The Age of Discovery

New opportunities in K–12

by Lisa Raleigh, *Apple Direct* staff

Education is a billion-dollar business for Apple. And that was *before* the Classic, LC, and IIsi were announced in October. With the introduction of machines with even more education-market appeal, that billion-dollar figure promises to grow. How much? That, of course, depends a great deal on you.

There's lots of pent-up demand for the new machines—our forecasts predict (and our initial orders confirm) that they're going to sell very well. But that's just part of the picture. Apple isn't just looking to rake in immediate revenues from this new suite of Macs. The Macintosh Classic, LC, and IIsi represent something more important than that to you and to education— namely, an opportunity to sit back and think about things that haven't ever been done before. Now that the Macintosh interface, color, graphics, sound, and networkability have the potential to be everywhere, how can you take advantage of that and join Apple in advancing the use of technology in schools? We want to collectively consider what's possible in education that hasn't been possible up until now.

Outpacing the Industry. For the purpose of this article, we'll focus on the K–12 market (and cover higher education in a later issue of *Apple Direct*). Although the competition has been tougher in recent years, Apple continues to be the Number-1 vendor in the U.S. K–12 institutional market. In fiscal 1990, K–12 was Apple USA's top-selling sales channel, with the Macintosh already making up about 40% of its revenues. Outside the U.S., the ratio of Macintosh to Apple II sales has been even higher—about 70% of Apple Pacific's K–12 sales were Macintosh computers, and the figure is higher still in Europe.

No matter what the region, though, the percentage of Macintosh versus Apple II systems is likely to increase dramatically as sales of the new Macintosh systems take off. And while the ratio of Macintosh systems rises, we also anticipate that Apple's U.S. growth in K–12 will outpace the growth rate of the K–12 market itself in 1991.

Bridging and Leaping. How about the classic question (no pun intended)—what about the Apple II? There are close to two million Apple IIs installed in schools, and educators are still

buying them. Apple will continue to sell and support them as long as there is a demand, which we anticipate will continue through the 1990s. We do expect, though, that educators will use the Apple IIe Card as a bridge to move to the Macintosh. We also anticipate that many teachers and coordinators will make the leap to the Mac outright. In fact, more than 85 percent of the teachers who personally bought Apple computers last year through the Educator Advantage program bought Macintosh systems.

"We're seeing things change faster than we thought they would," says Susan Schilling, vice president of development and creative director at MECC. "Educators are ready for the next generation in hardware. In the past, they had a hardware base and were upgrading it, but now they're at a hardware buying-decision stage."

Not only are the new systems themselves attractive to educators but the Mac is also gathering more and more third-party support. Last year Apple USA distributed to 40,000 educators a *Macintosh Educational Software Guide* that contained 214 titles; the upcoming revision of that guide will feature an additional 500 Macintosh educational products.

Raising the Bar. Given that the competition promises to be formidable in the education market, what will it take to be successful? Of course, there are many business and development factors to consider, but Apple believes that the greatest opportunities will lie in creating products that "raise the bar"—that take full advantage of the graphics, sound, networking, and direct-manipulation capabilities of the Macintosh —and then some.

That doesn't mean just adding pictures and sounds and network awareness to older product concepts, though. Instead, there's a chance here to make great strides forward by looking at the unique features of the Macintosh and coming up with unprecedented products that give teachers as well as kids the opportunity to gain greater insight and understanding through exploration and discovery. There will be lots of Macintosh programs for educators and kids, and the really great ones will allow users to view the world in new ways and *participate* in active learning.

"The (current) paradigm is delivering information rather than empowering learning," said Bill Atkinson at last year's TED2 conference. "You can doll up the information in ways that are more entertaining and require less of your personal commitment...but what's

needed is a way to actively engage children in doing something that makes a difference (to them)."

Active Learning. A tall order, to be sure. What does it mean in terms of developing a product with today's technology? For starters, the Macintosh is particularly suited for active learning. Because the user can directly manipulate objects on the screen, there's an opportunity for great user control and exploration, for nonlinear learning that doesn't bear a lot of resemblance to yesterday's "drill and kill."

Sentences, for instance, can be diagrammed in such a way that the user can "grab" phrases or rearrange parts of speech and see how the underlying structure of the sentence is affected. Scientific phenomena can be explored and measured in "what if?" kinds of ways. ("What happens to the animal population if I cut down
50 percent of this woodland to allow for industrial growth?") History can be conveyed through layers of windows that show the evolution
of maps, ideas, and populations over time (which is what Scholastic's new Point of View products do).

"History isn't a collection of facts," says Art Bardige, president of Learningways, developer of Point of View. "It's a process that changes with time. The great thing about the Mac is that it is a fabulous visual tool that helps kids visualize dynamic activities—it can show the process."

Sounds Great. Besides the graphical capabilities of the Mac, there's also the advent of sound input to take you places you haven't been before. We want sound input to spark the imagination of developers and lead to innovations in subject areas such as early learning, foreign language, bilingual education, and adult literacy.

Talk to the major educational developers, and you'll discover that many of them are already working on sound input. Davidson &
Associates, for instance, is developing a multimedia ESL (English as a Second Language) product that utilizes sound input, which Davidson will sell as a stand-alone product and as part of a larger system marketed by Jostens Learning Corporation. (Incidentally, the state of Florida recently granted $3 million in matching funds to the combined Jostens/Davidson effort for ESL curriculum development.)

Keep in mind too that the concept of teaching a second language applies around the world. In Europe, for instance, where multilingual education is the norm for many countries, a product that taught English or German or French as a second language would have appeal in multiple markets, in K–12 as well as adult education. The key to success here might be to "build a 'generic' product that embodies the methodology of teaching a second language but isn't tied down to a particular language," says David Walker, education manager for
Apple Europe.

Sound input is also great for a "show your work" kind of function. Rather than write up pages of lab reports, kids can attach voice notes to simulated science experiments, explaining their reasoning and choices. Same with math, where students can verbally explain why they chose a particular route in problem solving. Sound input also gives teachers a way to customize programs for their classes. Used intelligently, sound promises to differentiate products from the rest of the pack.

Cooperative Networking. Consider too what networking means in relation to your products. With more and more Macs going into schools, networking will become more pervasive. "You can no longer consider putting out a product that's merely stand-alone," says Peter Kelman, corporate vice president and publisher of Scholastic Software. "Educators are going to be expecting networking."

And that means more than making an application network-aware and having it live on a server where multiple students can launch it. Instead, the competitive edge will come from taking advantage of the cooperative learning and communication opportunities afforded by networking technology. Already developers such as MECC (with the collaborative application Wagon Train 1848) and Scholastic (with E-mail built in to Bank Street Writer) are finding ways for students to work together via network technology. "We figure you can either choose to follow or choose to set a new direction," says MECC's Schilling.

(Almost) Knock Yourself Out. Apple wants you to get carried away with the Mac and give teachers things they might not even know they want or need today, but not at the expense of giving them things they do know they need—namely, pedagogically-sound curriculum-based software. Teachers continue to demand products that they can seamlessly integrate into their classroom activities, that help them with classroom management, and that are immediately usable.

"We spend about 90 percent of our time thinking about education and teachers and kids, rather than technology," says David Dockterman, vice president of Tom Snyder Productions.

"It used to be that you could release a product that was really cool and that was sufficient," says Scholastic's Kelman, "but now it's got to be part of the curriculum."

Teachers are looking for packages that come with built-in lesson plans, with a curriculum that wraps around the application. They want developers to do the up-front thinking about how the software makes it easier to teach a given subject. They want developers to know that they don't have the time to thoroughly review products, wrestle with complicated installations, or read complex manuals. In short, they don't have the time to integrate new programs into their classrooms—the software should integrate itself. "Developers that understand this situation will profit," says Steve Scheier, Apple's director of K–12 marketing.

"If we sent out a product that was complicated, we would fail miserably," says Pat Walkington, director of educational sales for The Learning Company.

The Seeds of Success. Educational developers tend to agree that it hasn't necessarily become easier to remain a player in the market—schools still don't have enormous sums of money to spend, and the competition is as rigorous as ever. At the same time, they all agree that this is a terrifically exciting time to be an educational developer. That said, here are some pragmatic tips from several developers on what it takes to be successful in today's education market:

• *Don't port.* If you want to create a Macintosh program, create a Macintosh program. "A straight port just won't work at all," says Andrew Armstrong, senior Macintosh programmer at WINGS for Learning/Sunburst. "You have to go back and rethink the interface issues."

Peter Kelman of Scholastic concurs: "Make sure you take advantage of several years of human-interface guidelines," says Kelman. "People who are doing ports are making a very bad mistake. You need to get people on your team with a very deep understanding of the Macintosh."

• *Consider the competition from Nintendo and MTV.* For older kids, in particular, programs need to be fast-paced, colorful, and lively to keep their attention. "You almost have to educate them by accident," says Jake Star, vice president of development for Compu-Teach. Compu-Teach is coming out with a new line of products for teens that will feature a much higher concentration of high-quality graphics and animation.

For Brøderbund, the key phrase is "high production values," says Diane Rapley, director of education sales and marketing. That translates into engaging students' attention with the intelligent incorporation of animation, graphics, sound, and "depth," all of which she believes are fundamental to ongoing success in this market—no matter which age group you're attempting to target.

• *Plan for growth.* Managing your cash flow in a growth period can be tricky, particularly since sales in the education market can be cyclical, says David Rebak, CEO of Chancery Software. "The time when you need the money is not necessarily in sync with when the revenues flow in." His advice: "Start off with three times more money than you think you'll need."

Another way to plan for growth, from a technological point of view, is to create an "engine," or platform, if you will, on which you can build multiple products. If you make a large up-front investment in a product that, say, allows for collaborative writing projects, the same underlying technology and tools could possibly be used—at an incremental cost—for collaborative scientific investigations or history projects. Think about how you can build a base of technology that will take you into other areas.

• *Stay in touch with your users.* Start your own user groups and advisory boards. Adopt a school or two. Attend conferences that focus on subject areas or educational issues (see sidebar). You never know when something great will come out of that contact.

• *Be aware of trends in funding and adoptions.* State and federal money is becoming available in areas such as bilingual education, early learning, and ESL. Witness the $3 million awarded to Davidson/Jostens for their ESL product. At the same time, there's movement at the state level toward the adoption of computer products as classroom materials. The state of Texas, for instance, recently decided that textbook-adoption money could be spent on electronic media, and an Optical Data videodisc has been

officially adopted in that state. The states that lead in adoptions tend to be California, Texas, New York, Florida, and Pennsylvania, so stay abreast of activities there.

• *Find a partner.* "It's not like the good old days," says Jan Davidson of Davidson & Associates. "It used to be that we could develop a product with one programmer and one designer (usually me), but there's just no way that could happen today." What's changed? Both the technology and the users demand more-sophisticated products, and that often requires finding partners who have the strengths you don't.

"You have to understand what you don't understand," says Andrew Armstrong. What you don't understand might include human-interface issues, or animation, or the content of a specific subject. You might be strong in instructional design but not in marketing to high schools or negotiating network-licensing agreements.

(Hot Tip: Several developers said they're aware that textbook publishers are showing interest again in combining forces with software developers. Is this the right combination for you?)

But finding a partner is just the first step, says Scholastic's Kelman. The next phase is "to form strategic alliances in such a way that you don't spend more money than you can get back." It's easy, he says, to get carried away with big plans and big budgets. Think smart about everything—development dollars, positioning, distribution, the competition. Be realistic. If one thing has remained the same about the education market, it's the challenge of getting a good return on your investment. □

Sidebars

K–12 Around The World—Identifying and reaching other markets

K–12 is a worldwide activity. Although Apple's position is strongest in the U.S., there are opportunities around the globe for enterprising developers. Just as Apple intends to build its K–12 base in the U.S. with the introduction of the Macintosh LC, Classic, and IIsi, so does it expect that educators in the Pacific and European regions will readily

welcome the new machines. The new systems will be offered at substantial discounts to educators around the world, and we project significant growth in K–12 in all regions.

Clearly, some products cross borders more readily than others. A country-specific history program probably wouldn't lend itself to exportation, but subjects such as math and science have global application. Across Europe, for instance, "green" (i.e., environmental) issues are becoming part of the core primary curriculum, meaning that a product that focused on teaching environmentalism might find a Pan-European audience. Thus, we encourage developers to think about whether their products might apply outside their native countries.

More Similarities Than Differences. If you're worried about the transferability of your product into another culture, take heart. From country to country, "there are more similarities than there are differences," says Al Hill, education manager for Apple's Pacific region. The same is true in Europe, says David Walker, Apple Europe's education manager.

For English-language developers, there are several markets to consider. Besides the U.S., there are "extremely strong K–12 markets in Canada, Australia, and New Zealand," says Hill. In Europe, the obvious market is the U.K., but in both the Pacific and European regions, there are many countries in which English is a strong secondary language and many schools offer curricula that are English-based. The same kind of multicountry opportunity is also available for French- and Spanish-language developers.

Learning a New Language. Then there's the prospect of localizing your product for a language other than your own. In non-English-speaking countries, in particular, there's a "critical need" for educational software, says Hill. Local developers in the Far East and South America, for instance, may fill some of the gap, but the opportunity is wide open for developers from other countries to sell localized versions of their products. Apple's subsidiaries in individual countries can help you identify localization assistance, if you need it. (To obtain contact names and numbers for country offices, refer to the Worldwide Product Opportunities packet that went out in November's monthly mailing, or call the European or Pacific Education Managers whose numbers are given at the end of this sidebar.)

Whether you have plans to distribute internationally or not, *we encourage you to develop as if you were planning to localize for other languages.* If you don't localize now but decide later that you'd like to enter other markets that require localization, you may have some heavy development overhead that could have been avoided if you had planned for the possibility up front. To understand the issues, obtain a copy of Software Development for International Markets from APDA (APDA #A7G0016, $35).

A Worldwide Distribution Channel. One channel for worldwide distribution for Macintosh software is the newly created Intellimation catalog. Intellimation, which recently replaced Kinko's as Apple's higher-ed courseware distributor, is also distributing K–12 software and is looking at products developed by commercial developers as well as educators. Intellimation is putting together a disk-based catalog that it will distribute worldwide. Both Apple Europe and Apple Pacific are working with Intellimation to get the catalog into the hands of Apple representatives, who can then copy and distribute them in their own country. For more information, contact Becky Snyder, project director at Intellimation, 130 Cremona, Santa Barbara, CA 93117; (805) 685-2100, ext. 306.

For more information on which countries need what kind of educational software, contact Al Hill (AppleLink: HILL4; phone [408] 974-4761) for Pacific market information, or David Walker for information about European opportunities (AppleLink: WALKER; phone 33-1-4901-4806).

Is Your Product Raising The Bar?

Apple is ever alert for products that "raise the bar" by using Apple technology to break new ground in education—in collaborative applications, in active learning, in interdisciplinary studies, in areas we haven't even thought of yet. If you have a shipping product to which you'd like to draw Apple's attention, send a Link to MACEDU.SOFTW. We won't be able to respond to every Link, but we will follow up on products about which we'd like more information.

Where to Go, What to Read

Here's a list of some of the major K-12 conferences in the U.S. in 1991. For further information about Apple's participation in these events, contact Paula McClain (AppleLink address: MCCLAIN1). [For information about educational conferences in Europe, contact David Walker (AppleLink:WALKER); for conferences in the Far East, Canada, or Australia, contact Al Hill (AppleLink: HILL4).]

•Society for Applied Learning Technology (SALT) , Feb. 20-22, Orlando, FL, 703/ 347-0055

•American Association of School Administrators (AASA) , Mar. 1-4, New Orleans, LA, 703/ 875-0741

•Association for Supervision & Curriculum Development (ASCD) , Mar. 16-19, San Francisco, CA, 703/ 549-9110

•National Science Teachers Association (NSTA) , Mar. 27-30 , Houston, TX, 202/ 328-5800

•National Business Education Association (NBEA) , Mar. 27-30 Nashville, TN, 703/ 860-8300

•National School Boards Assocation (NSBA) , Apr. 13-15, San Francisco, CA, 703/ 838-6722
•
•National Council of Teachers of Mathematics (NCTM) , April 17-21, New Orleans, LA, 703/ 620-9840

•International Reading Association (IRA), May 6-10, Las Vegas, NV, 302/ 731-1600

•National Education Computing Conference (NECC) , June 18-21, Phoenix, AZ, 503/ 346-3537

•National Council of Social Studies (NCSS) , Nov. 22-25, Washington, D.C., 202/ 966-7840

There are also a couple of must-read magazines for educational developers:

Education Leadership covers issues and trends in education. Published eight times a year by ASCD, 125 N. West St., Alexandria, VA 22314-2798. Subscription price: $35.

The Computing Teacher is the journal of the International Society for Technology in Education, University of Oregon, 1787 Agate St., Eugene, OR 97403-9905. It focuses on the impact of computers on curricula and teaching about and with computers. Membership price includes subscription to Computing Teacher. Professional membership is $69 for U.S. members, $80 for non-U.S. Basic membership is $36 for U.S., $43 for non-U.S.