Chapter 9

Action Research with Internet Communications Tools

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Learning Objectives

1. List some Internet Tools for Interpersonal Communication.
2. Describe the identifying characteristics of an Internet communication tool.
3. Explain in what sense action research is progressively deeper examination of teaching and learning with an Internet communications tool.
4. Describe the identifying characteristics of an immersive collaborative environment.
5. Describe some Internet communication tools in use today.
6. Immersive Collaborative Environments (ICEs).
7. Demonstrate the procedure for conducting Web-based action research.
8. Devise a plan to conduct action research of a two-way real-time audio discussion and continuous instant messaging during an interactive slide presentation.
9. Summarize in your own words how we might “keep the edge on our communications Web tools.”
10. Summarize some instructional methods used with Web tools.
11. Summarize the post-and-vote model of Web-based peer assessment using Elluminate and WebCT.
12. Compare the challenges involved described in the dissertations and theses.
Abstract

This chapter will present some examples of Internet communication tools, instructional methods used with the tools, and implications for Internet-supported action research as a progressively deeper examination of teaching and learning.

Internet Tools for Interpersonal Communication

An “Internet communication tool” is a computer program or suite of programs designed to enhance and formal or informal information exchanges between individuals and groups. The best known Internet tool used by educational researchers is e-mail for asynchronous interpersonal communication. Another time-tested Internet tool still in use is the listserv, a mailing list management software that allows users to create and maintain e-mail lists on the Internet or even on a local area network. Listservs provide access to newsletters, moderated and unmoderated discussion groups, as well as Usenet newsgroups. Today researchers can use the Google Groups feature in the Google search engine to read and browse the Usenet newsgroups using your Web browser as a client software. We can add to this list “Web logs,” and a range of “instant messaging” software. A Web log or “blog” is a Web-based publication consisting primarily of periodic articles (normally in reverse chronological order). Most early Weblogs were manually updated. Today tools automate their maintenance. Instant messaging software enables the user to share text and multimedia in real time within a group. Some examples include Internet Relay Chat (IRC), ICQ short for “I Seek You,” and “Messenger,” still free in the form of many brand names (e.g., MSN or YAHOO). And then there’s Web conferencing software, or more accurately a Web course management system (WCMS). A WCMS entails reading and writing text into forums and message boards, instant messaging, video and audio conferencing, groupware, social software for virtual communities, virtual teamwork, collaborative workgroups, intranets, e-learning, knowledge management.

Some Communications Web Tools in Use Today

The flexibility of Internet communication tools lends itself to action research with teachers and students. When used for lesson enhancement, for example, a teacher might decide to introduce a communications Web tool as an extra-curricular activity, to enhance the lesson (Mann, 1999a, 1999b, 2000). Used in this way, instructors do not need to redesign their entire curricula or teaching practices to get a good result. Enhancing
a lesson using an Internet communication tool has become a popular topic for conducting educational research. Generally it is hoped that the online group discussion will activate, supplant or compensate for students’ cognitive processing necessary for achievement or motivation. For example, a student may need an example to connect new information with their prior experience. If he or she cannot generate such a connection for themselves, someone in the online group discussion might provide it for them.

Under the best circumstances, the group discussion is unstructured, spontaneous, and enthusiastic. A good conversation is personal with much interchange and clarification. Nobody takes a turn. Some even interrupt. Sometimes the focus can wander off-topic and back on topic and off on a tangential issue. Large, unstructured online discussions are almost bound to fail due to the multitude of incidents are an inevitable consequence of lack of structure. For this reason, the content and learning process of online discussions have become structured.

**Immersive Collaborative Environments (ICEs)**

In this context, usually with some help from the resident technologist, a teacher or researcher will use a communications Web tool to initiate a structured immersive collaborative environment (ICE) as an extra-curricular activity to enhance learning (Mann, 1999a, 1999b, 2000). The goal of the ICE is to enhance the level of student engagement on the Internet, from “read and reply” to dynamic interactions with peers. An ICE can be any combination of threaded, electronic bulletin boards, newsgroups, and chat rooms supported by the Web-course management system.

**Action Research in Bulletin Board ICEs**

In considering research on educational applications with a bulletin board system, several issues should be taken into account.

“Preparation and maintenance time” is an important issue for teachers. Preparation and maintenance time is concerned with the set-up of the forums within the discussion board and the lengthy after-work hours to maintain them. The rewards are: (1) twice the engagement by about a third of the students; (2) about twice the number of students engaged; (3) twice the student time on-task; and (4) about twice the quality of student work from about a third of the students (Mann, 2000). Figure 1 shows online collaboration using a bulletin board system.

- **Dribble files:** Dribble files may be a good secondary source of data for educational research. A “dribble file” is a log of “student access,” “messages read” and “new postings” that can be used to augment analysis of student communications.

- **Student effort:** It appears to be the case that students will work only as hard in an ICE as they perceive their instructor working. If students perceive that the commitment is less than originally stated, students will assume the standard has dropped and drop the quantity and quality of their postings accordingly. Just when and how much may be a separate research topic.
• **Communication**: Although an ICE is a media mix of both writing and speaking, the mental activity more closely resembles associating ideas during a telephone conversation than revising paragraphs in an essay (Mann, 1997). Therefore, students who prefer to express themselves verbally, who argue or debate, may be favored in an ICE over the literate souls with a passion for creative writing.

• **Skills transfer**: There are many similarities between the bulletin boards, newsgroups, and chat rooms provided in the Web-management systems and those offered by public Web sites. Therefore, students who browse and post messages to bulletin boards, newsgroups or chat rooms in public Web sites will have an advantage in an ICE over students who have not.

• **Team-like**: Bulletin boards, newsgroups, and chat rooms are team-like, interactive environments. Students who thrive in an interactive environment (e.g., sports team, debating club) are favored in an ICE over those who work better individually.

• **Incremental**: An ICE requires consistent commitment from the instructor and tutors to ongoing engagement with students online. Immersive collaboration means student immersion, not instructor immersion. A wise Web-course manager increases the amount of student interaction incrementally. Requesting too much
online, too fast will overwhelm and tire both the moderator and her audience; ostensibly throwing them both out of phase with the content. Staying in-phase means getting a best student opinion, satisfactory summary statement, or group consensus before giving a moderator’s view.

- **Engagement:** An ICE increases the engagement of some students with the course content. However, there will always be those who lurk but do not post, and those who neither read nor post, for whatever reason.
- **Democracy:** ICE values all students’ opinions equally. Provision for anonymous postings in the software can maximize the effects of this attribute.
- **Typing:** Those who like to type or can type become more visible than those who cannot or do not wish to type (for one reason or another).
- **Personality:** In a face-to-face lesson, extrovert personalities tend to dominate discussions while the shy quiet types stay hidden in the background. This is still the case with online ICE, with the natural-born writers overtaking the stage from the natural-born talkers.

### Instant Messaging ICES

Instant messaging (IM) is an Internet communication tool that is popular with many students and teachers. Instant messaging is a Web service that alerts its users when friends or colleagues are online and allows them to communicate with each other in real time through private online chat areas. With instant messaging, a user creates a list of other users with whom he or she wishes to communicate. When a user from his or her list is online, the service alerts the user and enables immediate contact with the other user. Students use instant messaging to support their learning. Today’s software makes it easy for the user to send any type of file up to 10 megabytes right from the IM window. This is a great way to send documents, spreadsheets, presentations or any other files you want and know when they have been received.

### Two-Way Audio-Conferencing, Instant Messaging and Interactive Whiteboard

The two-way audio-conference, instant messaging and interactive whiteboard extends the immediacy of instant messaging with a more sophisticated, though still easy-to-learn suite of Web tools, like Voice-over IP (Internet Protocol). Voice-over IP offers students and instructors a real-time controlled environment that keeps participants engaged with full two-way audio, instant messaging and a shared, interactive whiteboard within an intuitive, graphical interface.
Since their inception in the 1980s with CoSy (Szpakowski, 1985) in 1985 and PARTICipate (see CoNet, 1998) in 1981, Web-course management systems have focused on improving Web tool use. CoSy was a Computer Conferencing system developed at the University of Guelph, and later in the United States. With CoSy it was possible to comment on messages, and to follow such comments backwards and forwards, thus creating threads within a topic, as well as search for text strings within a topic. One key to CoSy’s success was the time spent on usability, with a draft user manual and numerous chalkboard walkthroughs with potential users to get early feedback.

PARTIcipate had a tree structure, allowing indefinite branching conferences, designed to structure short discussions, especially around questions and answers that could also be searched for specific information. PARTICipate offered facilities for electronic mail, conferencing, real-time (synchronous) messaging, electronic polling, editors (both line editors and the VAX EDT full-screen editor) as well as search mechanisms whereby the users can locate conference items and topics. Additionally, PARTICipate offered features valuable for designing an online educational environment.

It’s as true today as it was then. We continue to strive to keep the edge on our communications Web tools, by experimenting with new Web tools of course, and also by using familiar Web tools in new ways.
Instructional Methods Used with Web Tools

As in face-to-face settings, online discussion groups are still unstructured, informal and spontaneous. In larger groups especially, usually one person “speaks” at a time. Even in small discussion groups individuals contribute unequally. Online groups with teaching assistants commonly exhibit even more extreme patterns, with the tutors and teaching assistants “speaking” most of the time, and some students hardly speaking at all.

Online Structured Rounds

An instructor or researcher may wish to explore the “the amount of structure to use with a communications Web tool,” which offers more structure than that afforded in an ICE. The structured round can provide more structure to the interaction. Figure 4 shows an online structured round showing the tendency for students to communicate directly to the teacher, as shown in the diagram.
The instructor can use online forum, teleconference, newsgroup, or bulletin board to a structured round teaching strategy. The start of an online session might apply the structured round strategy by requiring students to respond to questions by typing in the online Chat, ICQ, Bulletin Board, Newsgroup:

- “What I’ve been reading since the last session...”
- “A question I’d like answered today...”
- “I hope today’s session...”

Rounds during an online sessions might use themes such as:

- “Something we seem not to have really tackled...”
- “One idea to help us to make progress faster...”
- “I’d be happy to offer an explanation of...”

Rounds at the end of a session might use themes such as:

- “What I’ve got out of today’s [online chat/video clip lecture/discussion forum/etc.]....”
- “Something I still don’t understand is...”

Figure 4. A typical many-to-one teaching strategy showing students swamping their teacher with their postings and requests for immediate feedback
"What I now want to [learn/read/practice/look up/work on] is ..."

In the next meeting, I hope that we...

The discussion data saved by the system can then be analyzed for its content.

Circular Interviewing

Like the structured round, circular interviewing can provide more structure to the interaction, and another opportunity for conducting Web-based educational research. Circular interviewing involves each student taking an opposing view for a set time period for an interview. Then both the interviewer and the interviewee roles “rotate” to another student in the group until everyone has taken both roles, as shown in the diagram in Figure 5.

Online Crossover Teaching

Like the structured round and circular interviewing, online crossover teaching can provide more structure to the interaction, and yet one more idea for conducting Web-based educational research. Online crossover teaching strategy is a way of changing the make-up of an online class from homogenous grouping to a heterogeneous group.

Figure 5. A structured discussion teaching strategy showing students posting to one another as the teacher monitors their discussions
Figure 6. The online crossover teaching strategy showing students posting to the Project Chat Room, before posting to the Specialist Chat Room

3 illustrates the online crossover teaching strategy showing students posting to their Project Chat Room before posting to their Specialist Chat Room.

In teaching strategy research, online crossover teaching may be effective for research on project-based learning activities. Assign students to a group, and roles to each student in the group. In large groups double-up on the role-playing. Start with 4 groups of 10 students posting to a chat room or conference forum so that each of the six group members consists of one member from each of the old groups.

In summation, conferencing features in discussion boards and IM’s permit students and teachers a means of providing communications and feedback by text with multiple people. The voice chat feature in IM software allows students and teachers to talk to one another through their computer speakers and microphone. Even away from the computer, students can send IMs as text messages from their PC to their friends’ mobile phones, when they are away from their PC. A Web-cam allows students to collaborate by sharing live images while they are online. In addition to text and voice messaging, they can broadcast live video of anything they want. In this context, students and teachers may communicate via text and voice in one window, and share their Web-cam with several people at once in another.
**Post-and-Vote for Text: Host-and-Vote for Voice**

This section will discuss two models of peer assessment with Internet communications tools—Post-and-Vote for assessing Chat or discussion board text, and Host-and-Vote for assessing voice-over IP. The post-and-vote model is a method of collecting and analyzing peer assessment data using the variety of features provided in off-the-shelf Web tools. The post and vote model is a direct way of using a variety of Web tools suited to the tasks for which they were designed, with the result of high validity of student assessment, and democratization of the assessment process (Mann, 2005). This model emerged in the late 1990s, at a time when colleges, universities and training organizations had already adopted a Web-based training platform and were becoming acquainted with the features provided in the Web tools. These Web tools included: a bulletin board for posting and replying to discussions, a student viewing area, a questionnaire tool, a message compiler, online chat, student progress tracking, group project organization, student self-evaluation, grade maintenance and distribution, access control, navigation tools, auto-marked quizzes, electronic mail, automatic index generation, course calendar, student homepages, and course content searches (Mann, 1998a, 1998b, 1998c). Whereas the post-and-vote model of online peer assessment is used in assessing Chat or discussion board text, the Host-and-Vote model provides a measure of consistency in peer assessing voice-over IP. Figure 7 shows the four-stage host-and-vote model of online peer assessment using Elluminate and WebCT. Elluminate is a suite of Internet communication tools discussed earlier in this chapter, a two-way, real-time audio discussion and continuous instant messaging during interactive slide presentations.

**Figure 7. The host-and-vote model of online peer assessment using Elluminate and WebCT**

1st: Student emails instructor about the assignment for details and tries-out preliminary ideas for possible inclusion in their real-time presentation.

2nd: Student enters Elluminate software, receives "moderator" status, uploads slides to the whiteboard and begins to speak to the class, introducing each slide and answering their spoken and instant text messages.

3rd: Peers use WebCT Survey to vote and comment anonymously on student presentation.

4th: In "Mail" student receives the concatenated votes and comments from peers and instructor.

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In step 1 of the process, a student e-mails the instructor about the assignment for details and tries out preliminary ideas for possible inclusion in their real-time presentation. In step 2, the student enters the voice-over IP software, receives “moderator” status, uploads slides to the whiteboard and begins to speak to the class, introducing each slide and answering their spoken and instant text messages. In step 3, student peers use WebCT Survey to vote and comment anonymously on student presentation. In step 4, the instructor e-mails the student with concatenated votes and comments from peers and the instructor.

**Action Research: What It Is**

Action research with an Internet communications tool is an iterative (cyclical), progressively deeper examination of one’s online teaching or learning methods. In the first cycle, the action researcher plans an initial intervention, then conducts the intervention and observes, and then reflects on the intervention and observations. In the second cycle, the process is renewed, but unlike a formative evaluation, the researcher’s motivations and assumptions are completely re-examined. See Chapter 11 for an in-depth treatment of action research with a broadband Internet communications tool.

**Implications for Web-Based Action Research**

Throughout the late 1990s and 2000, publicity and sales promotions in print and on the Web, claimed that their Web tools required minimal technical skill, and said they preferred to let educators apply their own methods of course design to their Web courses (Mann, 1998a, 1998b, 1998c). As a consequence, two things happened. First, the bulletin board tool was over-used, with high volumes of student data being saved in the discussion board for reading and grading. Second, a trial-and-error method of learning Web tools became the de facto method of preparing instructional materials for student learning on the Web, a method which I later chose to re-defined as “lesson enhancement, or an instructor’s gradual phasing-in to Web-course management behavior” (Mann, 2000a, p. 23). Trial-and-error has been augmented with research in cognitive load theory (Paas, Renkl, & Sweller, 2003) and multimedia learning (Mayer, 2003; Mayer & Moreno, 2003) to better adapt our instruction to the newer learning environments. At the same time, educators are becoming more socialized to some of the new tools and strategies of the trade. It appears too, that we may soon count on better Web tool assistance from platform developers.

These changes fit well with characteristics of action research (Cohen, Manion, & Morrison, 2000):
• Participatory approach to decision making
• Democratic and consensual decision making
• Shared values, beliefs, and goals
• Equal rights of participation and discussion
• Equal voting rights on decisions
• The deployment of groups that are accountable to the whole group
• Shared responsibility and open accountability
• An extended view of expertise
• Judgments and decisions based on power of the argument, rather than position of power of the advocates
• Shared ownership of decisions and actions

Action Research Dissertations and Theses

Action Research About Literacy Concerns

In 2004, Robert Rozema completed a Ph.D. degree at the Western Michigan University with the thesis “Electronic Literacy: Teaching Literary Reading Through the Digital Medium.” This dissertation argues that the digital medium, and more specifically about how the Web can support literature instruction at the secondary level. It begins by identifying two central concerns that have marked historical and contemporary approaches to literature instruction, namely: concern for the text, and concern for the reader. Next, through an examination of hypertext, it proposes that the digital medium can meet both concerns, and supplies a theoretical model for implementing digital technology in the literature curriculum. Subsequent chapters illustrate how this model functions in a practical context by drawing on action research conducted in a secondary classroom. Specifically, these chapters describe how two Web-based learning tools, the literary MOO and the WebQuest, were used to reinforce reader-oriented and text-oriented literature instruction. The literary MOO, used in conjunction with the novel Brave New World, helped students evoke and elaborate on the story world of the text, make personal connections between the text and their own lives, and discuss the text in an egalitarian and collaborative way. The WebQuest, used in conjunction with the novel Heart of Darkness, helped students learn about critical theory and read the text in an analytical and text-centered way. The dissertation concludes by considering how English language arts teachers might best be trained to integrated Web-based technology. Drawing on case studies of four intern teachers, this final chapter argues that teacher educators must equip their students to use technology in ways that are practical, as well as theoretically sound.
Action Research On Web-Site Development

Pamela Ann Miller wrote her Ph.D. thesis in 2003 on “How South African Further Education and Training Learners Acquire, Recall, Process and Present Information in a Digitally Enabled Environment.” The aim of the research was to investigate how South Africa Further Education and Training learners acquire, recall, process and present information in a digitally enabled environment. To determine how a changing society and technology have influenced the way learners interact with information in an educational environment, recent changes in society and their influences on young people were examined as well as the traits of the generations with respect to character, family life, the future, peers and technology. This revealed that learners today need: (1) material in visual format; (2) to find or create their own learning content; (3) fast access to learning material; and (4) learning material with long-term career value. It was also apparent that they are motivated by technology used in information, like to do things, and regard learning as a social activity. The methodology of case study action research was used. Note was taken of measures to ensure reliability and validity and applied to this research to ensure that the findings are valid and reliable as well as generalizable in South Africa beyond the confines of Pinelands High School (PHS). The learners were heterogeneous and displayed a range of skills, ages, academic abilities and prior experiences. Many different management formats were employed, such as learning at a distance, in a contact environment, with examples and specific or open-ended instructions as well as different forms of motivation, time for the work in hand, etc. The major findings of the research were the influence of peers and importance of external motivation in the form of grades on the learners’ cognitive, affective and physical learning activities in the computer laboratory. Secondary findings indicated the importance of content, examples, instructions, time, mental state, classroom ecology, contact environment and software in the way learners acquired, recalled, processed and presented information. The research concluded with a set of actions that should be taken to ensure successful interaction with information in a digitally enabled environment.

Action Research Collaboration

A Master’s thesis by Ellen Bourassa accepted in 2003, focused on “Creating a Virtual Community: An Action Research Study on Reducing Northern Adult Education Isolation.” Adult educators in Northern Canada identify isolation as a problem in their practice. This thesis describes an action research study based on the question, “Can the professional isolation perceived by Northern adult educators in the small isolated communities be reduced by fostering closer connections among them using communications technology?” The purpose of the study was to explore the perceptions held by Northern adult educators about their professional isolation and to explore the usefulness of a Web-based discussion for reducing their sense of isolation. In the study, Northern adult educators who work for a local college took part in discussions on the topic of professional isolation using a discussion board within a dedicated Web site. They also completed a telephone interview, kept a reflective journal, and responded to a final
questionnaire. The findings indicate that: (a) the adult educators perceive isolation as stemming from geography, lack of collegial connection, limited connection with their institution, and difficulty in establishing relationships with local communities; (b) connections with colleagues are very important to adult educators as a means of reducing professional isolation; (c) computer-mediated communication is a useful way of making professional connections among Northern adult educators; and (d) facilitation is important to the success of online discussion forums. The study recommends the continuation of online discussions to foster connection and reduce isolation among Northern adult educators. It further recommends increased institutional and personal efforts to establish a culture of reflective practice that includes, for example, encouragement of collaboration on other action research projects.

**Group Training, Mentored Training, and Self-Directed Training**

Sandra Neubauer completed a master’s thesis in 2004 entitled “Facilitating Computer Technology Skill Acquisition in Higher Education Faculty.” The study employed three professional development methods to teach higher education faculty to use an online course management system to create Web-enhanced courses that combine traditional classroom contact with portions of online learning and communication. Using action research, the researcher explored three professional development methods: (a) group training, (b) mentored training, and (c) self-directed training. The group session was typical of most computer training in institutions of higher learning. The mentored sessions paired new users with a more experienced user, and the self-directed training involved online learning from a course Web site. Results from a questionnaire administered after the sessions showed that faculty rated the mentored sessions very useful 83% of the time, while they rated the group session very useful 50% of the time, and the self-directed training very useful 33% of the time.

**Action Research Checklist/Procedure**

- Identified an online topic or issue possible on-site facilities.
- Planned, implemented, reviewed, evaluated an intervention designed to improve practice.
- Promoted online collaboration, promoting equality and democracy, and developing reflective practice. I empowered participants through involvement.
- Collected data, review, developed, analyzed and interpreted the data. I carried out the action plan, and linked practice and research.
References


