THE ROAD TO UTOPIA

BY TOM AND KATHY ROOSMA

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Jenny Gustafson, one of co-author Tom Roosma's students, shows him her finished Kid's Studio project on music.

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Sigri Gonzales, a student at the authors' school, enjoys spending time on the computer.

For many students, using technology at school means Utopia. However, for many teachers, it's a nightmare. Utopia or nightmare, welcome or not, technology is fast becoming an integral part of education.

But technology need not be intimidating to teachers. The Apple Classrooms of Tomorrow project revealed that teachers can and will embrace technology if they are given the kind of professional development and support they need.

The study also revealed that when technology is applied effectively, it acts as a catalyst for fundamental change in the way students learn and teachers teach. Teachers just need to be willing to take the first steps, keeping in mind that they don't have to have all the technology in hand, that even small changes can produce positive results.

As teachers in a small, 70-student school, we once only dreamed about being able to work extensively with technology. Those dreams are now a reality, and we are immersed in multimedia productions, keyboarding, publications, programming, and the Internet. In order to meet our instructional goals, we are using computers for much more than word processing or remedial drills. As a result, student motivation has improved.

We have discovered that computers with Internet and CD-ROM capabilities bring many real-world sights, sounds, and animations/demonstrations into the classroom. For instance, students can

• View video clips of the Wright brothers' first flight.

• See and hear Martin Luther King, Jr.'s "I Have a Dream" speech.

• Watch a video of Neil Armstrong walking on the moon.

• View natural processes like larvae changing to pupae, Venus flytraps feeding, chicks hatching, seeds germinating, and butterflies emerging.

• Access pictures of animals, accompanied by sound tracks and pages of information about the creatures' lives and habits.

• View many animated demonstrations; for example, the workings of the circulatory system and other body processes.

• Observe hurricanes, pictures from the Hubble space telescope, tidal cycles, eclipses, the water cycle, animated models of the solar system, and models of photosynthesis.

• Listen to parts of Bach's *Brandenburg Concertos* or Beethoven's *Fifth Symphony*.

Getting Started

What do you need to achieve a positive learning experience with computers in your classroom? You could start with *Kid's Studio*, an outstanding multimedia program available for both PC and Mac computers. It features voice, text, and graphic items created either by the students themselves or drawn from the program's memory. A similar type of program for younger users is *Kid Pix*. After students have a working knowledge of *Kid Pix or Kid's Studio*, they can use *Hyper Studio*, which is more powerful and offers more options.

Computers also help students improve their writing, since the editing capabilities of these programs make writing and rewriting easy. We have found that the more resources available to the

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Tereh Bardell, a student at the school where Tom and Kathy Roosma teach, prepares a research project using ClarisWorks, a word-processing program.

students, the more complete and creative their projects. One student, after presenting scientifically detailed descriptions of soil, invited the viewers to study dirt, assuring them they would be surprised by what they would learn from closely observing the ground they walk on.

Evaluation

With *Kid's Studio* and other multimedia programs, you can evaluate your students' speaking, writing, music, art, and creativity plus their depth of understanding just by having the computer display the presentation that the child has created. At our school, we are using thematic instruction. Our students regularly use the software programs listed above to produce unit culmination projects. This allows us to observe and evaluate ideas that have affected their learning.

Other Helpful Software

Another important piece of software is a combination program that includes a database, spreadsheet, and word processor. Some of these programs are almost as powerful as the multimedia programs. Our students have been working with a program called *Claris-*

Works,
which allows students to import dynamic color pictures, maps, charts, and other items into their reports. This can be a great incentive to students producing projects. They can create colorful and attractive presentations that are filled with data. They also take their own surveys, collect data, and prepare graphs to display their results, using pictographs, bar graphs, and pie charts. (See examples of students' projects.)

We also use another piece of older software, *Crossword Magic*. Instead of filling in teacher-created crossword grids and puzzles, our students now create their own. After creating puzzles and clues, they give their grids to other students to solve. The computer even produces an answer sheet. Students enjoy learning new vocabulary words this way.

Terrapin Logo is another older program that we've used to help students develop thinking skills and problem-solving abilities. It can also be used to teach basic geometry concepts, using degrees in exterior and interior angles and the number of corners in various

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geometric shapes.

Just one word of caution. Don't expect your students to be able to troubleshoot all the problems they experience. You must have a working understanding of the software yourself. We've spent considerable time talking with software support personnel to work through problems. Sometimes it is frustrating to become familiar with so many different applications, but it's a way for teachers to actively participate in the learning experiences of their students.

Using CD-ROMs

CD-ROMs can be used in partnership with Integrated Thematic Instruction. In each of our classrooms, a computer with CD-ROM capabilities provides multimedia information on the topic being studied that week. A variety of CD-ROMs are available on many of the subjects. When studying the systems of the human body, we use *A.D.A.M. The Inside Story;* for nutrition, *5 a Day Adventures;* for oceanography, *Whales* and *Dolphins, Oceans Below,* and *The Great Barrier Reef;* for government, *Capitol Hill;* for the solar system,

Space Shuttle and *Planetary Taxi.* When we study mammals, *The Animals, Encyclopedia of U.S. Endangered Species* and *National Geographic's Mammals* are popular.

In conjunction with topical CD-ROMs, we use a variety of reference CD-ROMs. *Compton's Interactive Encyclopedia, Grolier Multimedia Encyclopedia, Encarta,* and for the younger children, *First Connections: The Golden Book Encyclopedia* are available to the students. Students look up words in the *Macmillan Dictionary for Children.* The *U.S. Atlas* and *World Atlas* also provide a wealth of reference material.

The students enjoy using *The New Family Bible,* which offers Bible stories in interactive text and pictures, using the New Revised Standard Version. This includes maps of biblical lands, family trees of Bible characters, and a pronunciation guide of names and places in English and Hebrew. Students can do word searches to find information on selected topics. As teachers, we use the word-search capability to choose texts for morning worships.

Around the World by Internet

The Internet has literally opened up

the globe to our students, who are making contacts worldwide. They have corresponded with children from New Zealand, Australia, Italy, and England. During 1994, we regularly exchanged letters with a classroom in Syracuse, New York. After reading a message saying that they had received 18 feet of snow that winter, we couldn't wait to get out the yardstick and start measuring.

Our students have had a great time sending e-mail messages back and forth to one another and their teachers through the Internet. We usually have two or three assignments a week that use the e-mail feature.

Students respond by sending a reply back to their teacher, and/or starting a project.

Another motivator for students is being able to have live talk sessions with other computer users. Once the user logs onto a service such as CompuServe or the Internet, he or she can choose the name of someone currently online and click on the name to open a box with a split screen. One person's text messages appear on the top box as they are typed, while the other person's responses appear on the bottom half of the screen simultaneously. When some of the students are ill, they use their Internet connection from home to initiate talk sessions with the rest of the class and obtain their assignments for the day. Some of the students with Internet connections at home set up times for talk sessions with one another or with children from other lands. Not only has the Internet motivated students to use computers for purposeful tasks, it has also been a great way for them to practice their keyboarding skills.

Students can readily find pen pals on the Internet. Following is an example of a response two of our students received from Holland:

Hello Tamara and Annelies, I saw on KIDCAFE you would like to correspond with someone in HOLLAND. I will start telling you some things about myself. My name is Tessa de Haas and

I'm almost 14 years old. I live in a village named Stedum 12 miles from Groningen in Holland. My birthday is 13 december. My school is H. N. Werkamn College in Groningen. I think it's about the same as your High school.

My hobbies are swimming and I like horseriding. I have had one and a half year English so you'll understand that I'm typing with the dictionary in my hand. You are lucky that you must not write your answer in Dutch because dat wordt wat moeilijker, ha ha. (Do you understand?) I have a brother (20) and a little sister (10).

Well, I hope you'll write back. Bye, bye. Tessa.

Recently, our school went to Mount St. Helens for a three-day campout. Searching the Internet beforehand, we found lesson plans on volcanoes, video clips of volcanoes erupting, slide shows, and explanations of plant and animal life around the volcano.

On the Internet, you and your students can find more information, pictures, and video clips available than you could ever imagine. Pick a topic and explore. Space, astronomy, arts, music, biology, geology, mathematics, history, geography, government, meteorology, physics, and chemistry are areas exploding with information. (See sites to visit in the sidebar.) You can even access entire books on the Internet. Visit Andrews University and read *The Desire of Ages* or *Steps to Christ*—word for word.

Or perhaps you'd like to follow an expedition. This e-mail message came from scientists at the South Pole.

My first dive was conducted yesterday. We dove just off shore in about 65 feet of water. The dive was made from inside a hut that has a hole cut in the floor so we can just lower ourselves down into the dive hole that was drilled previously. The hut is probably 8 feet wide and about 16 feet long with a stove inside to keep it heated. The ice cover has a great deal of snow accumulation in this area so it was a very dark dive.

We both had flashlights. Looking down was absolute darkness, but if you looked back up you could see a beautiful mosaic of blue lines crisscrossing the blackness. A good dive. A bit of hot water in the gloves before getting in goes a long way. The weather today is much nicer with partly sunny skies and temps around -20C.

Oh yeah, this last winter the cross up on Ob Hill that was put up by Scottsmen after the South Pole party was

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variables, Stating hypotheses, Manipulating and interpreting data, Problem-solving and collaboration. If your students would be interested in participating in this collaborative environment project, please contact me. I will then send you a teacher's guide/unit outline and project timeline. Thanks; I'm looking forward to your reply.

Even students themselves request the help of other students. From Denmark came the plea:

Help us, please: International nuclear power questionnaire. Hello! We are 2 young boys from Denmark form 9 who are having in the subject of physics a project about nuclear power. We would like to know how you

discovered dead in their tents, was blown off of the hill. First time that has happened. I guess the Kiwis must have the cross and surely will put it back up again. It's a pretty nice historical landmark.

Imagine studying Africa while following a cycling expedition. Here are some Internet e-mail messages about such a trip:

The team is now in Yoruba territory, which is the area of the people of the team's Nigerian teammate. The people live in acorn shaped houses with thatched roofs and mud floors. Their diet consists of yam (a sweet potato) which is pounded into a pulp and made into fist-sized balls and is eaten with a soup made out of crushed melon seeds. Dan said, "It is a delicious meal, and because it is loaded with carbohydrates, it is good for the team."

The people have been great. Nigeria has a bad reputation for crime, but we have not had any problems. The misconceptions come when people fly into Lagos, which is one of the biggest cities in West Africa. Because it is so congested, there is some crime, but in the outlying areas people are as hospitable

as in any other area we have seen in Africa.

Steve Buettner had a bad 24 hour bout with food poisoning, but he is better now. The team continues to take malaria pills every Monday. Once they crossed the Niger River, mosquitoes started biting them. Mosquitoes carry malaria. There are four strains of malaria in Africa; one is fatal.

It is not unusual for teachers in different parts of the world to have their classes work together on a project.

My name is Ken Hignell, I teach Science 8-10 and biology 11 in Surrey, BC. I am also working on my Masters degree on Computers in Education. I have a strong interest in telecommunication, particularly its use in the Science classroom.

My grade 10 students would like to produce descriptive data on the acidity of as many streams/rivers as possible. We could share this data over the Internet and compare various regions of the continent and/or world. Collaborative lab reports could be written which refer to global patterns in our data. Science process skills would be emphasized while working in a 'real' scientific environment.

Our students would develop skills in: Designing scientific studies, Defining

Sources to Purchase CD-ROMs and Software

Education Resources
(800) 624-2926
1550 Executive Drive
P.O. Box 1900
Elgin, IL 60121-1900

Tiger Software
(800) 888-4437
One Datran Center, Suite 1500
9100 S. Dadeland Blvd.
Miami, FL 33156

Mac Warehouse
(800) 255-6227
1720 Oak Street
P.O. Box 3013
Lakewood, NJ 08701-5926

Education Technology, Inc. (ETI)
(800) 677-6221
5003 Tacoma Mall Blvd.
Suite A102
Tacoma, WA 98409-7139

Sunburst
(800) 321-7511
101 Castleton Street
P.O Box 100
Pleasantville, NY 10570-0100

feel about it and we would be very happy if you would answer these questions: 1) Name of your country. 2) Is there use of nuclear power in your country? 3) Is there a nuclear power station in your country? 4) Do you think there will be more or less use of nuclear power in the future? 5) Are you afraid of an explosion or escape? Please send your answers quickly to Lars and Jesper by the school mailbox.

How Teachers Can Use the Internet

For teachers, the Internet offers collegiality and support. Here is a portion of a letter received from a teacher in New York:

From: Ada Swanson.

Dear Kathy,

I am in a tandem room with another third grade teacher named Phyllis Chapman. We co-teach 50 students. This is our first year. It sounds like you have a multi-age small class . . . or have you just selected a few? Phyllis and I will assign some students to write to your pairs. Do you have anything specific in mind that you would like them to write about? They could exchange information about each other first. We should exchange mail, too. Is there another teacher at your academy? Is it a private school or a boarding school?

We are starting a unit on the rainforest. We just finished the desert habitat unit, focusing on the Sahara and the Kalahari Deserts in Africa. We studied the Taureg, Bedouin, and bushmen (San) tribes. We focused on the fennec fox and the camel. We should exchange resources. We have some really neat things we have accumulated over the last couple of years.

Since September 1995, our school has had its own server—a computer with information that Internet users can access. Teachers and students use the server to get onto the Internet, and people around the world can obtain information that our students have stored. Moms, dads, friends, and relatives will be able to log onto our server and see projects that their children have created. Come visit us by accessing http://www. cvja.edu.

See you on the Net! (roosmak@ peak.org)

Tom and Kathy Roosma teach at Central Valley Junior Academy in Tangent, Oregon. Tom is in his 16th year teaching grades four to six and Kathy her 14th year teaching grades one to three.

Internet Sites

http://gagma.wwa.com/boba/kids.html
http://www.npac.syr.edu:80/textbook/kidsweb
http://www.wentworth.com
http://ericir.syr.edu/Newton/welcome.html
http://www/gsfc.nasa.gov
http://www.osc.on.ca
http://www.tc.cornell.edu/Edu/MathSciGateway
http://www.shareware.com
http://www.discovery:com
http://www.cnn.com
http://pubweb.para.xerox.com/map