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Educational Telecomputing Projects: Information Collections

by Judi Harris

Can the Internet bring knowledge to the precollege classroom? Interestingly, the answer is probably no. Surprised? Probably not, if you consider the differences between *knowledge* and *information*.

Clearly, there is an enormous amount and variety of information available on the Internet. It comes to account holders in many different forms: as text, pictures, video clips, sound files, and software, and via several different information exchange formats: Gopher, World-Wide Web, electronic mail, conferencing, realtime interaction, and direct file transfer. But is this knowledge? Many, like Taylor & Swartz (1991) would say "no." To these scholars, knowledge is the result of the process of knowing, which can only occur as the learner actively *constructs* what s/he knows, using information in this process. Larsen (cited in Fox, 1991) declares that the confusion between knowledge and information

> is perhaps one of the most serious and widespread mistakes in the current use of information technology, and it leads to the attitude that giving students information is identical to giving them knowledge. (p. 224)

Larsen says that knowledge results when an individual personally transforms information. Knowledge is private, while information is public. Knowledge, therefore, cannot be communicated; only information can be shared. Whenever an attempt to communicate knowledge is made, it is translated into information, which other learners can choose to absorb and transform into knowledge, if they so desire.

This distinction, although it may strike you as purely semantic at first, is important to consider when deciding how to structure curriculum-based educational telecomputing activities. Some of the most motivating and successful activity structures are those that encourage students to collect and share information...*and then use it to actively create higher-order ideas.*

In this month's column, five different types of *information collections*, or educational telecomputing activities that help students to collect, organize, and share intrinsically interesting information, will be presented. This article is the second in a three-part series that features examples of three different general classes of educational telecomputing activities: *interpersonal exchanges* (March 1995 *TCT*), *information collections* (this month), and *problem solving projects* (next month). Each genre of educational telecomputing activities

includes five, six or seven different *activity structures*, and each structure is presented with at least one example activity that has been classroom-tested and shared by telecomputing teachers.

It is my hope that by providing you with activity structures, rather than a potpourri of lesson plans, you will be empowered to design effective educational telecomputing experiences for your students that are curricularly-based and adapted to suit their particular learning needs and preferences. This idea (and earlier versions of these activity classes and structures) was first presented in the May 1993 "Mining the Internet" column, then expanded in the February, March, and April 1994 "Mining" columns in *The Computing Teacher*. The following structures and examples are intended to serve as an update to that earlier work.

Information Exchanges

There are many examples of thematically-related information exchange that have been presented as popular telecomputing activities. Students and their teachers from around the globe have collected, shared and discussed, for example:

- student-written book reviews
- summer and winter solstice information
- children's voices (as sound files)
- teenagers' fashion preferences
- favorite quotes
- international eating habits
- local weather conditions around the world
- children's hour-by-hour schedules of activities on a common day
- recipes
- wild bird observations
- family life customs and perspectives
- insect identifications
- immigration/emigration experiences
- international holiday customs
- Internet signature files
- videoletters
- schoolground ecosystems
- school safety rules

This type of activity can involve many classes without becoming an overwhelming management task for teachers, and is a particularly powerful application of telecomputing tools because students become both creators and consumers of the information that they are sharing. Projects like these typically begin with a call for participation that is posted by a classroom teacher, such as this message, offered by "Internet angel" Patti Weeg:

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From: "Patricia A. Weeg" <pweeg@source.asset.com>
Subject: *Multi-Cultural Calendar: 'Valentine' names


                    **********************
                        Loving Names
                    **********************
```

The Salisbury KIDCLUB kids searched for names of places that capture the 'Valentine' spirit. Please add any other names of cities, towns, mountains, etc. We know there must be similar names in other countries but we just can't recognize them... You'll translate them for us?

Many thanks!

Here's their list:

Darling Range Mts. Australia
Darlington, England
Darlington, South Carolina
Friend, Nebraska
Friendship, New York
Heart's Content, Newfoundland
Heart's Delight, Newfoundland
Honey Brooke, Pennsylvania
Honeygrove, Texas
Kissimmee, Florida
Love, Oklahoma
Lovejoy, Illinois
Loveland, Colorado
Loveland, Ohio
Lovelock, Nevada
Lovely, Kentucky
Loving, Texas
Lovington, Illinois
Valentine, Nebraska

Kristi, Kelli, Hickory, Maggie, Mickey, Karen, and Nada

Sometimes students initiate information collection projects, too. These two young men, who are from two different countries, initiated an international project about flags by saying:

|~ -=+ KIDPROJ FLAGS PROJECT '95 +=- |~

Dear Friends,

We (Andraz and I) would like to organize a project. A project about flags. We are asking 'kids' to send us a 'drawing' of their flag and also a description... What do the colors mean, and maybe some history...

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Please DRAW your flag, because 'scanned' pictures are very big,
and when we get a lot... then the hard drive will get too full :)
Please sent your drawn flag with a description to:


KIDPROJ@vm1.nodak.edu


[material deleted]


Andraz  -  pttsc3@public1.noprmd.mail.si
Robbert -  parwanto@hacktic.nl
```

Sharing information that is intrinsically interesting to children on an international scale is an excellent way to engage students in authentic cultural exchange.

Database Creation

Some information exchange projects involve not only collecting, but also organizing information into databases that project participants and other students can use for study. Successful information exchange activities can "grow" into database creation activities.

Students in Julie McMahan's Year 9 Computer Literacy classes, for example, created a database of important world events by compiling and reflecting upon answers to the following survey:

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IMPORTANT EVENTS SURVEY


1) How old are you?
2) Are you a male or a female?
3) Where do you live?  (City, State, Country)
4) What is the name of your school?
5) What was the most important event that happened in your
school during the past year? (Please explain briefly why you feel
this event was so important.)
6) What was the most important event that happened in your
city or state during the past year? (Please explain briefly why
you feel this event was so important.)
7) What was the most important event that happened in your
country during the past year?  (Please explain briefly why you
feel this event was so important.)
```

As new information access and organization tools (such as the World-Wide Web browser, *Mosaic*,) become more widely used in precollege classrooms, databases that students create across sites can be freely shared with the rest of the Internet community. Databases can also be created *for* students to access, using information that they supply. Venanzio Jelenic (Venanzio@hookup.net), for example, proposed the "Jaunts"

project, in which students from many different countries collect pictures of their hometown signs (i.e., "Welcome to Port Sydney, home to 500 nice people and one old grouch."), and send them, along with text describing the town and themselves, to Venanzio, who adds the information to a growing WWW page.

Electronic Publishing

Another type of information collection and exchange can occur with electronic publishing of a common document, such as a newspaper, literary magazine, or electronic journal. For example, students who worked with Priscilla Franklin, of the Woolslair Elementary Gifted Center in Pittsburgh, Pennsylvania, created an "ethnic cookbook" with recipes supplied from students all over the world. John Swang, director of the National Student Research Center at Mandeville Middle School in Louisiana (nsrcmms@aol.com), helps students to edit and publish both printed and electronic journals that feature the results of exemplary student research. And Gary Ritzenthaler (garyz@elm.circa.ufl.edu) coordinates a "Global Student Newswire," which makes high school student-authored news stories and photographs available, via the Internet, to student journalists all over the world who are publishing news using a variety of media locally at their schools.

Tele-Fieldtrips

Organizers for the Global SchoolNet Foundation encourage Internet-connected teachers and students to share observations and experiences made during local fieldtrips with teachers and students from other cities, states, and countries. Erica Rogers (erogers@bonita.cerf.fred.org) maintains and distributes a monthly schedule of international fieldtrip information posted by participating teachers. In this way, if an upcoming fieldtrip will yield information pertinent to a particular class' curriculum, questions can be sent to the children scheduled to take the trip to answer while on the outing.

One unusual example of such an electronic fieldtrip occurred in August 1994, when Jane Goodall took sixty children to visit the exotic animals on the Michael Jackson Ranch, teaching about their care and feeding, and sharing information about the issues associated with animal welfare. The students who visited the California ranch took other children's questions along with them, so that they could find answers and report them back to the remotely-located questioners. After the trip, the student visitors wrote and shared both the answers that they discovered and their general observations and impressions of the experience.

"Fieldtrips" (often *expeditions*) taken by adult or child subject matter specialists are also shared on the Internet. In the month that this article appears, a team of archeologists and bicyclists will be engaged in an expedition to Central America, studying the ancient Mayan civilization as part of "MayaQuest." This rich interdisciplinary project was described, in part, as follows:

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During this school year, a kid-directed team of archeologists and
bicyclists will be using the latest technology to help illuminate
one of the greatest mysteries of all time: the collapse of the
Ancient Maya Civilization.


Between February and May, 1995, the team will travel through
Guatemala, Belize, Honduras and southern Mexico.  On mountain
bikes they'll carry Hi-8 cameras, laptop computers and EXEC*SAT
satellite transponders which will connect the team to an on-line
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audience featured on Prodigy and the Internet.

Students will be able to help direct the expedition and help answer questions by archeologists in the field. CNN Newsroom will air weekly reports on the expedition's progress and students in Minnesota will produce live satellite programs with accompanying support curriculum available via the Internet. All Internet materials are available via Gopher, World-Wide Web, or e-mail.

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**************************************
*             MAYAQUEST                *
**************************************
*   Gopher: InforMNs.k12.mn.us/mn-k12    *
* WWW: http://InforMNs.k12.mn.us/mayaquest *
*   E-mail: Mayaquest@InforMNs.k12.mn.us     *
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An equally exciting and sophisticated "vicarious expedition" focussed upon astronomical research was sponsored by NASA in mid-1994 and was dubbed "FOSTER On-Line."

FOSTER On-line will plug an airborne astronomy missions group into cyberspace. These researchers fly on NASA's Kuiper Airborne Observatory with an infrared telescope at 41,000 feet; the altitude diminishes problems with atmospheric absorption. The women and men involved in this research will be based in both Hawaii and California in May and early June. During this time they hope to share the excitement of a NASA research project with K-12 classrooms via the Internet.

Frequent project updates will be sent almost every day. Students and teachers will be encouraged to send question to the team via Email. Various background materials including articles, lesson plans and images will be made available via gopher and FTP. A video documentary about the research team will be aired via satellite once per week. The remainder of this message will provide details on the various components.

Information about the project is archived on NASA's Gopher at: **quest.arc.nasa.gov**.

Online expeditions can even help us to track animals' movements. The "Wolf Studies Project," organized by members of *InforMNs*, a commercial Internet provider in Minnesota, "allowed students and teachers around the world to hear, see, and track radio-collared wolves in the Superior National Forest via the Internet."

As you can see, the possibilities for this kind of rich, multidisciplinary, multimedia virtual experience are quite powerful.

Pooled Data Analysis

Information exchanges are particularly effective when data are collected at multiple sites, then combined for numeric and/or pattern analysis. The simplest of these types of activities involve students electronically issuing a survey, collecting the responses, pooling and analyzing the results, and reporting their findings to all participants. One such project involved a group of students in St. Claire Shores, Michigan, who polled other

students about the time that they spend watching television. A group of students working through the National Student Research Center (mentioned earlier) distributed a "quiz" to test respondents' knowledge about breast cancer. 10th-year students studying civil justice in Monroe, Michigan collected and analyzed responses to a survey of opinions on physician-assisted suicide.

Pooled data activities have also included projects in which students collect environmental data at numerous and varied sites, then pool and analyze it to reveal patterns that help to address current scientific challenges. For example, Marita Moll's Year 6 students in Ottawa, Ontario coordinated an international study of ultraviolet radiation levels, and Michele Wendel's students in Concord, New Hampshire led an international monitoring project of low-level ozone readings. Jim Meinke's students in Lakewood, California proposed helping students at other locations create isogonic maps (of the Earth's magnetic fields) with this simple call for participation on the Cleveland Freenet:

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            INTERESTED IN A NEW WORLDWIDE EXPERIMENT?


          MAPPING THE EARTH'S MAGNETIC FIELD (ISOGONIC)


This experiment can involve many classrooms around the globe in:
     communications
     measurement
     mapping skills
     calculations


It would involve a minimum of equipment at each school (or home)
to conduct the experiment.
     world map
     compass(es)
     night observation of Polaris (North Star), Southern Cross
         for our southern neighbors


The experiment would involve many schools or homes involved  in
gathering the data from their latitude and longitude. How far off
is your magnetic data from true north or south in your location?
This data would be transmitted to us here at Lakewood High School
and we would send out a summary so that you could construct a
worldwide magnetic map in your classroom.  This would also lead
to discussions on the locations of the magnetic poles as well as
how to draw iso or (equal) lines.  It might also lead to discussions
of night sky movements around the constellations or how the
magnetic field is thought to be created.


                        ARE YOU INTERESTED?
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If  you  are interested in trying such an experiment, drop  me  a
quick note at the address below.


Jim Meinke -          Lakewood High School
                      bd765@cleveland.freenet.edu
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Clearly, this type of project holds much promise for involving students in large-scale research efforts that use mathematics and scientific methods to answer complex and interesting questions.

An Educational Telecomputing Archive

Would you like to learn more about any or all of these innovative educational telecomputing projects? If so, there is an Internet file archive subdirectory made just for you. Use the **ftp** command from your Internet account, or the **ftpmail** gateway service via electronic mail (both presented in ISTE's *Way of the Ferret: Finding Educational Resources on the Internet*) [Harris, 1994] to anonymously access the Texas Center for Educational Technology's server at **tcet.unt.edu**. Once connected, look in the subdirectories contained inside **pub/telecomputing-info/ed-infusions** to find additional details on the activities mentioned above, plus descriptions of telecomputing projects from these and other "activity genres."

In the next "Mining the Internet" column, I will share examples of educational telecomputing projects that can be classified as seven different types of *problem-solving projects.* Until then, if you would like to share *your* examples of successful telecomputing activities with visitors to the **tcet.unt.edu** archive, please send your activity descriptions, via electronic mail, to me at the address listed at the end of this column.

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Other "Mining the Internet" columns are available on the Learning Resource Server at the College of Education, University of Illinois, Urbana-Champaign.