SPRING 1998

Volume 16 / Number 3

Logo Exchange

Journal of the ISTE Special Interest Group for Logo-Using Educators

A WORLD OF LOGO

INSIDE

ISTE

Logo Exchange

Volume 16 / Number 3

Logo Exchange is published quarterly by the International Society for Technology in Education Special Interest Group for Logo-Using Educators. *Logo Exchange* solicits articles on all aspects of Logo use in education.

Submission of Manuscripts

Manuscripts should be sent by surface mail on a 3.5-inch disk (where possible). Preferred format is Microsoft Word for the Macintosh. ASCII files in either Macintosh or DOS format are also welcome. Submissions may also be made by electronic mail. Where possible, graphics should be submitted electronically. Please include electronic copy, either on disk (preferred) or by electronic mail, with paper submissions. Paper submissions may be submitted for review if electronic copies are supplied on acceptance.

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Deadlines

To be considered for publication, manuscripts must be received by the dates indicated below.

Vol. 17, No. 1 .... July 15, 1998
"Back to School—Practical Logo Ideas for Teachers"

Vol. 17, No. 2 .... Sept. 15, 1998
"Perspectives on Papert"

Vol. 17, No. 3 .... Dec. 15, 1998
"Logo, Math, and Beauty"

Vol. 17, No. 4 .... Feb. 15, 1999
"The Turtle Parties Like It's 1999"

Logo Exchange is published quarterly by the International Society for Technology in Education (ISTE), 1787 Agate St., Eugene, OR 97403-1923, USA; 800/336-5191.

ISTE members may join SIG/Logo for $24. Dues include a subscription *to Logo Exchange.* Non ISTE member subscription rate is $34. Add $10 for mailing outside the USA. Send membership dues to ISTE. Add $4.00 for processing if payment does not accompany your dues. VISA, MasterCard, and Discover accepted.

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Logo Exchange solicits articles on all topics of interest to Logo-using educators. Submission guidelines can be obtained by contacting the editor. Opinions expressed in this publication are those of the authors and do not necessarily represent or reflect official ISTE policy.

POSTMASTER: Send address changes to *Logo Exchange,* ISTE, 480 Charnelton St., Eugene, OR 97401-2626 USA. Periodicals postage paid at Eugene, OR. USPS# 660-130. ISTE is a nonprofit organization with its main offices housed at the University of Oregon. ISSN# 0888-6970

This publication was produced using Aldus PageMaker®.

Logo Exchange

Spring 1998 Vol. 16 / No. 3

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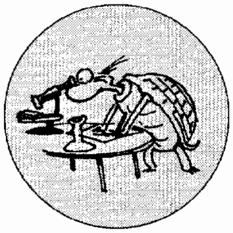
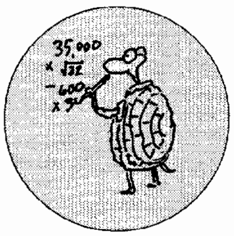
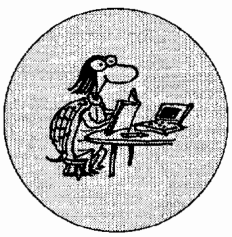
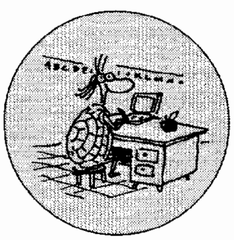
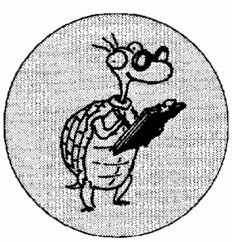










ARTICLES

COLUMNS

EDITORIAL / GARY S. STAGER

Logo and Jazz

Before I dedicated my professional life to teacher education and Logo evangelism, I studied to be a professional jazz musician. Although I no longer practice an instrument or arrange music my CD collection continues to expand and I am continuously inspired by what I learn about learning at the feet of great jazz artists.

Improvisation is at the heart of jazz and the "samba school" discussed in *Mindstorms*. Jazz is an art form you learn and hone in a social context, on the bandstand. There are jazz textbooks, but great musicians are not the product of such books. They are the products of experience. Watching Betty Carter prowl the stage coaxing, cajoling, inspiring and nurturing talent out of young musicians is a special treat. Miles Davis grew as an artist and reinvented the musical genre repeatedly for five decades by collaborating with young musicians. Art Blakey's Jazz Messengers was the MIT of jazz performance for 40 years. Blakey had an enormous influence on generations of musicians by creating a climate of musical excellence to which every young musician aspired. Art Blakey was fond of saying of his band members, "when these guys get too old, I'll get some new ones." Is a second or third generation of Logo leaders being nurtured?

The following is a list of similarities I've identified between Jazz and Logo:

Jazz and Logo value freedom
Wynton Marsalis argues that jazz epitomizes the highest ideals of American-style democracy in that it celebrates individual expression and excellence within a group context for the collective good.

Jazz and Logo are about community
Learning occurs best in a community of practice. Jazz musicians work and learn within a community of other musicians. There is no greater model of a learning community than what you may find in the kitchen of New York's Village Vanguard between sets. It is not uncommon to see three generations of musicians trading stories and sharing wisdom with one another.

> Too few music educators learn the philosophy and techniques associated with jazz.

Both require greater levels of commitment and artistry than their popular cousins
Jazz and Logo are hard fun. Their personal worth derives from being challenging and meaningful.

Much more expressive and personal than popular forms
Math Blaster vs. MicroWorlds... John Coltrane vs. Spice Girls... 'nuff said!

Easily caricatured and misunderstood
Whether we consider the goateed beret-wearing hipster or the elitist Logo zealot, both groups of people are the subject of misunderstanding and trivialization.

Educators remain ignorant of both jazz and Logo
Too few music educators learn the philosophy and techniques associated with jazz. Too few computer-using educators are exposed to the philosophy and techniques associated with Logo learning.

Their popularity ebbs and flows, but the form continues to evolve
New forms of Logo and jazz continue to emerge. New practitioners are added to both fields.

Jazz and Logo are both under-represented in the media

Philosophy is consistent over time
Jazz and Logo share a clarity and continuum of purpose that is not lost with the advent of new technology. New instruments are embraced and styles assimilated without abandoning the artistic/learning objectives.

An essentially American invention achieves greater levels of respect and popularity overseas
The expatriate is a jazz tradition. For generations, jazz musicians have sought monetary rewards and respect overseas. Logo is alive and well in Latin America, Australia and Eastern Europe.

See LOGO AND JAZZ (Page 8)

Make "Seven 5

Looking at things from different perspectives is always fun for me. At the very least, I get some mental exercise. Often, I discover a delightful path to thinking that otherwise would have remained hidden.

I'm not sure why, but triangles were on my mind the other day. Then, by happenstance, I saw a television program about Pythagoras on the History Channel, showing the elegant relationship between the legs of a right triangle and the hypotenuse.

Later, I went out for some exercise. Leaving home, I jogged four blocks east along the city streets and then three blocks north to the office. I began thinking about the distance I covered—a total of seven blocks. And yet, considering the hypotenuse distance, I was only five blocks from home (the hypotenuse of 5 is the square root of 25, which is the sum of 4 squared plus 3 squared).

When I imagined myself jogging to the office along smaller "blocks," repeatedly going east and then north, I found myself still traveling the equivalent of four original blocks east and three north. This happened no matter how small I imagined the "blocks" to be. The total distance was four plus three or seven original east-north blocks regardless.

So, when does seven become five? Hmmmmm. Time for the turtle!

```
to jog :factor
seth 90  fd 400 / :factor
seth 0 fd 300 / :factor
end
```

By positioning the turtle in the lower left corner of the screen and running **jog 1**, I generated the legs of a so-called Pythagorean triangle, with one leg of 400 turtle steps and the other of 300 steps, for a total of 700 turtle steps. The hypotenuse of the triangle is 500 turtle steps.

(Note: If your Logo version has a screen width of less than 400 and a height of less than 300, then use proportionally smaller numbers such as 160 and 120 in the jog procedure.)

Then, by returning the turtle to the starting position and typing lines such as

```
repeat 2 [jog 2]
repeat 10 [jog 10]
repeat 100 [jog 100]
```

I was able to study how the path of the turtle began to approach the hypotenuse. When I used larger numbers, such as 1,000, the path of the turtle actually looked like a straight line. But the turtle was still traveling the same 700 turtle steps in going along the hypotenuse, even though Pythagoras showed this to be 500 turtle steps in length. How can this be?

I am still thinking about this question. Part of the answer is probably related to what is called "taking the limit" in calculus. In this mysterious regime of the infinitesimal, does the total east-and-north distance of 700 suddenly become the Pythagorean distance of 500?

For the moment, the actual answer doesn't really matter to me. What does matter is the wonderful process of exploration, of reflection, of musing—all facilitated by the Logo turtle. Both the Pythagorean perspective and the "east-north" perspective have something to suggest about the length of the hypotenuse.

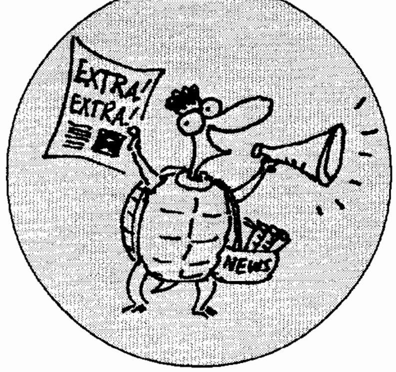
But there is an even larger process, or so it seems to me—the willingness of examining the hypotenuse from a different perspective, and then applying that willingness to other situations.

For example, in education we often use standardized test scores to measure student achievement. But authentic assessment means are gaining in popularity and use. Each of these two perspectives have something to say about student achievement.

Or, perhaps a student suggests a way of doing something completely differently—so differently that, in fact, it seems impossible. Even though it may not be aligned with convention or even possibility, the student's suggestion has something to say about the ultimate outcome. It was from such different perspectives that the Newtons, the Einsteins, the Feynmans obtained inspiration for their conceptual leaps that advanced science so dramatically.

Finally, technology is shrinking the world at an incredible rate, bringing cultures from different countries into contact with each other without the need for physical transportation. What a fantastic opportunity to work to-

See MAKE "SEVEN 5 (Page 8)



Logo News

Mark Your Calendars for Logosium!

June 21, 1998
San Diego NECC

NECC would not be complete without the annual Logosium mini-Logo conference. Logosium '98 will be held June 21, 1998 at Pepperdine University's Irvine, California, campus. Logosium is *the event* for all educators interested in Logo. Beginners and Logo veterans alike will enjoy stimulating discussion, minds-on sessions, hands-on workshops and exciting classroom project ideas at this unique event. Session topics will include:

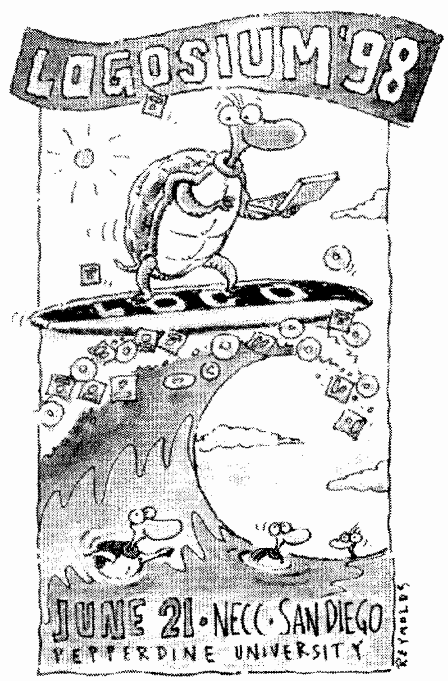
Introductions to MicroWorlds
LEGO and Logo
Publishing Logo Projects on the Web
Computer Science Logo Style
Exploring Mathematics and Logo
Logo Multimedia Project Ideas

Logo enthusiasts will board a morning bus at NECC headquarters in San Diego and travel to the terrific site to share ideas, collaborate on projects, enjoy hands-on workshops and seek inspiration from Logo veterans. At the end of the day, Logosium participants will be treated to a seaside dinner before returning to San Diego. For more information, check your NECC Advance Program or:

E-mail: logoexchange@moon.pepperdine.edu
URL: http://necc98.csusm.edu/necc98 workshops.html

Call for Participation—Logosium

ISTE's SIGLogo is looking for educators who are willing to share their expertise,



student work or ideas with international colleagues at this year's Logosium. You can lead a hands-on workshop, present research findings, share classroom strategies, join a panel discussion or moderate a brainstorming session. Logosium is about creating a space in which we can all learn together. Please participate. Send a one-page proposal, **by April 30th**, detailing the way(s) in which you can help make this the best Logosium ever to:

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Online Sample Issue of *Logo Exchange*!

The complete Fall 1997 issue of *Logo Exchange* is available online at: http://moon.pepperdine.edu/ ~ gstager/logo exchange/. Tell a friend or make a link to it from your Web page!

Jim Muller's New Hands-on Logo Book

Logo veteran Jim Muller has just published a brand new book, *The Great Logo Adventure–Discovering Logo On and Off the Computer*. The book comes with a CD containing sample files and full versions of MSWLogo and UCB Logo. The activities can be completed in most versions of Logo. To purchase the book, contact:

Doone Publications
7950 Hwy 72A, #G106
Madison, AL 35758 USA
ISBN 0-951934-6-2
1-800-311-3753
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e-mail asmith@doone.com
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New Anthology of Logo Thinking

Logo: A Retrospective is a new anthology of Logo research, thinking and case studies written by an impressive list of American and Australian educators. Authors include Doug Clements, Julie Sarama, Anne McDougall, Gary Stager, Yasmin Kafai and others. The book is available in hardcover and in a softcover version titled *Computers in the Schools–Logo: A Retrospective Volume 14, Num-*

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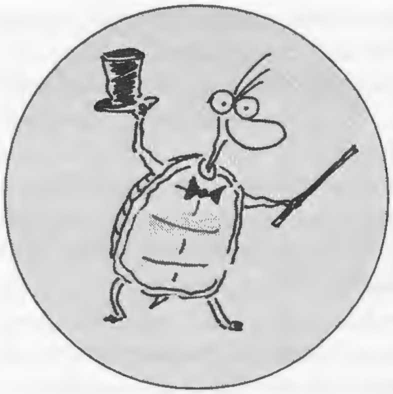

FEATURE ARTICLE

Fred and Catie's Excellent Adventure

by FRED D'IGNAZIO AND CATIE D'IGNAZIO

Editor's note: Multimedia guru Fred D'Ignazio and his daughter, Catie, sent me an animated MicroWorlds project for publication in *Logo Exchange*. Because print journals do not support animation, the text of their fable, complete with screen shots, appears below.

> For me, getting to know a domain of knowledge is much like coming into a new community of people. Sometimes one is initially overwhelmed by a bewildering array of undifferentiated faces. Only gradually do the individuals begin to stand out.
>
> —Seymour Papert, *Mindstorms*

On August 6, 1997, two little turtles set off on a fantastic journey. Fred the Lumbering and Catie the Plodder left their little pond in East Lansing, Michigan, USA, bound for Melbourne, Australia. They carried only what they could strap to their shells (or bribe the airlines to check). This included laptops and tape recorders, magic cables, adapters, microphones, Zip drives, quickcams, and videos. CD-ROMs and phone cords and SCSIs, video cameras, a scanner, and a good deal more. And like good little turtles, they allotted themselves one chocolate bar each to ensure their success.

Figure 1

On August 14, 1997, after a long ocean trek involving pirates and smugglers (not wholly relevant to the current story), Fred and Catie spotted land. Avalon! Home of mythical Camelot and the court of mighty King Arthur.

The two turtles splashed and clambered ashore, only to find themselves in the middle of a gothic fairy tale. Wandering up to a nearby sign, they read Avalon Conference Center, Avalon, Australia. The thunder crashed, the lightning flashed, and suddenly, they saw it right in front of them: An old, creaky structure, rooms with organs, and stray cats. This 200-year-old building seemed like the only shelter available. Catie wanted to jump back in the ocean, but Fred declared that he was plunging ahead, by golly! In the midst of their confusion, they heard a noise. Fred jumped under a bush and Catie prepared to do kung-fu.

It was another turtle!

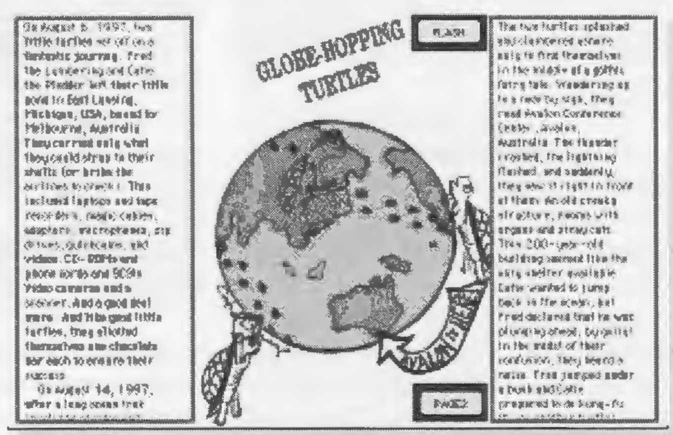

Figure 2

Hey, said Gary the Grumbling, you guys wanna do some MicroWorlds, or what? Fred and Catie breathed a sigh of relief. They had reached their destination for the week: an intensive gothic playground with multimedia for jungle gyms and MicroWorlds for merry-go-rounds. Gary ushered them into the castle-like conference center, which they began to decorate with cables and computers.

The week was to be major event in Turtle-World, which is, incidentally, the world we all live in. Turtle-teachers carrying little laptops came from all across the Australian continent. They journeyed to Avalon Castle on a pilgrimage to pool knowledge and gain insight into the bewildering world of educational technology.

It was winter in Avalon, miserable, cold and damp. Avalon Castle sat on the edge of Victoria Bay. On one side of the castle lay a vast, flat realm of water; on the other, an endless panorama of wetlands, bogs, and swamps. The castle itself was part of a farm. As they strolled the castle grounds, the turtle-teachers mixed with a noisy gaggle of chickens, horses, sheep, and pigs. Mornings, the teachers leapt out of their beds and raced to the showers. The early birds got hot showers; the slackers shivered in water that was numbingly cold.

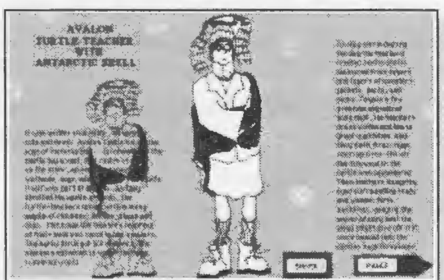

Figure 3

To stay warm during the day, the teachers created turtle shells fashioned from layers and layers of sweaters, jackets, pants, and socks. To gain a few precious degrees of body heat, the teachers drank coffee and tea in great quantities. And they built fires—huge, roaring fires—till all the firewood in the castle was squandered. Then teachers hungrily eyed surrounding trees and wooden farm buildings, gauging the waves of cozy heat the wood might give off if it were heaved into the castle's huge fireplaces.

With frostbite and hypothermia a constant concern, the workshop leaders designed a warm-up activity as soon as the first wave of turtle-teachers arrived. Their plan was home movies! The movies were to:

- Throw the teachers immediately into a hands-on multimedia project.
- Help the teachers reveal their personalities, backgrounds, etc .
- Encourage the teachers to bond into MicroWorlds production crews for the rest of the workshop.
- Keep the teachers warm, discourage frostbite, and stir up the blood.

Fred and Catie brought three silly two-minute biographical movies from the USA that they used as examples for the teachers and as a means to introduce themselves.

The movies worked. They propelled the diverse group of teachers into instant action. Five minutes after the movies were over, the teachers grabbed hand-held camcorders and drove off in cars, chased pigs and chickens across the castle lawn, collapsed corpse-like on the nearby beach, and climbed tall trees, all on frantic missions to shoot wacky biographical videos of their own.

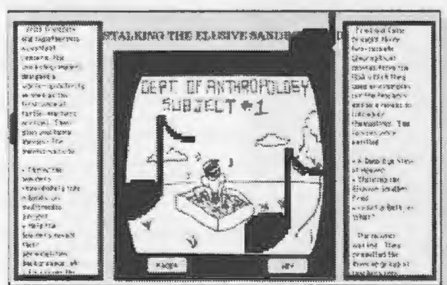

Figure 4

Avalon Castle was large enough to become its own little microworld. Gary, Catie, and Fred called the main room in the castle Mission Control. Here they connected the teacher's laptops to a network. Participants brought files from other parts of the castle, as offerings on Zip drives, to add to the centerpiece of their work, a MicroWorlds 2.0 project constructed by each turtle team. Gary acted as master chef on the MicroWorlds projects. Fred and Catie assisted teacher multimedia machinations.

Avalon Castle's far-flung rooms became the project studios for the teams multimedia productions. A cavernous living room was converted to a video-capture theater where teachers transformed their movies into Zip files bound for MicroWorlds projects in Mission Control. A satellite prep kitchen became an audio room. At all hours of the day and night, a cornucopia of sounds emanated from this kitchen. Groups of teachers became improvisational rock bands banging on spoons, wailing on electric guitars, plunking musical keyboards, harmonizing, jamming, and crooning. Far into the night, strains of music of all sorts drifted down the hall from the audio kitchen into dormitory rooms, lulling good little turtles to sleep.

In other rooms scattered around Avalon Castle, teachers sat down on floors like high-tech squatters and tapped on keyboards, chatted feverishly, previewed videotapes, listened to boom boxes, scribbled notes, wrote MicroWorlds procedures, and hastily sketched cartoon frames in project storyboards.

Figure 5

Teachers rushing outdoors lugging video cameras on tripods passed other teachers hurrying indoors hauling armloads of worm-eaten firewood. Strong smells of hot chocolate, strong coffee, English tea, and burning logs ebbed and flowed through the castle's interior, all overlaid by the odor of undeniable tension. Every few hours like a town crier, Gary floated through the castle crying, Demo or Die! Demo or Die! And frantic teachers would dive into action in front of roving bands of other teachers, demonstrating their ragged, unfinished projects as raw works in progress.

> **Editor's note:** "Demo or die" was the original brainchild of *Logo Exchange's* own Jeff Richardson. Kids feel completely comfortable getting up, walking around the room and investigating the work of their peers. A great deal of learning occurs via these interactions. Adults are prone to spend all of their time focusing on their own work while sacrificing the opportunity to learn from others or find solutions to their problems in the work of colleagues. "Demo or die" is an explicit attempt to require workshop participants to share their triumphs, challenges and ideas on a regular basis.

Catie and Fred were overwhelmed by the cold, chaotic frenzy that surrounded them. There were too many skills to be learned by too many teachers in not enough time. What to do? They glanced nervously over their shoulders. At any moment they knew that Gary would come grumbling through, crying Demo or Die!

They had to do something to speed things up. Teachers were simultaneously trying to learn MicroWorlds, LOGO programming, digital video, MIDI music composition, digital photography, research on the Internet, and a smorgasbord of other arcane, high-tech arts. All the raw media gathered by the teachers had to be clipped, cut, copied, and pasted into their MicroWorlds projects. MicroWorlds projects were the glue that held all the media together. And the projects were due in a few short hours.

Suddenly Fred and Catie remembered a quote from Seymour Papert. The quote was perfect. It was about new domains of knowledge. The domains were the hodgepodge of skills these teachers were trying to learn. Papert had called the domains "a bewildering array of undifferentiated faces." The only way for everyone to learn these faces in time was to distribute responsibility for learning across the entire group of workshop participants. After the biographical home movies, the teachers momentum to learn had grown so high that perhaps each teacher could learn one or two pieces of the knowledge needed and then share these pieces with other teachers who needed the same pieces. No single guru could be in all rooms in Avalon Castle coaching all teachers. But individual teachers could be one minute gurus who could be called upon, at a moments notice, to share the small but critical skill they had acquired. All teachers could make a contribution. All the teachers together could share knowledge. A knowledge web could be formed. Each node in the web would be a human being.

Fred quickly sketched the major knowledge domains in his workshop notebook. Catie grabbed a stack of poster paper and magic markers and drew up the knowledge domain posters. Teachers pitched in and hung the posters around the Avalon Castle dining room. Catie and Marie the Registrar ran around the castle photographing teachers with a digital camera. Mark the techie-turtle printed out the pictures on a workshop printer. Fred, Catie, and Gary called for a turtle huddle. The teachers assembled, and the three leaders explained the new strategy. Each teacher was asked to:

- Walk around the dining room and study the domains of knowledge which had to be mastered.
- Pick one or two domains they would like to learn personally.
- Learn just enough of that domain to apply it in their teams project.
- Teach what they learned to at least one other team member.
- Paste an autographed copy of their digital photo onto the Domain of Knowledge poster matching their new skill.
- Seek help from teachers whose pictures were on the domain poster where they needed help.
- Offer help to any teacher who matched their face with the photo on a poster.

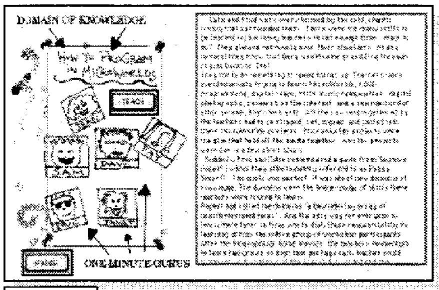

Figure 6

Ready! Set! Go! Gary cried. And the teachers raced off. By lunch time that same day the domains of knowledge posters began to fill with names and pictures of teachers who had published themselves as one-minute gurus of new knowledge. The posters functioned as oversized business cards advertising the teachers as helpers for fellow teachers. Gary, Fred, and Catie flew around Avalon Castle fighting fires, troubleshooting, and offering special-purpose advice. But all the rest of the problem-solving, teaching, coaching, and learning that day subtly shifted to the shoulders of the teachers.