Teachers and Technology in the Classroom

Proposal for Development of a Videodisc for Teachers and Administrators

I. Introduction

Teachers College, with the JHM CORP as a subcontractor, proposes to develop a videodisc for teachers and administrators that will demonstrate, through the use of educational technology, how such technology can help teachers work more effectively with their students. The videodisc will demonstrate different methods of teaching with technology and discuss different organizational structures which support appropriate uses of technology. We expect the project will take one-year to complete.

We will develop the videodisc in collaboration with a nationally recognized group of scholars and educators knowledgeable about the implementation of technology applications, teacher training, and administration of school innovations. Based on this understanding of teacher change and school improvement, the videodisc will be developed from the perspective of the teacher in the classroom, utilizing the branching capabilities of the disc to provide for many different teaching situations.

Educators need a videodisc presentation of technology use. Diverse counselors bombard teachers across the country and around the world with suggestions telling them to use more and more technology in their classrooms. Most often these directions come through traditional media -- newspapers, magazines, reports, and books. The average classroom teacher is at a loss to know where to start using technology, let alone know how to use it. Many teachers, unaware of technology applications as they pertain to their teaching, feel unable to take the time to learn about them. Often, teachers with the desire to find out about such applications have limited opportunity to use and explore the possibilities. Videodisc technology provides a cost-effective means of reaching large numbers of teachers, with a message that will exemplify its content.

We expect the development of this videodisc to be the first in a series that will provide K-12 teachers with substantive assistance for successfully implementing information technologies across a number of disciplines and groupings. This first disc will provide an interactive overview about teaching with technology. We will design it for use in teacher training situations in pre-service and in-service teacher education settings. In addition, we will design it for a simple, transportable kiosk-type installation that can rotate from school to school in a

district. In addition to the videodisc, we will develop a comprehensive dissemination plan to inform educators across the country that the disc exists and how to use it as a tool for school improvement in their district.

II. Rationale and Need

The implementation of technology in most schools around the country is piecemeal and uneven. All too often, "technology use" refers to brief drill and practice sessions in a computer lab set apart from the normal classroom. When standalone computers are available, their use is haphazard and unpredictable, restricted usually to the occasional teacher who has become an enthusiast. While most teachers are aware that technology can be of great use in the hands of the right teacher with the right equipment, they do not think of themselves and their equipment in that light. Many are unaware of the vast potential information tools can have for helping them reach their students.

Many teachers believe technology is too complicated, time consuming or simply irrelevant. In many school districts technology use is grounded in a math-based world and has not found its way into other disciplines. Where the position of computer coordinator exists, individuals often have little authority, and limited means of reaching teachers. Usually, information and misinformation about technology is passed informally between teachers, through word of mouth. In many cases school administrators do not understand the need for technology.

These conditions are well documented in the technology literature, and they indicate that introduction of technologies for the classroom has been largely ineffective to date. Despite the preponderance of national reports urging the integration of technology into our schools, dire warnings in the popular press, and parental pressure to use computers in the classroom, schools have integrated technology only minimally. Schools have basically "tacked on" computer use in ways that do not disturb traditional teaching practices, instead of truly adapting the schools and redesigning them to take advantage of the technology available.

Part of the diffusion problem is that educators do not have a coherent communication system. Our schools are decentralized institutions that have no need to consult with each other -- even within a given school, communication is often unreliable. As decentralized institutions, school administrators are answerable only to their school boards, and not easily influenced.

In addition, teachers and administrators feel that they have been asked to "add" computers to the unending list of new issues they are supposed to teach for the good of society. Along with drug education, sex education, health and nutrition, AIDS, and the environment, computers are yet another item on the list of important new topics to incorporate into the curriculum. *But computers should not be on this list.* They are not merely topics to be taught, but tools to be used. Computers and other information technologies are tools that have the potential to transform the traditional relationship between teachers, students and subject matter by providing new ways of integrating and communicating subject matter.

Teachers and administrators are not getting this message. There is sadly little scope and breadth to what teachers understand about computers and other technologies. As a group, they receive limited information on a regular basis about how to use the technologies available, how to critique software releases, or how to weigh hardware developments.

Moreover, if teachers and administrators are given information or training, it is often assumed that they will stay abreast of new software releases and new hardware developments. That is often not the case. Teachers are not accustomed to keeping up with rapidly changing fields. Technology trainers forget that reading and math for instance do not alter much year to year; teachers and administrators are not prepared to keep up with the rapidly changing world of technology.

We believe that school people need a carefully developed, teacher-friendly videodisc that will provide the scope and depth about teaching with technology needed by teachers. Such a disc needs to be engaging and it must effectively show the ordinary teacher that she can use the technology to inform herself about it. "I see what these tools can do!" We believe that such a disc can be a powerful means of disseminating understanding about the uses of technology in education and an effective way of lowering the anxiety that many teachers feel at the prospect of having to adapt to new tools for classroom work.

If this disc proves effective in helping teachers use technology in the classroom, we will follow it with a series of more specialized discs, each dealing with curricular areas in which the technological applications to education have a unique character. For instance, we would develop a disc on technology in the education of the handicapped, or on technology and language instruction, or on technology and early childhood education, and so on. In each case, the educational area has special conditions and the applications of technology differ significantly from those in other areas. But to start, we plan a general disc, one that presents the basic options and techniques for using technology in the classroom. This start thus can become a major channel that teachers will be able to depend on to be unbiased, provide in-depth information, and provide that information based on their daily needs in the classroom.

III. Objectives

Our objectives below provide an outline of our preliminary scope of work:

1. Establish a national advisory board that will define the most relevant theories and practices related to technology implementation, teacher training, and innovation in the schools and provide authority for the scope and balance of how the disc presents the dynamics of teaching with technology.
2. Conduct a thorough survey of the literature on teaching with technology, extracting from it the main patterns of use, pedagogical rationales for those patterns, and a list of sites that may exemplify each pattern well.
3. Visit schools that make extensive use of technology to observe, analyze, and define a range of technology implementations in diverse geographical and socio-economic environments, and gather ethnographic information about implementation attitudes, incentives and barriers. On this basis select locations for taping material to be included on the videodisc.
4. Use input from the advisory board, the research synthesis, and school site visitations to generate a problem analysis and to identify primary target audiences, anticipated benefits, and implementation objectives.
5. Develop, with the JHM CORP, a design approach for the videodisc, and associated software, including content information and learning points, production value, interactive instructional strategies, treatment of audio-visual material, scripts and design formats.
6. Produce, with the JHM CORP, a videodisc that demonstrates different methods of teaching with technology and discusses different classroom organizations which support appropriate use of technology.
6. Field test selected school districts and teacher-education programs to see how study with the videodisc affects teacher attitudes towards the prospect of using technology.
7. Evaluate the results. With them, design a dissemination plan that is national in scope, but provides for regional and local implementation.
8. Plan further follow-on discs that cover more specialized uses of technology in education in more depth, e.g. special education, language instruction, early childhood education, science and math instruction, music education, and so on.

The primary project staff will be organized through the Institute for Learning Technologies at Teachers College, Columbia University. This staff will work with the Advisory Board to develop the substantive material to be presented through the disc, and it will work with the JHM CORP to provide the over-all instructional design for the videodisc. In addition, this staff will conduct the follow-up evaluations of the effectiveness of the disc as a teacher education resource and it will assess whether further discs in the series are appropriate, and if so, decide

which ones.

Design of the disc will be done in cooperation with the JHM CORP and actual production of the videodisc will be subcontracted to the JHM CORP, which has had extensive experience developing videodisc based educational programs such as PALS and a set of teacher training discs for it.

IV. Key People in the Project

Several senior faculty members at Teachers College will be involved with the project through the Institute for Learning Technologies and the project Advisory Board. Among them will be Robert McClintock, Professor and Director of the Institute for Learning Technologies; John B. Black, Professor and Chairman of the Department of Communication, Computing, and Technology; and Professor Dale Mann, Professor of Educational Administration with extensive experience in videodisc development. In addition, two staff members will devote themselves full-time to the project.

James Fenwick, Assistant Professor in Education and Director, Graduate Computer Program, Nazareth College, Rochester, NY (he will take a leave of absence from Nazareth to work on this project).

Specializes in working with educators who teach technology in the schools. Current research and development interests include creating interactive multi-media presentations and projects that integrate technology into everyday classroom use. Background includes co-authoring logo workbooks and directing a major videodisc project with Interactive Inc. and IBM (Money Master). Has been through IBM's Project Director's workshop in Atlanta.

Ellen B. Meier, Consultant, Educational Management and Technology; Program Associate for the Institute of Learning Technologies at Teachers College, Columbia University

Specializes in working with schools and educational institutions introducing technology, with particular interest in the politics of change and innovation. Current research and development interests involve impact of technology on student learning, dissemination of technology, and policy issues for administrators who are integrating technology applications. Background includes 15 years as contractor for the Department of Education, working with all 50 states in the dissemination of federally approved exemplary practices, with particular emphasis on technology programs. Also designed and implemented alternative school and teacher center as part of Federal Experimental Schools Program.

JHM CORP has a highly experienced core staff that will implement the instructional design of the disc and manage its production. In addition, JHM CORP will contract camera crews and other specialists, as needed, to complete production of the disc.

An essential component of the project will be its National Board of Advisors. This board should be actively involved in the development of the disc, ensuring that it reflects views about teaching with technology that are representative and

sound. There should be at least four meetings of the board with substantive preparation prior to each meeting.

1) At the outset, the board members should join with the staff to generate a preliminary mapping of the sorts of teaching being done with technology. This mapping would serve to guide efforts by the staff to select sites for inclusion and to weight coverage. Board members should receive timely reports about the sites visited and the research syntheses generated by the staff.

2) Then, when the staff is ready to suggest a selection of sites and a rationale for the coverage it recommends, the board should meet to approve or revise these judgments that will form the basis for the design of the disc. Working with the staff of the JHM CORP, the project staff should develop the instructional design of the disc, have video shot and select footage for inclusion on the disc, and specify the controlling software.

3) When these disc development tasks are nearing completion, the results should be shown to the board which must give its approval prior to disc mastering. At the same time, the board should set the evaluation strategy and timetable, although anticipation of some features of this strategy will need to have been taken earlier so that useful data-gathering capacities could be built into the software.

4) When the evaluation results are available, the staff should present its interpretations of them to the board and the board should use these to decide on a dissemination strategy and a strategy for the development of further discs in the series, should these seem merited.

The board should have twelve members, five from the Teachers College Faculty and five prominent educators from elsewhere. In addition, the Director of the Institute for Learning Technologies and the President of the JHM CORP should be members. The board has not been recruited at this stage. When the project is funded, we will proceed to recruit board members as one of the first steps in getting the project underway. We would ask the following to be Teachers College members:

Linda Darling-Hammond	Professor, Department of Curriculum and Teaching
Ann Lieberman	Director, Center for School Reform
John Black	Professor and Chair, Department of Communication, Computing, and Technology
Dale Mann	Professor, Department of Educational Administration
Robert McClintock	Professor and Director, Institute for Learning Technologies
Margaret Jo Shepherd	Professor, Department of Special Education

As outside board members, we would invite people such as the following:

Philip Jackson	Professor, University of Chicago
James Mecklenburger	National School Boards Association
Susan Loucks-Horsley	Regional Laboratory for Educational Improvement of the Northeast
Marsha Levine	American Federation of Teachers
Sylvia Charp	T.H.E. Journal

V. Preliminary Budget

A. Personnel		
Director (.25)	15,000	
1 Research and Design Coordinator	35,000	
1 Design and Development Coordinator	35,000	
1 Research Assistant	25,000	
1 Design Assistant	25,000	
Secretarial (.5)	11,000	
Subtotal (Salaries)	146,000	
Fringe Benefits @ 27.5	40,150	
Subtotal -- Personnel		**186,150**
B. Advisory Committee		
Honorarium for 10 individuals @ $325/day for 4 days	13,000	
Travel for 6 individuals @ $400/trip for 4 trips	9,600	
Meeting costs @ $500/meeting for 4 meetings	2,000	
Subtotal -- Advisory Committee		**24,600**
C. Travel to School Sites		
Travel to representative sites for 2 individuals @ $400/trip for 10 trips	8,000	
Subtotal -- Travel to School Sites		**8,000**
D. Indirect Costs @ 67.5% on Salaries	125,650	
Subtotal -- Indirect Costs		**125,650**
Teachers College Total		**$344,400**
Work to be subcontracted to the JHM CORP		
Estimated amount	250,000	
Total for project		**$594,400**