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The Advanced Media in Education Project

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Emerging communications forces are making a deep, lasting transformation of education both feasible and necessary. The [Institute for Learning Technologies](#), on behalf of Teachers College and Columbia University, is asserting leadership in fulfilling these possibilities through the Advanced Media in Education Project. To accomplish this mission, the Institute is integrating technological innovations into a practical process of education, creating fresh models of educational excellence and professional development, and demonstrating to students, parents, and the public how the new educational process will meet their needs and interests more effectively than does the status quo.

As an enabling strategy, the Institute is undertaking a program of specific initiatives to improve dramatically the educational experience of disadvantaged children by connecting an increasing number of urban schools -- public, parochial and private -- to the information superhighway as a national testbed for educational innovation. Through these initiatives, the Institute is demonstrating how the new network technologies can lead to better education by:

- overcoming the traditional isolation of students, teachers, and schools;
- expanding the opportunity to develop skills for work and civic life in the 21st century;
- helping children build a fuller sense of efficacy and personal empowerment;
- strengthening schools as centers of communication, helping coordinate initiatives in education, health, housing, employment, and community development; and
- mobilizing the resources of private industry, foundations, and government to improve the educational opportunities of those most in need.

Through a six-part program, listed here and described on following pages, the Institute is empowering children, teachers, and schools with advanced multimedia information networks.

1. **Connectivity** provides school gateways linking to the Internet via broadband networks and creates a testbed for transforming education practice.
2. **Technical assistance** insures that schools linked to this growing testbed can take full advantage of its innovative resources.
3. **Curriculum integration** engages children with the questions, ideas, and

- principles that inform advanced scholarship and professional practice.
4. **Teacher development** -- on-site distantly through video conferencing and at Columbia University through a unified program of coursework, fieldwork, and internships -- enables teachers to make full use of new educational resources.
 5. **Assessment** evaluates how well young people study with advanced media and guides efforts to implement the basic strategy of change.
 6. **Community involvement** supports participating children while they are out of school and draws parents and other adults into the program.

Implementation of this program has begun. Through the [Living Textbook Project](#) (with funding from New York State) the Institute is linking six schools (three in New York City and three upstate) via very high-speed connections to both the Internet and to a New York State-wide prototype of the national information infrastructure being developed by NYNEX. Through the [Harlem Environmental Access Project](#) (with federal funding from the Department of Commerce) the Institute is connecting six other schools serving the New York City Empowerment Zone into Columbia University's information networks (and, through such, to the world) and to on-line environmental resources being developed jointly by Columbia and the Environmental Defense Fund.

Other Institute proposals to both public and private sector funding sources seek to expand these beginnings significantly, concentrating particularly on two groups of schools, those serving disadvantaged, inner-city populations, and those schools, newly organized, or re-organized, that seek to be relatively small, self-directing institutions.

- In inner-city schools, wide-area networking can particularly help redress the burden of inequitable access to economic and cultural resources that children there suffer. Advanced media introduce new causal forces in education. New technologies are not merely a good to distribute, but a force to employ. In concept, networked multimedia can make the richest, most powerful resources of our culture available to anyone, anywhere, at any time, and in principle this change should have greatest relative value to those who presently have least access to the fullness of our culture. All children will benefit, but the least advantaged children can benefit the most.
- Reform efforts nurturing small, effective schools, committed to equity and engagement, are fast becoming the norm of good pedagogical practice. A networking infrastructure for education, designed to enable teachers and students in these schools to employ, at low cost and large effect, the full range of powerful educational tools, cultural resources, and social services available electronically, will enable such schools to provide comprehensive yet compelling opportunities for their students more surely and efficiently.

[Update 10/03/96 by KAT: During Summer 1996, a consortium -- led by the Center for Collaborative Education (CCE) and the Institute for Learning

Technologies (ILT) at Columbia University -- joined together to initiate the [Eiffel Project](#) in order to demonstrate how children contending with poverty, discrimination, and urban crowding can achieve world-class education standards when liberated by fundamental efforts at school reform, empowered by the full use of advanced digital information. The consortium intends to improve the educational experience of disadvantaged children dramatically by connecting an increasing number of New York's urban K-12 schools to the information superhighway, developing and implementing innovative curricular strategies, and providing effective teacher professional development, all in support of the small schools reform movement. As currently envisioned, by the end of its fifth year, the Eiffel Project will directly benefit over 30,000 students, most from African-American, Latino, immigrant, and economically disadvantaged families in Harlem and Upper Manhattan, the South Bronx, Queens, downtown Brooklyn, as well as Newburgh, NY, and will serve as a national model for new educational processes suited for use in all educational settings.

Participants are aggregating funding for the project from four sources: first, the project has received a grant of \$7 million over five years from the U. S. Department of Education through its Challenge Grants for Technology in Education (announced 10/02/96); second, the sponsoring coalition will provide substantial matching resources through contributed effort, equipment, services, and talent; third, the coalition is raising funds for component activities within the project from other diverse granting agencies -- federal, state, local, and private; and, fourth, the project seeks to raise funds systematically to support the project from a wide cross-section of New York City businesses and philanthropies.

The total projected budget over the initial five years of the project is expected to exceed \$20 million.]

Designing the School of the 21st Century

Educators have a rare, historic opportunity to extend the limits of educational possibility. Through the Advanced Media in Education Project, the Institute will provide decisive leadership in the effort to seize that opportunity.

Technologies, particularly multimedia and digital networks, can enable people to change education profoundly. These technologies alter the methods and economics governing how people produce, disseminate, and use knowledge. These changes in turn affect the curriculum: what is taught, how students gain access to it, and what human achievements result. Reshaping the curriculum through digital communications has enormous potential for advancing both intellectual excellence and democratic equity. These are the goals of this project.

High-speed networks can deliver, to any person at any place at any time, digital curricular materials that integrate multiple forms of knowledge (i.e. audio, video, imagery, simulations and sophisticated tools of analysis and synthesis) in addition to traditional text. Networks provide not only access to curricular materials, but

also the means to enable students and teachers at the classroom level to communicate with the world at large, thereby breaking out of their traditional isolation. In short, the world of culture becomes a significant part of each class; and creative contribution to that culture by students and teachers themselves becomes a possibility in every educational encounter. High-speed networks can unite the library and the classroom, and open the tools and the data of advanced research to curious inquiry by all, creating a rich, high-quality environment of educational resources that empowers teachers and students to take on new and liberating roles.

Advanced media have great educational significance because they enable students to master a fuller, more powerful curriculum. The Advanced Media in Education Project is advancing these possibilities by drawing creatively on the talents and intellectual property base of both Columbia University and collaborating groups from both the public and the private sector.

Digital networks and distributed computing create opportunities for major efficiencies in educational development. The Institute is making use of the extensive investments in technology for education made by many state governments and by major federal agencies such as the National Science Foundation, NASA, and the Department of Education. It is mobilizing tools to allow schools, classes, and groups of students to assemble and control their own contributions to the structures of networked information and knowledge. Such tools, based on designs such as Mosaic and the World Wide Web and their successors, will enhance the ability of teachers, parents, and students to find and selectively filter information; to control, assess, and present their findings and ideas; and to communicate with peers and experts about their interests and concerns.

A Six-Part Program

To pursue its goals, the Institute is executing a six-part program of practice to provide extensive direct service to children in urban centers around the nation.

Connectivity. Goals of school change and curriculum innovation will become feasible as children, teachers, and schools gain easy, affordable access to the digital infrastructure. Over the next three years the Institute will undertake to connect on the order of 200 schools in major cities to the information highway through high-speed connections to the Internet. These connections will direct educational innovation to where the need is poignant and to where results will be prominent. Associated efforts to build the technical infrastructure within participating schools will provide an unmatched base for showing how advanced multimedia information networks can provide the means to effect educational change. Over 100,000 disadvantaged children will immediately benefit and become a beacon for further reform.

Technical Assistance. To insure that schools affiliated with the Institute can adapt to the new technologies and take advantage of access to innovative curricular

materials, the Institute provides direct technical assistance during the period of initial connectivity. In the longer term, the Institute is pioneering the use of wide-area network communication capabilities to develop and deliver technical support directly to the schools over the network. Expertise gained in this process will be invaluable in extending network services to schools far beyond the direct reach of the testbed.

Curriculum Integration. Many groups are creating powerful curricular innovations. The Institute is working to bring many of these new materials from diverse sources creatively into working classrooms, combining resources developed at Columbia University, along with materials available from others, whether on disk or over the Internet, to integrate everything into the daily work of schools. The Institute intends to combine the best resources it can find, the better to educate the developing child and will implement, test, and perfect that configuration of means, providing proven new models for dissemination to the world.

These efforts at curriculum integration will concentrate, substantially, but not exclusively, on the middle school and high school. Traditional compensatory education in disadvantaged areas has centered attention on the early grades. This is good, but not sufficient. To capitalize on the power of advanced media in education, the Institute is addressing the needs of children as they approach adolescence and grow into adults. These are the years in which students appropriate high levels of working skill and substantive knowledge, given the chance. Too often, these are the years when schools fail because they lack sufficient resources to satisfy growing curiosities, losing the attention of all-too-many students. These are the years in which networked multimedia can make a sharp, significant difference for young people who are at the emotional border between alienation and engagement. These are the years when digital educational tools can give students a perception that the agencies of action, so powerful in the world about them, are indeed within their personal reach. These are the years when the current system fails and when a better system must succeed.

Teacher Development. Successful educational reforms, especially ones combining a new pedagogy with mastery of new technological tools, requires a concurrent program of teacher training, professional development, and in-school teacher support. Prevailing modes of teacher preparation are poorly adapted to technologically dynamic practices. The Institute and Teachers College are developing and implementing a scaleable model of teacher training and in-school professional development support, building on the pioneering initiatives such as the Living Textbook Project and the Harlem Environmental Access Project, described above.

As a first step, Teachers College will create a fellowship program for master teachers from schools connected to the network testbed. These Fellows will come together to study how students and teachers can best make use of network resources and tools. Upon completion of their studies, they will return to their local

schools able to teach others how to take full advantage of these materials and technologies. At the same time they will continue to participate in the overall networking strategy and will be able to call on experts at the Institute and elsewhere at Columbia University through the innovative use of electronic mail, discussion groups and network video conferencing. Returning Fellows will themselves become part of an expanding pool of resources available not just within their own school but to all the other affiliated schools through the network. The whole effort of teacher development will provide a model for general practice, amplifying the results of the Institute through adoption into general practice.

Assessment. Fundamental to successful innovation and the continued commitment of resources is the assessment of curriculum performance and student achievement. When deep educational changes occur, traditional assessment strategies cease to work. These strategies have assumed that what students should know is predictable and assessment of students turns on measuring how well they conform to those predicted expectations. Meanwhile, the evaluation of curricula turns on measuring the relative efficiency with which students reach base-lines of canonical knowledge. With the new emerging curricula, the key matter will no longer be what students know, but what they can do with intellectual material.

The Institute is developing new assessment procedures to reflect these changes and will use them to demonstrate what arrangements ensure good practice with advanced media in education. To achieve systemic change in education, however, specific efforts at improving practice need to produce measurable, positive effects under traditional criteria as well. Thus, the Institute seeks to ensure validation of its efforts under existing methods, both pedagogically and politically, at the same time that it undertakes to transform assessment methods. In this way, the Institute can become the locus of sustained innovation, reshaping the process of education and creating a national, even global market for those providing innovative resources and services within it.

Community involvement. In efforts to develop the educational uses of wide-area networking, public attention is turning to improving the connections between home and school. This effort presents a particular problem in social settings where families are poor, fragmented, weakened by unemployment, inadequate housing, and dangerous surroundings. In these areas community-based organizations (CBOs) are particularly important in giving children out-of-school access to networked educational resources. The Institute's strategy includes helping CBOs in the vicinity of participating schools to establish electronic links to the school and network resources and for the Institute to provide those CBOs with technical and program assistance in helping participating students and their families make good use of these resources. These efforts will also serve to strengthen community, and thus political, support for the strategy of educational reform through wide-area networking.

Columbia University and Educational Innovation.

A sound strategy makes it feasible to overcome impediments to educational innovation, provided one has the capacity to act in a sustained effort on a large scale. Through the Advanced Media in Education Project, the Institute is bringing together substantial, enduring enterprises -- ones capable of long-term, compelling action.

Teachers College is the oldest, most comprehensive graduate school of education in the world. It has a long tradition of innovation in education and service to disadvantaged communities. Columbia University is distinguished among leading research universities as a leader in education through its influence in developing the core curriculum. The Institute for Learning Technologies has advanced a full vision of how to reshape the process of education through innovative uses of information technology, particularly, multimedia and network technologies and is a national leader in applying these technologies in working schools.

Institutions seeking to influence change incur historical responsibility for the consequences of their actions. Working together through the Institute, Teachers College, Columbia University, and their partners have the potential to effect significant educational change; the potential to make innovations that will stand the test of time as a model for an effective information-based society, one that people will experience as both empowering and equitable.

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