

8 InterQuest: Designing a Communication-Intensive Web-Based Course

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A traditional model for a distance education course locates the bulk of the students at satellite campuses receiving electronically transmitted instruction from a teacher at a central location. Of course, that location is central only to the teacher and the handful of students able to attend class in the broadcast studio that serves as the classroom. This type of distance education helps bring education to students physically remote from the campus, but tends not to differ in presentation from the traditional classroom.

A different distance education model incorporates the technological capabilities of the Internet and the World Wide Web, allowing radical changes in the level of interaction among students and teachers while staying true to course content. Classes taught via the Web can be constructed to rely heavily on writing, yet offer flexibility to accommodate other forms of communication (pictures, graphics, sound, etc.) supportable by the students' and teachers' technology.

The InterQuest (IQ) course at Oregon State University is an introductory philosophy course conducted virtually via the Web. The virtual nature of the course allows students to enroll and participate in the course as long as they have a computer connection to the Web. This inter-institutional course accommodates university, community college, and advanced placement high school students simultaneously. These students interact with each other and the teacher by reading course content on the Web and engaging each other, and that content, via e-mail. InterQuest is based on a distance education pedagogy that believes students can learn effectively in a computer-supported communication environment.

This chapter addresses many of the issues associated with developing a Web-based course using e-mail writing as its dominant form of communication. The next section of the chapter provides a description of the InterQuest course. A discussion of developing a communication-intensive distance education course follows, using InterQuest as an exemplar.

Introducing InterQuest

Imagine a university where students satisfy a college core requirement through a virtual course. Students enroll in the course via telephone, log on to the course and read course materials using a Web browser, dialogue with the teacher and other students using e-mail, take quizzes from their home or campus computer lab, and turn in papers electronically. For the Introduction to Philosophy course at Oregon State University that world exists. InterQuest¹ is the name for that course and the name for the research and development team applying IQ techniques to other courses on campus, including CalcQuest², a virtual introduction to calculus.

The goal of InterQuest is to guide students through philosophical claims and arguments in a virtual environment. Students enter InterQuest with their own philosophical beliefs and values. The IQ course seeks to change the way students think about some of their own philosophic beliefs and values. The desired change is not to replace the students' beliefs and values or to weaken their conviction in them; the desired changes are in the ways students apply awareness and reasoning to their beliefs and values. Students' thinking, virtually discussing, and writing about philosophy facilitate those changes. Students succeed in the course when they can demonstrate in their writing that they

- are aware of their commitment to a philosophic belief or value of which they were previously unaware,
- can develop a more sophisticated interpretation of their beliefs,
- can provide an explanation of some philosophic claim to which they are committed,
- can provide support for an explanation of some philosophic claim to which they are committed, and
- can demonstrate in writing they are aware of the implications of the philosophic claims to which they commit.

Pedagogy precedes technology in InterQuest. The educational objectives of InterQuest center on teaching philosophic claims and reasoning. Technology used in InterQuest is valuable only to the extent that it increases the likelihood that the educational objectives are reached. We believe it is possible, and appropriate, to use technology to guide students through paths of learning. Students can intellectually walk these paths autonomously, or they can seek assistance along the way. The power of the technology InterQuest uses is its capacity to incorporate thinking, writing, and communicating into all assignments and aspects of knowledge acquisition.

Designing a Virtual Distance Education Course

Modifying any course to keep it current and interesting is challenging. Converting a lecture/discussion course to a virtual course on the Web can be daunting. The following sections explain the key components to consider when converting an existing course to a Web-based course.

Pedagogy Drives It All: Components of a Virtual Distance Education Course

Six course goals were identified prior to designing the technical aspects of the course: (1) student autonomy, (2) active student participation, (3) intellectual community, (4) time and place-independent learning, (5) collaborative learning, and (6) networked instruction. The first goal, student autonomy, seeks to provide students a choice about which perspective they take in engaging the course content. Philosophy readings in IQ are linked to each other, allowing students to choose where to begin their study of the course content (e.g., do they see themselves as moralists, utilitarians, etc.). They do this by reading text associated with five worldviews, then selecting the worldview that best fits how they see the world. (The worldviews are (1) self-interest is central, (2) cooperation is the key, (3) faith is the focus, (4) reality is relative, and (5) knowledge is negligible. See Chadwick and Dorbolo 1997-1³.) This linking of worldview statements with supporting text, or hypertext design, provides a structure that guides students, placing each student in a framework group where all group members share the same worldview. Future writing and discussion assignments will ask the students to interact with their own or other framework groups. Students using this method demonstrate high levels of commitment to the subject matter and course pursuits.

The second goal, active student participation, puts a premium on student-teacher and student-student interaction. The quality and quantity of student-student and student-instructor discussion is substantially increased over traditional classroom discussions. InterQuest demonstrates that close to universal active participation can be accomplished for classes of over 100 students. Students interact asynchronously, providing them time to craft their written arguments. All IQ discussions and assignments are designed to be iterative to some extent, so students practice and benefit from editing, rewriting, and reformulating their ideas across the entire term of the course. For a sample of InterQuest writing assignments, see Chadwick and Dorbolo 1997-2 and 1997-3. The first sample is a presentation essay assignment where students must write a presentation in which they explain some of their philosophic views. The second sample is a rhetorical precis assignment where students must provide a written summary interpretation of a philosophic text.

Building an intellectual community, goal three, requires creating a cohesive group of student scholars who are equipped with what they need to continue their studies and intellectual conversations after they complete the course. InterQuest provides forms students can use to publicly respond to a text while reading it on the Web.⁴ These forms are e-mailed to other students reading that same text, or working on that same assignment. All structured communication in IQ fits one of five discourse models: (1) peer-peer exchange (Chadwick and Dorbolo 1997-4), (2) small group exchange (Chadwick and Dorbolo 1997-5), (3) framework-group to framework-group exchange (Chadwick and Dorbolo 1997-6), (4) chain exchange, where students are linked sequentially (Chadwick and Dorbolo 1997-7), and (5) global exchange (Chadwick and Dorbolo 1997-8). This interface of activities collapses the traditional learning methods of class discussion, reading text, and writing responses into a single activity. This produces active reading and makes course time more efficient.

Goal four, time and place-independent learning, seeks to provide students a learning environment where they are not tied to a time and a place to learn. Class discussions progress around the clock and around the globe. During one term, an IQ student had to return home for a family emergency. The challenge was that home was in Ecuador. Computer connections were made for the student, and of all the courses he took that term, IQ was the only course in which he could stay current and participate during his time off-campus.

Central to all distance education successes is ensuring that students understand what is expected of them and how they can achieve success in the class. InterQuest accomplishes that by providing an online Objective and Requirements Page (Chadwick and Dorbolo 1997-9) and an online InterQuest Orientation (Chadwick and Dorbolo 1997-10). The Objectives and Requirements page explains the course objectives and what students will be required to do. The InterQuest Orientation page provides links to pages covering the syllabus, course objectives, grading criteria, keeping in touch with the teacher, and how to improve Web and Internet skills.

The fifth goal, collaborative learning, strives for a class situation where students must communicate with each other in order to complete their tasks. All InterQuest discussion and writing activities require students to read and consider other students' ideas. Responding to other students is as easy as writing comments on the class conversation form (see endnote 4) or sending an e-mail message to all class members by clicking on the class e-mail list icon. Writing activities set a minimum number of collaborative interactions, but students are free to collaborate more than required. The ease of communicating across time and space makes increased collaboration more likely. That increased ability to communicate also makes collaborative learning projects easier to design and accomplish. (An example of a collaborative writing example can be found at Chadwick and Dorbolo 1997-11.)

Finally, the goal of networked instruction provides a class structure allowing multiple teachers to participate cooperatively, especially when they teach in different schools. Instructors separated in place, time, institution, and discipline may teach collaboratively in new ways. *InterQuest* allows multiple teachers from several institutions to co-teach the course. In these cases, a form of networked instruction is used which distributes teaching tasks according to teacher expertise. Multiple instructors may require multiple course evaluation forms. *InterQuest* handles this requirement by using separate forms accessible by students. See Chadwick and Dorbolo 1997-12 and 1997-13 for two such IQ evaluation forms.

Organizing Students into the Course

The mechanics of organizing the course at the start of the term are burdensome. Getting group e-mail lists set up and dealing with late enrollments requires much effort. Having just a few students out of the discourse loop creates major logistic issues for all the structured communication models mentioned above. Online registration tools are currently under development. These tools will handle the registration, recording, and authentication of students and their coursework (Chadwick and Dorbolo 1997-14). Likewise, we are working to develop software that will automate assigning and tracking students in their conversation activities. That conversation management engine is being designed to assign partners, deliver instructions, track progress, and report exceptions to the teacher (Chadwick and Dorbolo 1997-15).

Technology Training for Students

Course designers need to be prepared for the possibility that students lack computer and Internet skills. Differences in skill levels create issues of perceived and real fairness. Because IQ students were not centrally located, early attempts at providing face-to-face computer skill tutorials proved difficult to manage and were largely ineffective. The problem has largely been solved by providing online tutorials in those skills. The IQ Orientation page (Chadwick and Dorbolo 1997-16) includes Web links to pages addressing (1) how to effectively use the Web, (2) how to navigate and search the Internet, and (3) how to use the IQ Move Bar, a navigation tool internal to *InterQuest*. The IQ Move Bar is particularly useful to students because it allows them to move about the entire IQ course Web site without using any Web browser tools. Students can click on icons to go back one page, forward one page, to the login/logout page, to the IQ Compass page to learn more about using the Internet and Web, or to the IQ Central page, where they can then link to any other Region in the course (Chadwick and Dorbolo 1997-17).

Accommodating Different Learning Styles

InterQuest accommodates different types of learners based on Kolb's (1984, 1985) four learning modes and four learning styles. Kolb claims that learners predominantly use one of these four learning modes: (1) concrete experience, or learning from feeling; (2) reflective observation, or learning by watching and listening; (3) abstract conceptualization, or learning by thinking; and (4) active experimentation, or learning by doing (1985, 4-5). Kolb's four learning styles reflect combinations of the learning modes (1985, 5-7). *Accommodators* learn by feeling and doing. *Assimilators* learn by thinking, watching, and listening. *Convergers* learn by thinking and doing. *Divergers* learn by feeling, watching, and listening.

InterQuest's Dear Author activity (Chadwick and Dorbolo 1997-18) helps students learn through reflective observation and abstract conceptualization. The Dear Author activity pairs students who are reading the same philosophy text. Each student poses a serious question to the author, then e-mails that question to his or her partner. A serious question is a question whose answer will help the student understand some difficult part of the text being read (see Chadwick and Dorbolo 1997-19 for information provided to students regarding how to make a serious question relevant to the discussion at hand). The student receiving the Dear Author question assumes the role of the author and answers the partner's question as best he or she can. This task commonly takes several iterations where students seek and provide clarification of questions and answers. All e-mail is electronically copied to the teacher, who can step in and provide assistance throughout the process. (See Chadwick and Dorbolo 1997-20 for a discussion activity form designed to help students form constructive questions about texts they just read.)

InterQuest's Virtual Conversations allow students to participate in discussions and grow intellectually through relating their personal experiences to the text being studied. Virtual Conversations occur weekly as the teacher poses a discussion question or statement for student discussion. Students create and send e-mail messages responding to the teacher and each other. Students regularly post multiple messages to the class e-mail list as the discussions move forward. The quantity and quality of interaction regularly exceeds similar discussions in traditional classrooms. Students feel comfortable engaging the text and each other in the discussion format. They argue about the text using knowledge they have gained in the class and through their lived experiences. (See Chadwick and Dorbolo 1997-21 for a Virtual Conversation addressing students' worldviews. See Chadwick and Dorbolo 1997-22 for a Virtual Conversation designed to help students improve their argumentative skills.)

The Concept Analysis activity allows students to actively experiment with their newly gained knowledge of philosophy. Here students analyze and argue for their intellectual position on a philosophical claim, such as "God exists."

Similar discussions are often attempted in philosophy courses held in traditional classrooms. Those discussions often fail because students need more time to try their hand at philosophizing than the class period allows. Accomplished philosophers may be able to generate arguments on philosophical claims quickly; students need time to experiment with their ideas, argumentative styles, and methods of articulating those ideas in writing. The Concept Analysis activity gives students that time (Chadwick and Dorbolo 1997-23).

Building a Cohesive Class

Teaching students virtually introduces unique communication situations that need to be addressed. The processes of feedback, trust, sensitivity to others in the class, and relationship-building all require special attention in the virtual environment. Teachers designing and executing a virtual course can benefit from computer-supported communication (CSC) research on those processes. The Web provides a communication channel rich enough to accommodate primary communication goals. Those goals include communicating about (1) the tasks at hand, (2) the relationships created and extended during the class, and (3) the impression students project about themselves to their classmates and teacher (Clark and Delia 1979).

Feedback

Students and teachers need to provide feedback to each other to keep any class running smoothly. This is particularly important during a Web-based course. Persons are more likely to seek feedback, and more likely to do so immediately, when using computer-mediated communication (CMC) than when using face-to-face communication (Ang et al. 1993; Ang and Cummings 1994). Persons receiving positive feedback tend to engage in more subsequent feedback-seeking than persons receiving negative feedback. Also, persons trusting the feedback giver gain satisfaction from a high quantity of feedback (O'Reilly and Anderson 1980). Students are provided feedback opportunities each time they enter and prepare to leave the IQ Web site. Feedback in IQ occurs as students log in and log out during every session describing what they intend to do, what they did, and what concerns and questions they have (Chadwick and Dorbolo 1997-24 and 1997-25). Feedback in IQ also occurs via evaluation forms. Evaluation forms are used to determine how well students are reading the assigned readings (Chadwick and Dorbolo 1997-26) and as overall course evaluations (Chadwick and Dorbolo 1997-27).

Trust

Teachers and students can build trust in the classroom using CMC. Trust arises out of class members' interdependency in achieving positive outcomes and pre-

venting negative outcomes (Kipnis 1995). That trust can come directly from students being able to (1) determine the costs and benefits of their behavior, (2) predict the teacher's and other students' behavior, and (3) identify with other class members' desires and intentions (Lewicki and Bunker 1995; Shapiro, Sheppard, and Cheraskin 1992). Determining costs and benefits, and predicting behaviors is largely driven by the syllabus (Chadwick and Dorbolo 1997-28). Throughout the term, identification in InterQuest is facilitated through interaction with and feedback from the teacher (Chadwick and Dorbolo 1997-29) and from interaction with other students individually, in groups, and as a class.

Tying all of this together is the class constitution. The class constitution is a student-generated set of principles defining acceptable student behavior in the class. Modeled after the United States Constitution and Bill of Rights, the InterQuest class constitution allows students to define the class as theirs, instead of merely following rules given by the teacher. In this exercise, students first learn the principles associated with constitutions and read the Bill of Rights. Then the students create a principle they would like to see in their class constitution, e-mail that principle to the class e-mail list, then discuss all students' postings until a class constitution is agreed upon.⁵

Interpersonal Sensitivity

Teachers in a traditional classroom can often control inappropriate communicative behavior by using nonverbal looks and gestures or by giving verbal reprimands. InterQuest instructions help students build their rhetorical sensitivity skills, adapting their messages to the communicative needs of the receivers of those messages (Hart and Burks 1972; Hart, Carlson, and Eadie 1980). These instructions inform students about how to write to others directly, affirmatively, and ethically. A unique assignment toward that goal occurs in the second region⁶ of the course. Region II: Constructing Communication inoculates students against producing offensive communication, or flames, in course discussions. This region asks students to write a summary of their own thinking, then identify "sparks" in their writing. A spark is a statement or argument that works to block productive discussion. Sparks are often inflammatory in nature, leading to future flames. Once students recognize their own sparks, they are instructed to look for others' sparks and discuss the intent and effect of such communication. See Chadwick and Dorbolo 1997-30 for the full text on sparks and flames.

Relationship-Building

InterQuest students' relationship-building skills via e-mail and the Web confirm studies comparing face-to-face and electronic communication. Members of computer-supported groups participate more equally than do members of

face-to-face groups (Dubrovsky, Kiesler, and Sethna 1991; Straus 1996; Weisband 1992). Further, e-mail can diminish status effects in the class. Gone are the faces in front of which some students are afraid of speaking. Gone are physical classrooms with their front rows and back rows, each with its own supposed types of students. Students can ignore social roles and demographics, thereby reducing the pressure they feel to fit in. All of this tends to make students write to each other via e-mail as if everyone is of the same status level (Kiesler and Sproull 1992; Sproull and Kiesler 1986). However, when students do know the status of the person they are e-mailing to, such as the instructor, the students create messages respectful of that status hierarchy (Saunders, Robey, and Vaverek 1994).

Once the cornerstones of trust, feedback, and rhetorical sensitivity are in place, the students are ready to begin forming a sense of class unity. And it does not take long to build a cohesive group. Walther and Burgoon (1992) found that persons can develop quality working relationships with others before meeting them face-to-face. Persons interacting exclusively through CMC also use more messages about their relationship with their e-mail partners when they believe they are in a long-term relationship (as short as six weeks) than in a short-term interaction (Walther 1994). In fact, the proportion of relational communication to total communication in CMC increases over time, approaching the proportion of relational communication to total communication in face-to-face interactions (Walther, Anderson, and Park 1994). Within five weeks, persons communicating asynchronously create impressions of their fellow communicators as deep as those created by face-to-face communicators (Walther 1993).

Using E-mail as a Writing Tool

In early IQ trials, student essays were of low quality in both form and content. Few students showed a grasp of basic compositional style and organization. To correct this, assignments now include information about the practice of writing as well as information about the desired content of that writing (see Chadwick and Dorbolo 1997-31 and 1997-32). To further help students use e-mail as a writing tool, InterQuest's Writing Style in E-mail page provides ten tips for successfully using e-mail (Chadwick and Dorbolo 1997-33). Students can also link to Oregon State University's Writing Center Web site for online writing assistance (Chadwick and Dorbolo 1997-34).

A problem being worked on in the current phase of InterQuest is students' tendency to cram their readings and assignments a few days before they are due. This behavior does not take advantage of the capabilities of asynchronous teaching and learning. It is particularly damaging to the flow of computer-assisted conversation. A solution being tested is to include lessons about time management and learning styles as explicit features of the curriculum (see Chadwick and Dorbolo 1997-35 and 1997-36).

Traditional classes offer students products they take with them from the course (e.g., books, journals, class notes, etc.). InterQuest currently only provides students what they choose to print off the Web version of the course, including conversations they have been in. A solution under development is to implement a portfolio system in which students will save to disk their work, their conversations, their teacher's comments, and texts significant to them (see Chadwick and Dorbolo 1997-37)

While determining how to structure e-mail writing assignments, the goal has always been to get students to engage in "hyperpersonal" communication (Walther 1996, 29). Hyperpersonal communication exists when students intentionally select and edit what they communicate to present a unique image of themselves to the receivers of their e-mail. This allows students to exploit the power of e-mail as "editable verbal communication" (36). Students initially use e-mail as a means to quickly jot down a response to something they read. Students must be trained to read, think, and reflect, and then craft a response. When students do this they may still "see" the receivers of their e-mail they are "talking to" but they will take the time necessary to edit that "verbal communication" into quality written communication. This process is not unlike forcing a delay time in classroom discussions. The delay time allows all students enough time to think about a question posed to the class and prevents the "fast thinkers" from blurting out their response, regardless of the quality of that response.

Testing

InterQuest is not an online text book. It is more a succession of activities students perform. Still, students tend to get lost in the course and frequently ask where they are in it and how they are doing. This information must be accessible by the student directly. We are testing a Web quiz tool that gives students instant feedback (Chadwick and Dorbolo 1997-38). The quiz is intended to be a way of helping students organize their reading and to provide a marker of course progress.

Conclusion

Designing a Web course for current technology requires heavy emphasis on writing assignments. In InterQuest even the class discussions are conducted as students write e-mail. The key is to craft a seamless connection between the task, technology, and students so that students can focus on learning course content, not just technology. Most students appear to enjoy taking IQ and find the format intriguing. Many report that they do not feel they are in a "real" class. We interpret this positively, believing that IQ is giving students practice at learning after formal schooling is over, whether that learning uses the Web or not.

Notes

1. The homepage for all InterQuest-related pages is <http://iq.orst.edu>. InterQuest is written for all Web browsers that can display forms and tables.

2. CalcQuest can be found at <http://iq.orst.edu/cq>. The CalcQuest site contains Java and Frames. A browser supporting frames, such as Netscape 2.0 or higher, is required to successfully navigate this site.

3. All Chadwick and Dorbolo 1997 citations refer to the InterQuest Web pages located at <http://osu.orst.edu/pubs/ecac>. The numbers following 1997 correspond to the hyperlinks on that Web page.

4. A form is an HTML element which allows the person using the Web page to enter data into preconfigured spaces, then send that data to a server for processing. A Web form is not unlike any paper-based form you may be used to filling out for a driver's license application. See Chadwick and Dorbolo 1997-39 for the form used to conduct a student survey in the IQ class. See also Chadwick and Dorbolo 1997-40 for the standard IQ Class Conversation form.

5. The class constitution for the spring 1996 version of InterQuest contained these seven principles: 1) To thine own self be true; 2) The ideas and opinions of everyone participating must be respected; 3) Do unto others as you want to have done unto you; 4) There will be no discrimination on the basis of race, class, sexual orientation, marital status, gender, age, or nationality; 5) Participants in our class must be open-minded and supportive to all others; 6) Before criticizing the work of others, we must seek to understand the point of view from which they are speaking; and 7) It is the responsibility of all class members to enforce the above laws by communicating disapproval to those who "get out of line." The class constitution activity involves four Web pages: Chadwick and Dorbolo 1997-41 through 1997-44.

6. InterQuest is organized into regions instead of weeks. The course currently is taught during a ten-week term, where each region usually maps to a week. However, orienting students to regions instead of weeks allows the teacher flexibility in adjusting how much time is spent on each content area. Traditional classes are tied to the working days of the week (Monday-Friday). Students in InterQuest can work at the class at any time on any day. Thus, it makes sense to allow one region to take eight days, another region to take four days, etc., as long as assignments are due during the workweek.

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