

MAC TODAY



THE ALTERNATIVE MACINTOSH MAGAZINE

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We've all heard the Mac Faithful defend the merits of Macs in schools. We've done it ourselves out of loyalty. Here's a study that shows we're right, in business terms. Every school board in the nation should read this.



grown up
reasons why
educators
should
stick with
macintosh

BY MICHAEL J. JOHNSON, PH.D.

Over the last three years my two co-researchers and I have evaluated more than 200 educational technology projects funded by an educational foundation in the 14 Western states. These university, school district, and individual teachers' projects focused on educational technology, and the use of multimedia technology in the classroom in particular. After visiting scores of schools and universities, corresponding with hundreds of teachers and administrators, and producing two videos, we concluded that the battle over which platform, Macintosh vs. DOS/Windows, was an adult issue. Students easily adapt and move seamlessly from one platform to another. Students do get very upset when the platform they are given cannot do some of the things they learn that another machine can do or do with less effort. But for the most part, kids adapt. So it's the adults who seem to have so much invested in the platform war.

The platform controversy often becomes extreme in school districts, where allegiances are strong, and bias is at times an insurmountable obstacle. People's emotional attachments to the platform they learned on often make it nearly impossible to be objective. Strong opinions are formed and voiced by the technologically literate members of the district team, opinions which often are not based on criteria designed to select the best platform for use in a school setting. This leaves many educators, administrators, and board members, who do not themselves have a strong technical background, at an extreme disadvantage, as they rely on their (often biased) technical computer support staff and others for information and recommendations.

In the past, educators, administrators, and school boards may have been uncomfortable with this situation, but left it up to the techies. That situation has changed. The importance of the platform decision has become much more critical in the last two years as the technology and its use both in schools and in the wider world have changed. The pervasiveness of the Internet as a new vehicle for commerce and information is driving this technological revolution in education. School districts will spend \$5-billion in the next year on technology,

and higher education is spending even more. Everyone is thinking about, and the vast majority of districts are working on, wiring their buildings and installing networks. As the American Association of School Administrators reports, school home pages on the World Wide Web grew exponentially from 134 to 2,850 in just 18 months during 1995 and 1996. The importance and the amount of money being expended on school technology are making board members and administrators very nervous about platform decisions.

The national bad press that Apple has received in the past year has also increased administrator and board member anxiety over the platform issue. Macintosh is the leading multimedia platform in education today, according to the latest report by Quality Educational Data. However, the bad press has prompted some school administrators to consider scaling back their future investments in Macintoshes. Board members and administrators may be at a disadvantage in making this decision if they are basing their choice on the negative press coverage, or on the biased views of the district technology staff.

an objective analysis

Anyone reading an article in favor of one particular platform is likely to be cautious, wary of the author's bias. I have worked with many platforms over the years, from CPM to Macintosh to Unix to Windows. In the past a variety of practical reasons have led me to recommend Macintosh in schools. However, with all the furor over Apple's bad press, I purposefully set out to research the issue objectively with an open mind, willing to consider moving away from Macintosh, if the facts indicated that the world had changed and that would be an appropriate decision. As Deputy Superintendent for Instruction and Technology of a large suburban school district that has spent \$8-million on computers in the last four years, I have an obligation to remain as objective as possible. There is just too much

at stake to let previous bias interfere with the ability to see current circumstances. Here's what I discovered and concluded from my personal research into the platform issue over the past six months.

networking and networking support
School networks are being installed at an exponential rate. According to QED (1996), school district networks have grown 600% in the last five years. The ease and cost of supporting a platform on local and wide area networks should be a significant factor in deciding which platform to purchase.

Our district has an extensive intranet and Internet network. We have installed thousands of Macs and PCs on our network in the last two years. Our experience points to a significant difference between Macintosh and Windows computers on a school network. This difference is demonstrated by the directions for how to install each platform. The Windows directions were three pages long, single spaced. Until only recently, our district Windows technical experts and a few building-level technology specialists were the only people who could do the Win-install. The Macintosh directions, by comparison, are ½ page long, including a picture. All of the librarians in our district are trained to install Macs on the network.

Although Windows 95 has improved significantly, even our most devoted Windows fans still call it plug and pray. We have analyzed the time that it takes our technical staff to install the Windows platform, especially on multimedia Windows machines, versus the time for a Mac installation. Installing a Mac on the network takes 10–15 minutes. Windows 3.1 often takes an experienced technician 45 minutes to an hour, and even Windows 95 can also take as long as 45 minutes. On a small percentage of Windows 95 machines the installation time can be as short as 20 minutes, if Windows 95 can identify and locate the correct ethernet driver.

If any problems occur with a Windows install, most of the technical people we have at the building level simply can't handle them. We have consistently found that supporting the Mac platform on our network is dramatically less expensive and—perhaps more important—requires far less district level support. I have

heard the same report from other districts.

The lack of technical support, especially at the building level, has been identified in Texas and nationally as the number one problem in educational computing. Just affording the budget to purchase the technology has been a major challenge for most districts. Providing adequate technical support positions seems out of the question for many. The ease of installing and maintaining a platform becomes a real concern when technical resources are at such a premium. If computers require support that is not available, they can sit in closets or on desk tops as dark-screened Cassandras foretelling the death of the school's educational technology program.

cost of supporting the platform

In the fall of 1995 The Gartner Group, a leading information technology industry analyst, released an independent study that concluded that Macintosh was at least 25% cheaper to support than Windows. This data matches our District's general experience with platform support, especially with the advent of networking as such an important computer function.

ease of use and learning to use it

Which is easier to use, Mac versus Windows, is another of those "never the sides shall meet" issues in schools. Perhaps the opinion of the CEO of the company that makes the most popular computer processor for Windows machines might be viewed as being a little less Mac-biased. Andrew Grove, CEO of Intel, says on page 58 of his 1996 book *Only the Paranoid Survive*, "Windows wasn't even as good as the Mac, let alone the NeXT interface, and it wasn't seamlessly integrated with computers or applications." Our experience with the Mac platform bears this out as the Mac OS takes much less time to learn and to start using effectively. Windows 95 has improved over 3.1, but it still has a good distance to go to match the Mac OS in ease of use/ease of learning. Our resources for staff

development and training are seriously limited. Unlike in business, teachers cannot just take the morning or day off to learn to use the computers. To free teachers for training, the districts have to provide substitutes, which greatly increases the cost of training. We cannot afford to waste a dollar of staff development time, especially when we are paying for a substitute—or even if it is on the teachers' own time, after school, or on Saturdays. We have found that it takes a great deal less time and staff development to get a

teacher up and running on a Macintosh.

cost of support: replicating business's technology model won't work in

education

Another concern that parents in particular express at school PTO meetings is, "Shouldn't we have the same computers in the classroom that are the majority in business?" This is an especially enticing solution for school administrators and board members, who are much more in tune with business and business management practices. But there are some key differences between business and education, especially in regard to computing.

The first major difference is that studies show that business provides a support ratio of one technical support person for every 35–60 users. In our district the ratio is closer to one technical support person for every 750 users. National studies and a recent study in Texas list lack of technical computer support as the most critical problem in educational computing at the district and particularly at the building level. Given how difficult it is to get money to spend on technology, hiring an army of technical experts to support them will not fly with tax-payers or with parents. Business' computer support model would be nice for education, but it just won't happen.

Another, and perhaps the most surprising, reason that business computing is not a model for education is that *K-12 students are power users*. Most K-12 students use the

computer as a true multimedia tool and their technological expertise is very sophisticated, especially when compared to most business users. **We have students who construct their own Internet Web pages—students with no front teeth who still believe in the Easter Bunny!**

The vast majority of business people do not use the full multimedia capabilities of their computers. Elementary students putting together a multimedia report will record sound; scan pictures and draw graphics; input a digital camera image; incorporate word processing; program an animation; and even input a video segment. Few business users begin to approach that level of sophistication. Student computers have to have more capability and power. *Putting a standard business desk-top in every classroom would seriously hamper most of our student computer users.*

which computer features best support and enhance learning: multimedia

When the first computers hit classrooms in the late 1970s, we took the new technology and used it to do the same kinds of things we'd been doing in education—we created Computer Assisted Instruction (CAI), electronic workbooks. We have since learned that a workbook in paper form costs only \$10, while a workbook on a computer (otherwise known as Computer Assisted Instruction, beep-beepware, or drill-and-kill software) costs over \$2,000. Moreover, educational research as well as teacher and student experience has found that multimedia enhances student learning in amazing ways that we are just beginning to understand.

Regardless of the effects of multimedia learning, the Internet has made it obvious that multimedia is the present and future of computing. The installed base of multimedia computers in schools is now 1.9-million, or 41% of the total number of computers in schools (QED, 1996). We have learned that computers are tools for learning and discovery, and that information and knowledge are more than just the text and pictures we have had in books. Information, when digitized, can be text, pictures, graphics, sound, and video. Providing information in all these ways really enhances learn-

continued

ing for all students and especially for all those students we know are very bright, but have not yet achieved their potential in school. In addition, once kids use multimedia, they want to use it in all their learning. This generation of young people in our schools is creating a "time-bomb of computer users" as Andrew Grove discusses in *Only The Paranoid Survive*.

which multimedia platform delivers the greatest capacity at the best price?

The very thing that has posed Macintosh its biggest challenge is the very thing that most benefits schools: a truly integrated system. For years Apple didn't license the Macintosh operating system to other manufacturers. Meanwhile DOS/Windows, which were licensed, gained market share in the business world because computers and parts became commodity items. You could mix and match and build your own in the PC world. This permitted endless variation. All PCs came with an assortment of slots that you could put different card devices in and create the computer that best met your needs.

Every Mac, on the other hand, comes equipped as a full multimedia machine with sound input/output and graphics features. All the components in Macs were from the same designer/manufacturer, and therefore they have all been designed to work together.

The endless variation on the DOS/Windows side has led to many problems. When different devices, made by different manufacturers, are installed in different slots in the same PC, they don't necessarily work well together. I have seen this problem cause havoc in many places, and in schools in particular, where advanced technical support is lacking. One project among several different school districts was delayed for more than nine months because the PCs they had would not function with both the CD-ROM

drive and the ethernet card installed.

Over the last year, even our district's most ardent Windows fans have become enthusiastic about purchasing Macintoshes, as Macintosh delivered far more RAM, hard-drive and full multimedia features than any Windows manufacturer at a far cheaper price. Some of the Windows manufacturers, (e. g., Compaq and Dell) are really starting to make headway in delivering comparable capacity at more comparable prices, but the slot addressing and driver difficulties continue to be a problem that is not going to go away in the near future. Our district analysis is that Apple continues to deliver

the fastest and most fully integrated multimedia machines on the educational market.

what about kids' being able to work at home or in schools with both

platforms? Most teachers, and most Windows users, don't understand how easy it is to move documents between computers running the Mac and Windows operating systems. Most do not even understand that you can format a diskette for use on the Windows platform while that disk is in a Macintosh computer.

best company sales and support to education

Apple has the most sophisticated sales and support force for education. Some PC resellers are providing excellent service, but no other PC manufacturer can provide the information, assistance, and support that Apple has developed and been so good at delivering over the last 20 years. In addition, the majority of Apple's educational support and sales personnel are former teachers themselves and have a good understanding of the needs of teachers and students and how technology enhances learning. The other manufacturers tend to hire business graduates who do not have the important experience and knowledge. Again, Compaq and Dell are

making inroads in this area by developing functioning educational marketing teams, complete with former educators and former Apple employees—but they will be a while in developing.

conclusion:
macintosh is still the best platform for education

Our students do get very upset when they know that they can do things on the Mac that the Windows machine can't or when they can't get the Windows multimedia functions to work properly. But kids are extremely adaptable and can use any platform or combination of platforms seamlessly. However, when I consider the strictly adult reasons for choosing a platform: money, resource requirements, technologies that support learning, ease of use, ease of learning, and the fewest possible problems—my conclusion is that Macintosh is still the best computer platform for education.

apple's survival is also an issue:
chrysler came back. so can apple

But "which is better" is not the only issue in the platform debate. Many school districts and other educational institutions have questioned their continued purchase of Macintosh because of a concern that Apple won't survive. The current media feeding frenzy and the "Apple's dying" spin they are putting on all stories about Apple have made everyone wonder. I have wondered myself. But four factors keep from going very far down that path: (1) Media frenzies are examples of stampede behavior, and they are most often inaccurate perceptions of reality. I shouldn't believe everything I read or see on TV; (2) Jobs, Wozniak, and Kawasaki are back involved in Apple and that will count for something; (3) Chrysler nearly went under and came back to lead their industry—so can Apple; (4) Real competition provides education with the best software and hardware; and we need that competition to provide us with more choices and better products.

Apple is probably in for still more bad news. Their struggle isn't over yet. However, many people sincerely believe that they will make it in the marketplace and remain Education's most prolific platform. While others

are on their heels and some, like Compaq, are clearly focusing on education, that competition in both hardware and platforms is just what education needs to ensure better products and services.

uncertainty in the computer world in general: who knows where it is going!?

Another factor that has heightened anxiety over the Mac/Windows platform debate is the general anxiety about the vast amount of uncertainty and risk there is in the computer world in general. Most people anticipate that the world of computing is about to go through several major metamorphoses. The questions about Wintel's (Microsoft and Intel) support for Windows NT on IBM and Motorola chips has technology directors wondering which way to go. The addition of the Apple/NeXT acquisition, Rhapsody, multi-platform operating system, and what advances it will bring to the desktop compounds their confusion.

The battle between the use of thin clients/client server desktop networks versus the full-blown multimedia machines with "bloatware," large programs requiring big operating and storage memory makes the world of technology even more disconcerting. The introduction of radically new products especially designed for Education, such as Apple's new eMate 300 portable for students, adds to the mix of questions.

All this uncertainty has left many educators nervous about computing in general. It is all moving so fast and any decision you make could become a mistake. However, the best advice for how to make decisions in today's very uncertain world might be to go with grown up reasons for making decisions: Which platform that exists right now saves the most money, time, and effort, and simultaneously delivers the most features that educators and students need, at the best price? ☐

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