

# Content and Intent Shape Function

## Designs for Web-Based Educational Telecomputing Activities

By Judi Harris

Eliel Saarinen (1873–1950), a Finnish architect and city planner who moved to the United States in the 1920s, was quoted in the July 2, 1956, issue of *Time* magazine as having said:

Always design a thing by considering it in its next larger context—a chair in a room, a room in a house, a house in an environment, an environment in a city plan.

Saarinen's words convey wisdom to those of us planning curriculum-based educational telecomputing projects that will be supported by World Wide Web pages. (For more information on Saarinen's work, see the Saarinen Resources sidebar at the end of this article.) Our "next larger context" for project page design is the variety of *functions* that we hope the WWW site will serve and support. The pages in our projects should be designed with these functions in mind. Before offering our Web documents to an online community, we must answer questions like these:

- Who will be interested in exploring the site?
- What types of information should be available at the site to address different audiences' interests?
- How should this information be presented so that it is maximally helpful to project participants and/or Web strollers?

Currently, Web page design is primarily addressed in terms of *form* and *content*, rather than *function*. We consider, for example, layout options (i.e., "Should we use frames?"), overall structure (i.e., "Should we have one long page with links to subsections or should we have multiple, shorter pages?"), transfer time (i.e., "How many graphics should I put on this page?"), browser differences (i.e., "Will Lynx users be able to benefit from my site?"), readability (i.e., "Does this combination of background pattern and text color make the page difficult to decipher?"), and aesthetics (i.e., "Is the combination of colors, items, and spacing pleasing to the eye?"). In this article, I will suggest that we also consider project-related *functions* as we design WWW documents. After all, any architect (including Mr. Saarinen) would strongly suggest that "form follows function," right?

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**Before you design the form of your Web site, you need to give some thought to the way the site functions. This article identifies 10 ways that Web sites can function to support curriculum-based educational projects and provides examples of Web sites for each.**

### Project-Related Page Functions

Have you explored the Web pages that Glen Bull, Gina Bull, Tim Sigmon, and I have been providing as support for this volume's "Mining the Internet" columns? If not, please stop reading for a bit and go to this URL with your World Wide Web browser to see what's there for you:

<http://teach.virginia.edu/go/mining/>

In addition to materials that relate to the topics for the September, October, and November 1996 "Mining" columns, you should see a link on the page to resources that I've collected and categorized in ways that might help you explore K–12 project-related Web page design. I've included many good examples of educational telecomputing projects that are supported by Web pages. These are organized both by Web page functions and by activity structures (Harris, 1995). Let's examine aspects of a few of these WWW documents here to illustrate 10 different project page functions. More information about each is, of course, available on the Web and accessible from the "Mining the Internet" support page just mentioned.

### 1. Project Overview

*Web sites can serve as succinct introductions to the goals and operational structures for educational telecomputing projects.*

For example, the Web page for the Canadian Kids from Kanata project (<http://www.web.apc.org/KFK/kfkhome.html>) provides an overview offering a general description of this global classroom effort to encourage communication among indigenous peoples and later immigrants. Included on the page are a brief history of the project, an explanation of how the communicating groups are organized, summaries of praise that the project has received in the past, a list of supporting organizations and individuals (including Buffy Sainte-Marie), and links enabling page visitors to fill out an application to participate and/or e-mail organizers with questions.

## 2. Project Announcement

Web sites can **announce curriculum-based projects**, inviting participation and providing links to relevant networked resources.

The U.K.-based Chatback project collection sponsors Memories from 1945 (<http://spectrum.tcns.co.uk/chatback/welcome.html>), an electronic appearance activity that helps senior citizens to communicate with students about their memories of experiences during World War II. The main page for this project (see Figure 1) includes enticing introductions to the seniors available for communication.

The page also includes information on how to subscribe to the project's electronic mail discussion list, links to stories about people's WWII experiences, and sample project work from students in Cottage Grove, Minnesota.

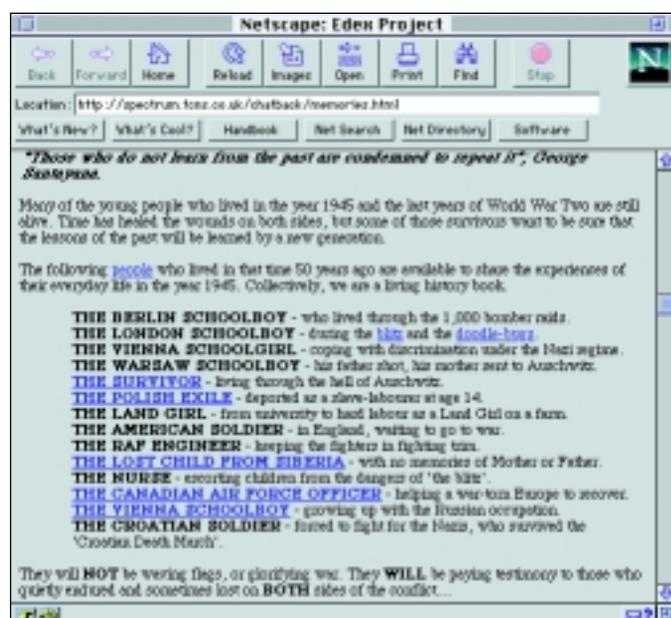


Figure 1. The Chatback project page.

## 3. Project Instructions

Web sites can provide specific **instructions** to telecollaborators on how to participate in the educational project.

I\*EARN's excellently organized Learning Circle global classroom projects (<http://www.iearn.org/iearn/circles/lc-home.html>), for example, are supported by a hypertextually linked set of carefully crafted and information-rich Web pages that provide specific, step-by-step instructions for project participation. A small section of the main page at this site appears in Figure 2. Note the many active links to documents supporting each stage of project work.

The page also contains information on joining I\*EARN, links to conferencing spaces in which project partners communicate, and a chronologically organized timeline for the first session of Learning Circle 1996-97 telecollaboration.

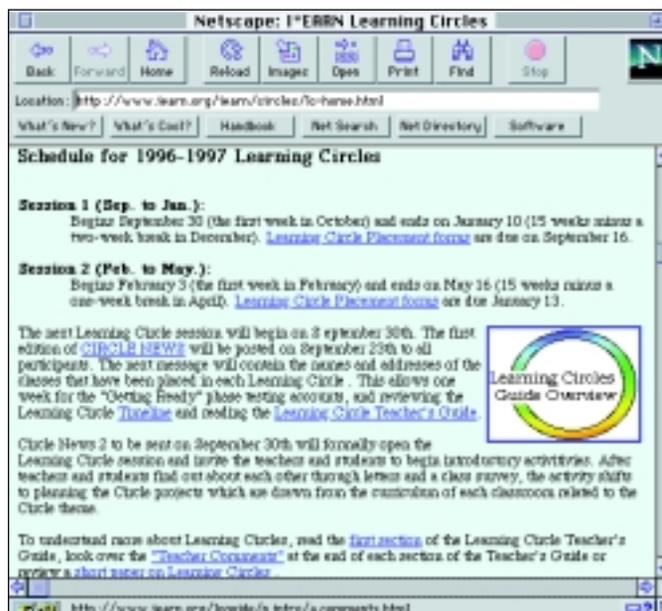


Figure 2. The Learning Circle global classroom project page.

## 4. Information Repository and Exchange

Web sites can serve as virtual places for project participants to exchange information.

KIDLINK's long-term Multi-Cultural Calendar database creation project site (<http://www.kidlink.org/KIDPROJ/MCC/>) cross-indexes student-written depictions of hundreds of holidays and festivals from around the world. The holiday descriptions are accessible by month, holiday name, country, and author. A World Wide Web-based form is also available at the site, so that new entries for the holiday database can be submitted more easily. A portion of this form is shown in Figure 3.

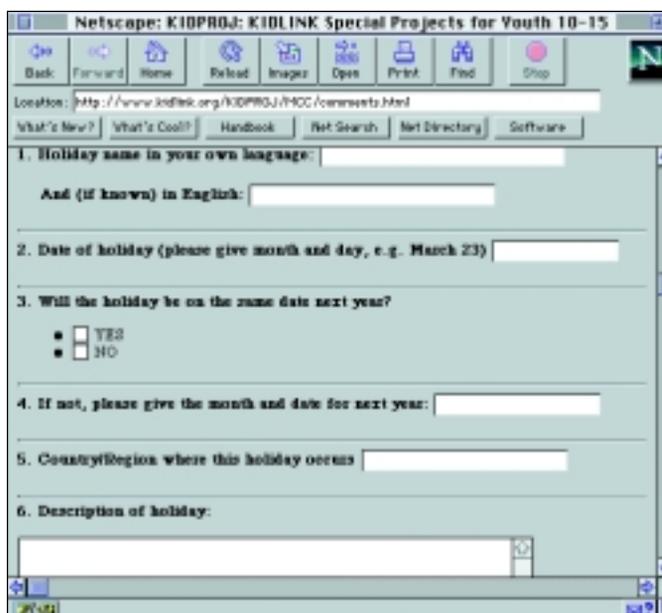


Figure 3. The Multi-Cultural Calendar project page.

## 5. Context for Project-Related Communication

Web pages can be co-constructed by project participants, creating an open-ended form of multimedia communication.

The Electronic Emissary telementoring project (<http://www.tapr.org/emissary/>), which “matches” volunteer subject matter experts with students and teachers interested in inquiry-based learning in the experts’ specializations, has seen a few electronic teams co-create Web pages to facilitate their virtual interactions. This is especially effective when pictures or diagrams need to be concurrently viewed, and can be supplemented by real-time audio/video interaction using CUSeeMe.

For example, a meteorologist working for the National Center for Atmospheric Research in Colorado helped a sixth-grade class in Texas learn about atmospheric science, in part by suggesting an experiment that required the assembly of a device that would help them to “measure radiative processes.” The scientist posted a picture of the device on the common page as a beginning to an ongoing, multimedia discussion of the results that the planned experiment yielded.

## 6. Project Support

Web sites can serve as organized collections of project-related resources.

CoVis’s rich and well-organized site (<http://www.covis.nwu.edu/>) offers a plethora of materials that participants can use as they explore geosciences in telementoring contexts, “learning through collaborative visualization.” The key to making project support sites maximally useful to project participants is to organize the materials offered for quick and efficient access. CoVis’s main menu, shown in Figure 4, reflects the care and thought that project coordinators have put into the functionality of the project’s Web site.



Figure 4. The CoVis main menu.

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## 7. Project Chronology

Web sites can present chronologies of past and ongoing project work.

The beautiful page shown in Figure 5 greets GlobalLearn’s (<http://www.globalearn.org/>) Web site visitors. Selecting the Expedition icon allows viewers to see rich artifacts of many types. These artifacts trace the experiences of a group of explores who are traveling to 14 different countries on this expedition and telecommunicating as they do so, providing telefieldtrip opportunities for many students from all over the world.



Figure 5. The GlobalLearn home page.

## 8. Showcase of Participants’ Works

Web sites can provide viewing space to share project participants’ creations.

MidLink Magazine (<http://longwood.cs.ucf.edu/~MidLink/>), an electronic publishing project for “kids in the middle grades,” publishes students’ art and writing four times each year. Each issue of this “e-zine” is actually a thematically linked collection of students’ works that were associated with different educational telecomputing projects. Examples from the December/January 1996–97 issue include stories, “peace cards,” a haiku exchange, and a “virtual quilt,” all created around the theme of friendship.

## 9. Project Center

Web sites can serve as multipurpose centers, combining several of the other project-related functions listed here.

Figure 6 shows the main menu for the Global SchoolNet’s KidsPeak telefieldtrip project (<http://www.gsn.org/gsn/proj/everest/>), with which students used the Web to follow mountain climber Sandy Hill Pittman as she and her team ascended

Mount Everest in 1996. This site illustrates well how many of the page functions mentioned earlier in this article can be combined to create an information-rich, facilitative, multipurpose “virtual center” for an educational telecomputing project.



Figure 6. The KidsPeak telefieldtrip project page.

## 10. Project-Spawning Service

Web sites can offer **electronic services** that can help to initiate new curriculum-based telecomputing projects.

A growing number of services that help teachers and students locate information and interpersonal contacts with which they can begin new projects is now available on the Web. Notable among these are:

- Keypal and global classroom partner locators, such as the Intercultural E-Mail Classroom Connections service (<http://www.stolaf.edu/network/iecc/>).
- Content-related question-answering sites, many of which are indexed on Pitsco's Ask an Expert page (<http://www.askanexpert.com/askanexpert/ask.html>).

## The Next Next Larger Context: Purpose

I hope that the 10 Web site functions explained and illustrated here will help you to allow function to drive form as you design Web pages to support current and future educational telecomputing projects. I would be remiss, however, if I did not urge you to continue to follow Saarinen's sage advice by considering function in terms of its next larger context: purpose. For, as Norbert Wiener (1954) wrote in *The Human Use of Human Beings*:

There is one quality more important than “know-how.” ... This is “know-what,” by which we determine not only how to accomplish our purposes, but what our purposes are to be.

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## Reference

Harris, J. (1995). *Way of the ferret: Finding and using educational resources on the Internet* (2nd ed.). Eugene, OR: International Society for Technology in Education.

## Saarinen Resources

**Examples of and information about Saarinen's works can be found on the World Wide Web at these locations:**

### First Christian Church

**Bloomfield Hills, Michigan, USA (1942)**

<http://columbus.hsonline.net/1chrisch.htm>

### Railway Station

**Helsinki, Finland (1910–1914)**

<http://www.tulane.edu/lester/text/1890-Present/Modern/Modern26.html>

<http://www.hype.com/finnart/helrail2.gif>

<http://www.hype.com/finnart/helrail1.gif>

### Project for the Chicago Tribune

**Chicago, Illinois, USA (1922)**

<http://www.tulane.edu/lester/text/1890-Present/Modern/Modern48.html>

<http://archfilms.com/tour/michigan/tribune.html>

### City Plan for Canberra

**Australia (1912)**

<http://www.archmedia.com.au/aa/1996/vol85no2/review.htm>

### Finnish Art Nouveau

<http://www.kuokkala.jkl.fi/oppilaat/93c/architec.htm>

### Cranbrook Foundation Buildings

**Bloomfield Hills, Michigan, USA (1922–1938)**

<http://www.n8fow.ampr.org/catalpa/cranbrook.html>