Communication in Cyberspace: Powerful Ideas Shaping Our Educational System


In the September issue of L&L (vol. 27 no. 1), I briefly discussed 10 powerful ideas that are helping shape the present and future of information technology (IT) in education. Each of these powerful ideas cuts across many disciplines, makes effective use of IT, and has enduring value. Communication is an underlying theme in many of these powerful ideas and is especially emphasized in #1 and #8. For the whole list, visit www.iste.org/L&L.

Humans are social creatures. They have developed many different aids to communication, such as written language and the telephone. These aids to communication have helped change the world. Now many of us make routine use of cyberspace aids to communication such as e-mail, the Web, and interactive hypermedia.

Communication (reading, writing, speaking, listening, and viewing) is part of the basics of education. Logan (1995) argues that information technology is a language (a new form of communication). Our educational system is faced with the challenge of deciding what we want students to learn about the cyberspace communication aids.

**Synchronous and Asynchronous Communication**

A face-to-face conversation is a synchronous communication. The speaker and listener alternate roles—indeed, both may talk at the same time. The telephone and videophone facilitate a synchronous interactive communication between people who are separated by great distances. Such a two-way communication can be carried on through the Internet.

Sending and receiving letters provides an example of an asynchronous communication. The communication may be interactive or one-way, and typically there is a substantial time delay between the sending of the communication and the receiving of the communication. The telegraph and e-mail both facilitate asynchronous communications.

**Publishing and Broadcasting**

Book and magazine publications, as well as radio and television broadcasts, tend to be one-way communications. Of course, you can write a letter to the editor or call a talk show. Thus, these forms of communication have some of the same characteristics as synchronous or asynchronous interactive communication. However, the level of interactivity is generally quite low.

**The Web and Hypermedia**

At first glance, one might think of a Web site or a hypermedia document as just another form of publishing or broadcasting. But wait! A hypermedia document or a Web site can be designed so that it is interactive. In essence, the hypermedia or Web site creator can design various types of immediate response to help give the communication some synchronous interactive features.
This is a new type of communication, a sort of blend between the interactive and the one-way types of communication. In the remainder of this article, I will call it interactive broadcasting.

One of the goals of research and development in artificial intelligence (AI) is to significantly improve interactive broadcasting. Gradual progress is occurring in developing AI software that can “understand” incoming communications and that can respond (for example, by providing various types of written or oral output) in an “intelligent” manner. Perhaps you use a primitive form of such software to filter your incoming e-mail, dividing it into various categories, and perhaps automatically responding to some of the messages.

**Some Implementation Ideas**

A key idea to keep in mind is that the “older” forms of communication are not going away. A student needs to develop facility in both the older and newer forms of communication and learn when each is most appropriately used.

1. Have your students work in teams to make a list of modes of communication and classify each communication as interactive, broadcast (low or no interactivity), and interactive broadcast. The teams are to give examples of common uses of each of the modes of communication. Additional activities:
   a. Develop a time line illustrating when each of these modes of communication was initially developed and when it came into common use.
   b. Discuss the advantages and disadvantages (strengths and weaknesses) of each of the modes of communication. Give examples for each mode of communication as to when it is particularly appropriate and when it is relatively inappropriate.

2. Have your students do research on Alan Turing (“Alan Turing,” 1998). One of Turing’s contributions to the field of computer and information science is now called the Turing Test. Turing challenged computer scientists to develop hardware and software that could carry on a conversation (for example, using e-mail) with a person. The test is to develop a conversation program that is so good that people cannot readily tell if they are communicating with a person or with a computer. Some additional activities:
   A. Discuss with your students how a person communicating using e-mail can easily pretend to be someone else. How can you tell if the people you are communicating with are accurately representing themselves and telling the truth? What can you do to protect yourself from fraud and deception in this type of communication?
   B. Extend the discussion in (A) to Web sites. How can you assess the quality of the content of a Web site? "What are similarities and differences between communicating with a person through e-mail and communicating with a person through his or her Web site?"

3. Have your students work in teams to develop rubrics for evaluating the quality of the communication in an interactive hypermedia or Web document. Each team is to find examples of very good communication and of relatively poor
communication. Each team is to do a presentation to the whole class, illustrating their rubrics with examples of good and poor communication.

4. The tools (plough, hammer, bicycle, etc.) that humans have developed and pass on from generation to generation can be thought of as a form of one-way communication. But with IT and AI, we can now have interactive tools—tools that have a certain degree of intelligence. Divide your class into teams. Each team is to select a tool that does not currently contain IT and AI. The team is to propose IT/AI-based modifications to the tool to make it more useful, user friendly, easier to learn how to use, and so on. Each team is to do a presentation to the whole class.

Final Remarks

The ISTE National Educational Technology Standards (NETS, 1999) emphasize communication. Among other things, these standards specify that students are to learn to read and write interactive hypermedia. Interactive hypermedia is to be one of the routine, everyday modes of communication to be used by students and their teachers in the learning and teaching process. This is to occur throughout the curriculum, at all grade levels, as one component of students learning to communicate.

References

