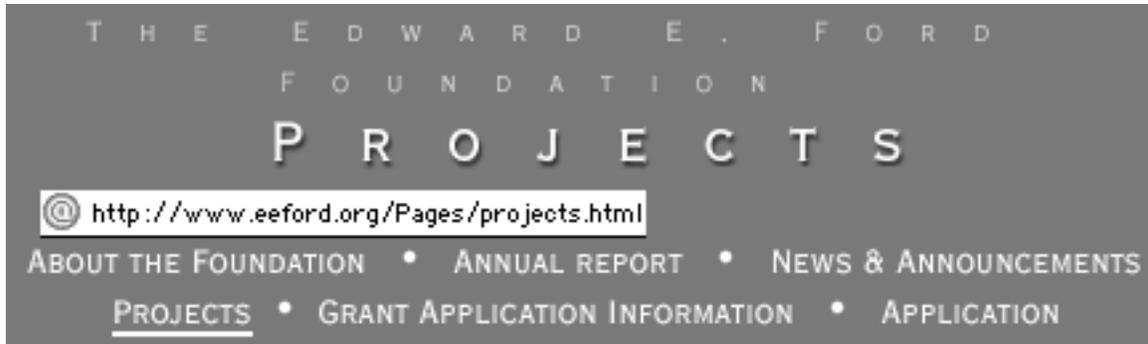


# FORD FOUNDATION GRANT, Spring 1998

## *Hardware, Software, Humanware*

*With a try before we buy approach to technology, Nobles takes special care to keep the focus on the humanware.*



At Nobles we believe that technology has the potential to revolutionize education, yet we have moved forward with caution, regarding technological tools as experimental until their success is proven. We believe this approach has allowed us to strike a balance that has placed us at the forefront of technology-using secondary schools.

On one end of the spectrum are schools that will jump right in and spend money to get the newest and the best technology, often at the expense of anyone actually knowing how to use the technology to its full advantage. At the other end are the conservative schools that choose to wait and play it safe, letting others make the mistakes first before they commit to any form of technology. But why, in many cases, have these schools come up short? And why has Nobles been able to forge ahead of so many of its peer institutions? The answers lie in our simple, two-fold approach to technology.

First we have discovered that the key to technology is to keep the focus on the *humanware*, or the human aspects of computing. What use is fancy, expensive equipment if no one has taken the time to learn how to use it? Our philosophy for purchasing new hardware and software and for incorporating them into the curriculum has always assumed that *humanware* comes before hardware, that teachers skills with computers and technology are a prerequisite to the purchase of new technology.

Secondly, our success has come when faculty members (humanware), and in some cases students (also humanware), have had ideas that they have been willing to push and test experimentally at first, not adopting them schoolwide until we become convinced that they show significant potential to support teaching and learning. The results of this careful approach, one we have loosely termed try before we buy, ensure that the centrality of faculty/student interactions and a sound curriculum remain at the heart of the Nobles experience, while at the same time avoiding stasis in education.

Nobles approach began to take shape in 1995 when a campuswide computer network called Noblesnet, conceived and installed by a student, revolutionized communications among teachers and students, and connected the School to the Internet and the World Wide Web. Since then, huge strides have been made in incorporating computers into our educational program:

we've networked our entire campus; added a fractional T1 internet connection line; automated our library services; created a campus e-mail and bulletin board system for all students, faculty, and staff with components for parents, trustees, prospective students, and outside visitors; and provided on-going computer training and support for faculty.

### **Powerbook Pioneers**

- *Ten pioneering faculty explore new ways of adopting computer technology into their classrooms to enhance teaching and learning*
- *The Pioneer program provides the teacher with an electronic blackboard that is a window into the entire world of data, graphics, video and information.*
- *While the results of the pioneer work to date are more anecdotal than statistical, they are unanimous in their sentiment: students in a pioneer classroom are more excited and involved in the learning process.*
- *The objective of the Pioneer program is exploration, the exploration of ways in which teachers can adopt computer technology into their classroom to enhance teaching and learning.*

Down in room number 008 in the basement of the Shattuck Schoolhouse, Sandi MacQuinn's freshman English class convenes daily over a powerbook computer, an LCD (Liquid Crystal Display) projector, a wobbly cart, cords akimbo, and a darkened room. All this so her students can present AppleWorks slide shows, HyperStudio stacks, interesting websites, and other assorted software designed presentations on ancient Greece or a Native American tribe and their contact with Europeans.

Some days MacQuinn says it's a disaster, with frantic pleas to Nobles Computer and Technology Coordinator Steve Bergen who runs down and crawls around on his hands and knees fixing cords and computer settings until he gets them to work - or doesn't.

But most days, MacQuinn is in awe of the learning environment in her classroom. "Most of the time I sit there scribbling notes, learning amazing details about things I didn't know, and the student is in control of the classroom for almost an hour, sharing information, answering questions, showing slides, manipulating maps, and using musical backgrounds to add drama and life to their stellar presentations," said MacQuinn, who admittedly has a love/hate relationship with the schools Pioneer Powerbook program that she and nine other faculty members are currently a part of.

"I take my cue from Steve Bergen who tells me we are attempting some very sophisticated stuff," said MacQuinn who joined the Nobles faculty this year. "It can be exhausting at times, because I am used to being able to totally control the environment and I cannot always do that with technology. But it's also very exciting. I'm learning and so are the kids. Its worthwhile and I'm sticking to it."

MacQuinn isn't alone in her mixed feelings about the technology. Many of the other Pioneer Powerbook faculty have also experienced similar frustrations spurred on by problems with the hardware and software. But like MacQuinn, they're staying with the program and using the powerbook in class as much as possible, whether it's used to supplement their lectures or as a medium for their students presentations. But why? What is so revolutionary about this program that keeps these faculty members, and their students, clamoring for more? Perhaps the answers lie in the underlying philosophies of the Pioneer Powerbook program.

The image of pioneers was chosen for this project to connote the forward edge of educational innovation. Over the last year, Nobles has launched the first phases of its Pioneer Powerbook program in which ten teachers, representing different academic departments, have been supplied with basic pioneering equipment: a networked laptop powerbook computer, a modem, an internet connection line, a traveling case and special software applications that they have been required to use regularly in their classrooms.

In each generation, teachers have adapted to new educational tools that enable them to teach more effectively. The blackboard, although still valid as a teaching tool, is limited to a teachers writing and drawing skills. The overhead projector is limited, as well, in that each projection is simply an image that is static in nature.

In our Pioneer program, however, the laptop computer, in tandem with an LCD projector, literally puts the computer screen on the wall and becomes an interactive teaching tool with unlimited capabilities for such things as accessing resource materials from the World Wide Web, presenting CD-ROMs, showcasing and editing student writing, and taking notes during class that can be e-mailed directly to all class members over Noblesnet - all in an intimate, fast and engaging manner.

The objective of the Pioneer program is exploration, the exploration of ways in which teachers can adopt computer technology to enhance teaching and learning. While at times the effort to get the powerbooks wired for class has been frustrating, the benefits to both teachers and students have clearly outweighed the programs inevitable growing pains and sporadic technological mishaps, making the Pioneer Powerbook program a powerful teaching tool, for the ten teachers, or pioneers if you will, who have been using them in their classrooms.

“The Pioneer Powerbook program makes the classroom a richer daily experience for the students,” said Steve Bergen who created and has led the charge for the program. “It provides the teacher with an electronic blackboard that is a window into the entire world of data, graphics, video and information.”

At Nobles, we do not believe that computer technology in a classroom replaces teachers, or that students cannot learn effectively if their teachers are not using Pioneer program applications. But the School does believe that the Pioneer program has the capability to enhance more in-depth and interactive classroom learning experiences.

“Technology today is a great advantage in the classroom,” began freshman Alexandra Briggs of Weymouth when asked to reflect on the use of the powerbook in class. “Information is more fun and interesting when presented in a multimedia presentation. I used HyperStudio, a multimedia program, for my English project. It raised my interest in the project and my friends were more attentive during my presentation. It was easy and hands-on, and adding graphics and sound made it look great.”

Bergen believes it’s too simplistic to say that the program creates value only for students; he thinks the impact on faculty is enormous in that it creates a level of excitement for teachers that can sometimes be lost. “Teaching can be a burnout profession,” he began, “but the Pioneer program creates a level of being on the cutting edge, of trying new things, a feeling of renewal. Our pioneers have been challenged to find new ways of presenting material, and that can be very energizing.”

According to pioneer and English teacher Rosie Driscoll, her first day of pioneering yielded unbelievable and immediate results. “My goal was to get my sophomores to focus on their use of language in their *Macbeth* essays,” she began. “I used the powerbook to project

selected sentences from their drafts onto the screen and had the class work together to suggest solutions. I couldn't believe how well the exercise worked because the students were so engaged. I've certainly never managed to get them excited in a 40-minute discussion of grammar and syntax before!"

Bill Gilbert, who teaches Spanish, is one of the few teachers who has been able to embrace the full spectrum of the Pioneer program. As a modern language faculty member, he uses the School's Digital Learning Center with each of his classes one period a week. But, by also being one of the School's ten pioneers, he is able to use his powerbook in classes held outside of the DLC. "This equipment has been a wonderful help in my teaching," he said. "I use it to make periodic forays through websites in Spanish. It's neat to have the entire class read today's comics section in San Jose or an editorial on anti-terrorism from today's paper in Buenos Aires."

Whether a Nobles Pioneer is using the powerbooks for on-screen essay revisions or if they're exploring on-line websites, they have incredible access to the most current world of information from museums, universities, books, magazines, videos, foreign newspapers and more. And teachers are redesigning their lesson plans based on these new methods of curriculum innovation by creating quizzes or discussions after accessing in class such things as historical time lines, live CNN broadcasts related to physics lessons, graphics of ancient Roman and Greek artifacts from around the world, or websites related to upcoming field trips.

In the short time the Pioneer program has been tested, it has become clear that the tools of the program are providing teachers with the unique opportunity to think about new ways of presenting materials that illustrate their curriculum and excite and engage their students. It has also fostered a climate of interdepartmental sharing.

"The Pioneer program has created an interesting interpersonal theme at Nobles," observed one teacher. "Teachers in unrelated disciplines are learning from each other: the Latin teacher, the physics teacher and the English teacher are all sharing their successes and failures and giving helpful hints to each other; technology is the catalyst here."

The notion that teachers are stimulated and revived by the challenge of finding new ways to present their material supports the core of the Schools belief that stasis in education must be avoided. Nobles must continually move forward and deploy prospective new tools experimentally at first and then adopt them should they prove to offer real benefits. While the results of the pioneer work to date are more anecdotal than statistical, they are unanimous in their sentiment: students in a pioneer classroom are more excited and involved in the learning process and participate more frequently in class, thus creating a more interactive classroom.

Most importantly, students see their teachers not simply as harbingers of information, but as active and engaged learners themselves; this conveys a powerful message about lifelong learning to faculty and students alike.



5) you will be given the extended loan of a few Chapin owned goodies such as a wireless airport access point so that you can be wireless in your own home or apartment if you so choose  
6) you will have to agree that your writing to Diaries (ML) will be public and usable by others, perhaps even for marketing reasons or for a grant proposal ... the reason that I have included Vera as one of the cc's in this e-mail is that she may at some point turn this Pioneer Program into a grant proposal the way we did at Nobles

**From: Grade 2 Teacher To: Diaries (ML) Subject: Pioneer Diaries**

Class Two definitely wants to make the varsity team! We are LCD obsessed! We begin our day with the morning message projected onto the board and we include images that relate to our day, e.g. pictures of the marathon, images from books that we read. We use it for vocabulary, e.g. if the girls don't know what a rhododendron looks like, we find it on Google images then project it. We use it for social studies, e.g. we did an interactive PowerPoint presentation to introduce Iroquois Clothing, or to view websites with the girls. We use it for writing, e.g. we did a collaborative writing project using Word. We model editing strategies. We use it for reading, e.g. we put "watch words" up as they read and then define the words. We mapped out a storyline using Kidspiration and imported graphics from the internet. We use it for math, e.g. we projected a 100s chart with missing numbers and the girls came up the blackboard to fill it in. We love it, and we hope we can make the team!!!!!!

**From: Upper School Latin Teacher To: Diaries (ML) Subject: this week's diary**

So last week I actually did a whole lesson on PowerPoint. It was the introduction of two past tenses in Latin. The nice part was that afterwards I was able to post it on the Web so that students could refer to it again and review. Even though I was the only one of the 3 latin teachers to present the lesson in this format, the other teachers told their students about the Web resource; many students then checked it out.

**From: Second Grade Teachers To: Diaries (ML) Subject: this week's diary**

Katie and I are using our Smart Boards all the time. We use them for teaching:

- Handwriting- Created a template to use for teaching cursive
- Reading- We are going to use Inspiration for character and event mapping. We frequently Google images relating to topics in literature.
- Math- The clock templates in the SB Notebook are amazing because we don't have to waste time drawing clocks. We dictate various times of the day and have students represent the time by drawing hands on the clock faces. Katie and I just finished writing up questions for an interactive clock game the students will play tomorrow during math. Some of the questions require them to use the clocks mentioned above while others require them to push a "button" that links them to "The Teachable Clock" on our Class Two website.