and “learning communities” (p. 118) when they analysed constructivist design in technological environments.

Online learning communities are united by common goals, shared experiences, and mutual support. Although learning communities existed long before the Internet, the unique

characteristics of the web offer new ways to develop community learning through social negotiation. Email, chat rooms, bulletin boards, peer projects, and other online technologies have all been successful in promoting discussion and collaboration in online classrooms. Collaboration has also been encouraged in online courses, in both team activities and peer assessments. In addition, communication formats can be structured to reflect the design of the specific online course; class discussions have taken place synchronously and asynchronously over the Internet, with successful results in both formats.

Sorg and McElhinney (2000), analysed an online course that used a synchronous format for discussions. There was no required face-to-face interaction. The researchers collected qualitative data from learning journal entries, personal interviews, observation of online interactions, and reflective journals. Their findings indicated synchronous computer conferences and discussions can increase meaningful learning, participants' sense of belonging, and empowerment in online classes.

Other researchers focus on the value of learning in a social setting over the Internet. Hung and Nichani (2001) suggest framing online courses in both the social community of practice and individual minds of students. The researchers argue that: "learning should be a process of active individual construction and a process of enculturation into the practices of social society" (p. 40). Their findings indicated that successful online learning was dependent on the interaction of diverse perspectives, with mutual dependency, respect for other points of view, and healthy discourse, all factors which could be deliberately fostered to improve learning quality in an online course (Hung & Nichani, 2001).

The value of online discussions has also been linked to the unique structural characteristics of the Internet. Jonassen et al. (1999) suggest that online discussions offer students more time to "consider an idea and formulate an answer" before responding (p. 121). According to these advocates of constructivism, online conversations allow students new freedom, higher levels of participation, and empowerment in the conversation process.

Online courses also lend themselves to a third goal of constructivism, the integration of multiple modes of perspective and multiple modes of presentation. In an online class, students have equal opportunities to 'be heard', regardless of their individual personality attributes and oral social skills. The sharing of perspectives can be maximised with guest speaker perspectives and opinions from 'real-world' experts, aspects that can be fairly easily integrated into online course curricula, in many cases without requiring the experts to leave their office. New Internet tools, such as 'webinars' and 'blogs', also maximise the exchange of multiple perspectives and ideas.

Multiple Perspectives

Oliver (2000) identified strategies to integrate different perspectives into the online classroom, citing the value of mental model development by students and peers and suggesting students link their personal conceptions with expert conceptions. Oliver argued that the Internet offers greater opportunity for these pedagogical tools than traditional classrooms because traditional classrooms are confined by space, resources, and time. Oliver gave the example of a popular constructivist activity in which students are required to pair online with experts in the field as the students work on real-world inquiry projects.

Ip and Naidu (2001) offered several ways that 'personal experience' can be leveraged into powerful and effective online learning tools. They deemed the following types of 'stories' applicable to online courses:

- (a) utilisation of first-person experiences;
- (b) third-person experiences (specially edited versions and authentic, original versions);
- (c) web-based role plays, rule-based simulations and case studies, distributed problem learning;
- (d) critical-incident-based, computer-supported, collaborative learning (p. 54).

The authors suggest that these design tools can be both effective and powerful, as they enhance the transfer of third-person experience into first-person experience, thus affecting an entire group of online learners (Ip & Naidu, 2001).

Students' personal understanding of concepts can also be spatially displayed in an online course. Mental models, as visualised in a student's mind, can be displayed in digital presentation software, desktop publishing formats, multi-layered websites, and other hyper-linked media. Jonassen et al. (1999) capture this notion in their discussion of the usefulness of "semantic networks" and "concept maps" (p. 163) to allow students to organise their ideas spatially and convey them to other students in the class. This type of learning strategy goes beyond memorisation, offering students the opportunity to analyse new information and make sense of it, while sharing it with others in a rich format. These processes are further enhanced by collaboration with other students on joint concept mapping (Jonassen et al. 1999).

Ownership in Learning and Self Awareness in Knowledge Construction

As articulated in Driscoll's recommendations (2000), constructivists encourage ownership in learning and self-awareness in the learning process. This allows for layers of negotiation between the learner and teacher (Hannafin & Hill, 2002), and conscious, active learning by students. Communication of goals and self-conscious learning can manifest itself in many different ways.

Matuga (2001) describes an online class that changed throughout the course, based on student feedback. For example, when online student debates initially offered little value to the students, the instructor changed the format based on input from the students, resulting in a successful learning forum. Lusnia (1999) researched negotiation of student goals in online learning. In the constructivist tradition, the researcher created questionnaires so that online instructors could work closely with their students in developing course material that would be beneficial to students and meet their learning goals.

Constructivism in an online setting shifts the role and responsibility of teachers. In a traditional classroom setting, teachers often function as 'a sage on a stage', imparting their perspectives and teaching the class what they

deem to be 'true'. In a constructivist setting, this paradigm shifts, and online teachers act as a 'guide on the side', facilitating learning as it takes place among the students themselves. Learners are routinely responsible for expressing learning goals, are more self-directed, and take an active role in monitoring their learning and reflecting on their growth.

Method

This study used six key informant surveys, interviewing faculty members who had taught public relations online with at least 85% of the teaching occurring in a computer-mediated, virtual context. The goal was to identify whether constructivist approaches to teaching were occurring in online public relations courses, and if so in what forms.

Because the number of public relations instructors who teach online is relatively small, the researcher used snowball sampling from referrals in the United States public relations teaching community. Six of the 12 referrals agreed to participate. One taught at a private institution and the other five at public institutions. Their online teaching experience ranged from one semester to eight years.

The key informant surveys took place via email. After verifying their role as online public relations instructors, the interviewees received a query and consent letter requesting their participation. In addition to closed-ended demographic and online course information questions, the survey also contained open-ended questions about online teaching, followed by in-depth queries that further probed various pedagogical issues associated with constructivism. The researcher looked for common themes in the responses.

Results

Despite using different approaches in teaching online classes, all of the participants reported successful online teaching experiences. Elements of constructivism could be identified in many of their responses, but none of the faculty members appeared to base their entire course on constructivist teaching tools.

The most common constructivist theme that emerged in the surveys was the value of learning in a social setting. Roblyer (2003) describes this constructivist tenet as collaboration between students, with an emphasis on group work (as opposed to students demonstrating personal competence on an individual basis). Most of the interviewees found the community learning opportunities offered in the online public relations classroom useful. Respondents indicated success with various teaching methodologies that encouraged peer collaboration in a social context.

Online discussions and conversations proved to be a popular way to engage students in reflective thought. As explained by Jonassen et al. (1999), multi-user environments that engage learners in high-level conversations are useful for constructivist-based courses. In the survey, participants expressed differing opinions as to whether synchronous or asynchronous formats were the best way to teach online. Several taught online courses that included some (or all) synchronous communication activities. One respondent went as far as to say: “a seminar format requires a synchronous approach”. Others reported all communication as asynchronous, without any required ‘virtual’ meeting times. They cited an asynchronous format as particularly useful in online learning, allowing more flexibility for adult students.

Other opportunities for learning in an online social context included case studies, chat rooms, group activities, debates, real-time (synchronous) online meetings, shared whiteboard, distributed problem learning, and other tools involving collaboration with other students. All of these activities are constructivist in nature when they focus more on group work than individualised work.

Many of the instructors described attributes of successful online students that are also closely linked to successful constructivist student characteristics (conscious, active, engaged students who assess their own learning as they proceed). When asked to describe successful online students, the survey participants all expressed similar views, citing a need for motivated, independent learners who are self-starters and take ownership in learning. As

one instructor stated, the successful online learner is a “Focused, motivated, adult student. This type of learning isn’t for the immature person which most 18–21 year olds are!”

Several respondents noted that many successful online public relations students had a clear focus on the future, were professionally oriented, and were “serious about advancing their careers”. These students were described as people with very little free time, who juggled jobs and family, yet enjoyed the flexibility of online courses. “In general, I believe the students who have successful experiences ... are career-oriented students who work full-time and take online courses at night and on weekends to accommodate their family and work schedules.”

Only one educator used ‘guest speakers’ to add additional depth to the online class. This represents authentic learning while connecting students to the ‘real world’. Another indication of authentic learning was one instructor who had students work together on real-world problems or situations that benefited an outside group or client. All but one interviewee integrated collaborative learning efforts into the classroom, where students learned not only from the teacher but also from one another.

The courses themselves were as diverse as the approaches to teaching. Interviewees reported successful online classes at the undergraduate level (i.e. Introduction to Public Relations and Public Relations Writing) and postgraduate level (Public Relations Theory, Public Relations Principles and Issues, Public Relations Programmes and Production, Organisational Public Relations, and Public Relations Management). Most of the instructors did not require any face-to-face meetings as part of their curriculum. A few had several meetings (hybrid courses), but the bulk of learning took place over the Internet. The number of students in each class ranged from four to 20, with most of the participants reporting 10–15 as an ideal number of students for an online class.

Online teaching methodologies differed depending on the course. In line with the constructivist perspective of maximising the use of hypermedia for learning, interviewees maximised learning opportunities by using technological tools unique to the Internet. All of

the instructors used case studies in their teaching, and included hyperlinks to additional Internet sites and resources. This allowed sharing of multiple perspectives in the online setting. All but one instructor used chat rooms or threaded discussion to facilitate exchange of ideas. One respondent differentiated chat rooms from threaded discussions, using chat rooms as an optional communication tool, but requiring contribution to discussions as part of the class grade.

Half of the courses made extensive use of team learning and collaborative group exercises as pedagogical tools. Across all the respondents, online activities being used that could be interpreted as constructivist tools included online debates, online guest speakers, problem-based learning scenarios, online presentations, team projects, and other group activities in which students learned from each other. Individual activities, which reflect traditional learning methods, as opposed to constructivism, included student essays or online reaction pieces and optional (non-graded) online quizzes for self-study. One participant said exams did not work well in an online context, a notion that constructivists are likely to agree with since exams fall into the category of traditional learning methods.

One interviewee, who taught a 'self-paced' graduate level online course, did not use online discussions, group or team activities, or other teaching methodologies that involved collaboration with other students. Since students could sign up at different times and stretch the course over 18 months, group activities did not fit neatly with this curriculum design.

Other online instructors used unique pedagogical tools, some falling into traditional teaching methodologies and others falling into constructivist approaches. One participant reported using streaming video reels available from book publishers and audio reviews of each week's chapters/lecture (with an outline of key terms). This participant also used a class news page and web resources page. Another instructor contended that two-way audio was a critical tool in online teaching.

All of the respondents encouraged students to share personal experiences in the online

classroom, which was likely to have made learning more meaningful and active from a constructivist perspective. Several instructors used real-life scenarios or case studies to generate thoughtful online discussions among classmates. Most of the survey participants said group projects and knowing other students from previous courses also fostered a community of shared learning.

Most of the interviewees described themselves as playing a facilitator role of 'guide on the side' as opposed to a 'sage on a stage'. All stated that they were flexible. One person described themselves as "course manager and coach", and another said they were a combination of guide and sage: "I tend to toss the hot rock into the laps of the students and stand back and watch the fun, interjecting more questions to keep the dialogue going."

The use of multiple perspectives was also evident from the faculty responses. Most of the instructors said online public relations classes increased opportunities for diversity in the classroom, a finding that would support Kirschner's (2001) assertion that integrated electronic environments will increase the richness of student diversity. Several interviewees said they taught across several time zones, and online learning was the only way that their class of working professionals could meet. One educator from New York cited geographical diversity: "It [online learning] absolutely increases the diversity of students ... I have students from Vietnam, Cayman Islands and California ... it allows for an excellent mix of mid-career professionals who might have not attended a traditional masters program."

An educator from Colorado said their undergraduate class included students from remote areas of Colorado, plus students from other states including Arizona and Texas. Another said online courses allowed more people access to higher education, particularly those with families or time constraints. "Our average student is a 40-year-old female with a couple of kids ... she has very little free time."

All of the instructors used email to communicate with students; some also used phone. Most responded to email within 48 hours, some as frequently as several times a day. One

instructor said that “students appreciate immediate feedback”. All of the participants said email was the easiest and most practical way to maintain communication with students. A majority of the participants also said they encouraged email between the students themselves as part of the community learning process.

Discussion

Whereas the existing literature and current technology supports constructivist approaches in developing online courses, comments from the interviewees indicate a successful online class may not necessarily depend on ‘self-construction’ of knowledge or virtual group-settings for rich learning experiences.

The participants in this study were divided; pedagogical tools, which they perceived as successful, fell into both constructivist and traditional teaching strategies. Only a few embraced the opportunity to collaborate directly with real communities and real-world problems outside the virtual classroom, however. The differences in opinion warrant further research, perhaps from the perspective of the online learner.

All of the public relations educators reported a more relaxed, facilitator type approach as most suitable for teaching in the online environment. This approach to teaching falls into the constructivist framework that places emphasis on the students as they generate their own knowledge. All of the respondents identified themselves more with the ‘guide on the side’ approach to teaching than with the ‘sage on the stage’. In the spirit of constructivism, one instructor said, “I believe students should experience the content on self-discovery based on the parameters I provide them. I also give them helpful supplemental resources (books, journals, examples, and links to other online resources).”

The findings suggest public relations educators who wish to teach online may want to consider their own teaching styles when developing online curricula, and alter their approach (if necessary) to better foster a rich online learning experience for students that

encourages self-discovery and reflection. According to the respondents, asynchronous and synchronous communication methods both seem to work in the online classroom, but most instructors preferred one format over the other. Both formats can be categorised as constructivist in nature if they focus on students learning from each other.

Some of the respondents claimed synchronous online meetings were the best form of discussion because all of the students could share thoughts in one forum at the same time, fostering a synergy of discussion. Interestingly, respondents who favoured asynchronous learning used the same rationale in defending their choice, saying asynchronous formats allow diverse students to participate when they can fit it in their busy lives, allowing for a rich exchange of perspectives and fostering synergy of discussion among a disparate group of people who ‘come to class’ at different times of day.

The importance of community learning and group activities had proponents on each end of the spectrum. Some educators were more constructivist oriented, arguing for team projects and group learning experiences as critical components of the online learning process. On the other hand, one instructor specifically stated online courses were not well suited for public relations campaign classes and case studies involving groups. One respondent did not include any group activities or discussion at all in their course, since it was designed to be self-paced for students.

Respondents also expressed different opinions on what courses are best suited for online formats. Those who taught undergraduate public relations classes online said undergraduate courses were best fitted for the Internet because postgraduate courses “required in-person seminars” (something they viewed as difficult in the online environment). In contrast, several participants who taught postgraduate classes over the Internet said they thought online formats were best suited for postgraduate courses. “Most undergraduates see the online courses as an easy path to a grade, while in reality, they [the online classes] tend to be more, rather than less, demanding.” Another respondent contended that postgraduate students who worked full-time and

balanced families were able to participate more fully in an online class.

The respondents were unanimous when asked what it takes to be a successful online public relations student. Consistent with existing literature on other online courses, instructors said success in an online class requires motivation and self-discipline. In a constructivist context, both skills are required for a meaningful learning experience. Because of this, online learning might not be the answer for all students. Successful learning under a constructivist perspective would also require personal meta-cognition skills, as students are often required to take ownership of their learning. Jonassen et al. (1999) describe a culture that fosters meta-cognition as a learning environment that “promotes frequent discussion of the processes and strategies (both successful and unsuccessful) involved in learning” (p. 230). In other words, students who use meta-cognition in the online classroom actively reflect on their personal learning and assess their learning goals throughout the process.

Limitations and Future Research

The key limitations of this exploratory study are the relatively small number of participants and snowball sampling method used to recruit them. In spite of the fact that the number of American public relations educators who teach online is relatively small, a non-random sampling of six respondents is still not generalisable to a larger population. In addition, while this study probed the perceptions of public relations educators, it did not directly ask survey participants to identify the learning theories they use as a pedagogical base in developing curricula, and did not examine their actual teaching tools, such as syllabi. Because courses in education and learning theory are not prerequisites to teach public relations at the college level, it is possible that many public relations instructors never consider learning theories when they develop online courses; current online successes may result from a combination of experimentation and ‘luck’.

This study suggests the need for more research in identifying what pedagogical

strategies and learning theories work best in the ‘virtual classroom’. At first reading, the findings appear to indicate that there is no single or clear approach to teaching online; learning styles, individual student characteristics, and teacher preferences all work together in determining online course outcomes. However, to maximise student opportunities and course potential, public relations educators may want to continue to research the best ways to foster learning by tapping into the unique social and collaborative opportunities offered in an online environment.

This study raises additional questions concerning which public relations courses are best suited for online delivery. The key informant survey respondents were divided on whether online learning is more appropriate for undergraduate or postgraduate students. Additional research will help determine whether these issues are related to actual course content and related tasks and objectives, or to the characteristics of students themselves (level in school, motivation, and degree of self-discipline).

The varied opinions of respondents and their approaches to teaching suggest a rich area for further exploration in the ‘virtual’ public relations classroom. Public relations educators can be reasonably sure about one thing: the world of online learning encourages a diverse mix of students from different geographic, ethnic, and professional backgrounds, while offering multiple opportunities for collaborative projects in a rich learning environment. How these new technological tools are actually used in an online course, however, is ultimately up to each individual educator.

References

- Dempsey, J. V., & Van Eck, R. N. (2002). Instructional design on-line; Evolving expectations. In R. A. Reiser & J. V. Dempsey (Eds.), *Trends and issues in instructional design and technology*. Upper Saddle River, NJ: Merrill Prentice Hall.
- Driscoll, M. P. (2000). *Psychology of learning for instruction*. Needham Heights, MA: Allyn & Bacon.
- Hannafin, M. J., & Hill, J. R. (2002). Epistemology and the design of learning environments. In R. A.

- Reiser & J. V. Dempsey (Eds.), *Trends and issues in instructional design and technology*. Upper Saddle River, NJ: Merrill Prentice Hall.
- Hung, D., & Nichani, M. (2001). Constructivism and e-learning: Balancing between the individual and social levels of cognition. *Educational Technology*, 41(2), 40–44.
- Ip, A., & Naidu, S. (2001). Experienced-based pedagogical designs for e-learning. *Educational Technology*, 41(5), 53–58.
- Jonassen, D. H., Peck, K. L., & Wilson, B. G. (1999). *Learning with technology: A constructivist perspective*. Upper Saddle River, NJ: Merrill Prentice Hall.
- Kirschner, P. A. (2001). Using integrated electronic environments for collaborative teaching/learning. *Research Dialogue in Learning and Instruction*, 2(1), 1–10.
- Koyangi, M. (2003). *Putting courses online: Theory and practice*. Retrieved January 4, 2004 from <http://www.ils.unc.edu/disted/cmi/final2.html>
- Lusnia, K. (1999). *Teaching teachers long-distance: A paradigm-shift for the teacher-planner in Mexico*. Paper presented at the International Conference on Language Teacher Education, Minneapolis, MN.
- Matuga, J. M. (2001). Electronic pedagogical practice: The art and science of teaching and learning on-line. *Educational Technology & Society*, 4(3). Retrieved January 4, 2004 from http://ifets.ieee.org/periodical/vol_3_2001/matuga.html
- McManus, T. F. (1996). *Delivering instruction on the world wide web*. Retrieved January 4, 2004 from <http://www.svsu.edu/~mcmanus/papers/wbi.html>
- Moallem, M. (2001). Applying constructivist and objectivist learning theories in the design of a web-based course: Implications for practice. *Educational Technology & Society*, 4(3). Retrieved January 4, 2004 from http://ifets.ieee.org/periodical/vol_3_2001/moallem.html
- Oliver, K. (2000). Methods for developing constructivist learning on the web. *Educational Technology*, 40(6), 5–17.
- Reiser, R. A. (2002). A history of instructional design and technology. In R. A. Reiser & J. V. Dempsey (Eds.), *Trends and issues in instructional design and technology*. Upper Saddle River, NJ: Merrill Prentice Hall.
- Roblyer, M. D. (2003). *Integrating educational technology into teaching*. Upper Saddle River, NJ: Merrill Prentice Hall.
- Rudestam, K. E., & Schoenholtz-Read, J. (2002). *Handbook of online learning: Innovations in higher education and corporate training*. Thousand Oaks, CA: Sage Publications.
- Sorg, J., & McElhinney, J. (2000). *A case study describing student experiences of learning in a context of synchronous computer-mediated communication in a distance learning environment*. Available from the U.S. Department of Education, Educational Resources Information Center [ERIC], document #IR 020 416.