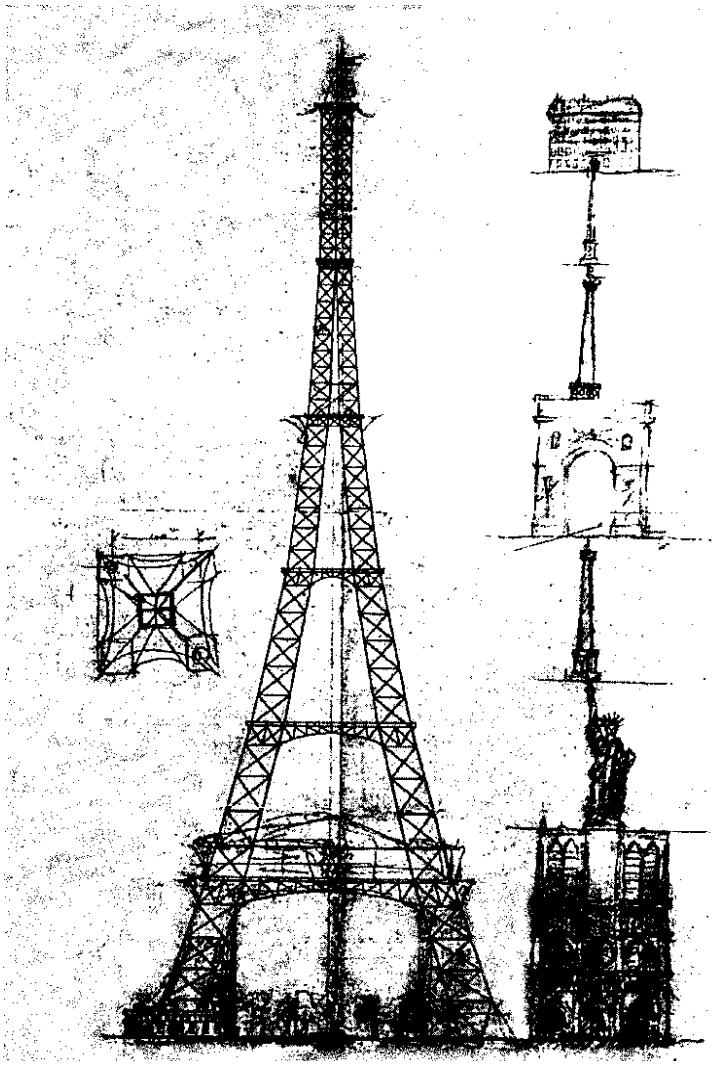
NETWORKS FOR LEARNING RENEWAL
THE CENTER FOR COLLABORATIVE EDUCATION
and
INSTITUTE FOR LEARNING TECHNOLOGIES
COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

The Eiffel Project

New York City's
Small Schools Partnership
Technology Learning Challenge



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The Eiffel Project:
NYC's Small Schools Partnership
Technology Learning Challenge
Abstract

- The Eiffel Project joins New York City's small schools reform movement with a major research university in a powerful alliance of educators, industry partners, and community leaders to break the constraints of traditional schooling, enabling all children to achieve unprecedented levels of excellence. A consortium, led by the Center for Collaborative Education and Columbia University, offers a vision of how digital libraries, desktop videoconferencing, collaborative problem solving with digital tools, and multimedia portfolios make a new pedagogy lead to high achievement by all children. The Eiffel Project will bring the intellectual, cultural, and human resources of a major research university, one committed to improving the quality of life in its surrounding communities, to bear on the complex problems of urban, K-12 education.
- The Eiffel Project prototypes educational processes suited for use in all educational settings, and initial scaling up will demonstrate that transfer to other localities will give the project far-reaching impact.
- In its fifth year, the Eiffel Project will directly benefit at least 67 schools serving 30,000 students, most from African-American, Latino, immigrant, and economically disadvantaged families, with 1,350 teachers. The project will further serve numerous parents and community members accessing it through 10 community-based organizations in areas where the need for technology is acute.
- The Eiffel Project will ensure ongoing, intensive professional development through a series of extended Design Studios for Teachers during summers; use of Media Centers in schools for regular exchanges between teachers, communities, professionals, and scholars; and classroom interaction with specialists and experts via desktop videoconferencing. The Project will support Lead Teachers at each participating school and support teams skilled to work as needed on-site and to facilitate technology transfer.
- The Eiffel Project serves disadvantaged students and areas with great need for technology, such as the Upper Manhattan Empowerment Zone and schools in stressed areas of the Bronx, Queens, and Brooklyn.
- The Eiffel Project transforms the school from a self-enclosed place, to an open learning community, linked world-wide with archives, laboratories, observatories, studios, museums, libraries, offices, and homes.
- The Eiffel Project builds in continuous large-scale fund raising above its base budget (circa $10 million annually) and plans to extend that at least 5 years after Challenge Grant funding ceases. Consortium members will match Challenge Grant funds more than one-to-one through its base budget.
- The design of the Eiffel Project includes a strong formative evaluation effort and extensive attention to dissemination through scaling up strategies.

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In the 1889 Paris World's Fair, the Eiffel Tower rose far above the scale of any existing building, demonstrating to the world how engineering design, working with new materials and techniques, could break prior constraints on architecture. Digital information technologies are for education what iron and steel girders, reinforced concrete, plate glass, elevators, central heating and air conditioning have been for architecture. Digital technologies break significant, long-lasting constraints on educational activity, constraints that have suited too few and shackled many with limiting opportunities.

The objective of the Eiffel Project is to meet progressive expectations with a high profile, large scale project that will demonstrate that the small schools reform movement, empowered with advanced media, can break the constraints of the traditional school, thereby enabling all children to achieve unprecedented levels of excellence.

1) The Challenge: Offer a Creative New Vision for Technology in Education

A consortium -- led by the Center for Collaborative Education (CCE) and Columbia University -- will join in a large scale demonstration of 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 Eiffel Project will bring the intellectual, cultural, and human resources of a major research university, one committed to improving the quality of life in New York City, to bear on the complex problems of urban education.

A depressed urban semi-circle -- Harlem and Upper Manhattan, the South Bronx, Queens, downtown Brooklyn -- experience the persistent problems of inner cities in America. These communities surround the commercial core of Manhattan, which harbors an immense wealth of cultural, technological, and financial assets. The objective of our coalition is to show that the combination of school reform and technological resources can solve the persistent problems of education associated with urban adversity.

Marshall McLuhan's suggestive phrase, "the medium is the message," is most apt in thinking about schools. Large, bureaucratic schools that treat students and teachers as depersonalized, interchangeable agents who perform routine, fragmentary tasks along the production lines of instructional labor, impart the wrong message. To advance equity and excellence, educators must reshape the school itself, so that it conveys a more expansive, liberating message. This conviction grounds the small schools reform

movement, which seeks to scale down the size of schools, to make them more autonomous and self-directing, to concentrate on what teachers, parents, and children find important and moving.

In New York City, a school-reform movement has taken root, with support from the Annenberg Foundation; the Mayor, City Council, and Board of Education; the State Board of Regents; the teachers' unions; key universities; and major civic and corporate partners. Large schools serving the urban poor have too often been examples of the school as factory and warehouse -- big, impersonal institutions, mediocre as places of education and most effective in keeping kids off the streets. The small schools reform movement seeks to transform big, impersonal schools into models of autonomous learning communities, scaled to nurture the child, to provide face-to-face involvement for both students and teachers. The Center for Collaborative Education has been a leader of this movement since its inception, in both New York City and the nation at large.

The Center for Collaborative Education gives the Eiffel Project a firm base in the small schools reform movement. The project will work to extend and strengthen this base, stressing smaller class sizes, cooperative learning, interdisciplinary study, and strong parent and community involvement. In 1987, the NYC Board of Education agreed to support the work of CCE, which provides on-going leadership to a growing number of schools that are restructuring on the model Deborah Meier created through the renowned Central Park East Schools. In 1995, the Annenberg Foundation awarded a "Networks for Learning Renewal" grant to four groups pioneering small schools reform in New York City -- CCE, the Manhattan Institute, ACORN, and the Fund for New York City Public Education. As part of the Eiffel Project, CCE is developing an association of restructured public schools across the City -- the Small Schools Partnerships, clusters of three to five schools within one or more community school districts. By 2001, CCE will directly support restructured educational and governance practices among 13 Small Schools Partnerships in all five of the City's boroughs, serving 22,000 students and 1,000 teachers.

Building on the Small Schools Partnerships, the Eiffel Project will additionally develop a second ring of schools that are restructuring according to the same fundamental principles but are not receiving direct Annenberg support through CCE. Some receive support through other Annenberg grantees, particularly the Fund for New York City Public Education, a consortium partner in the Eiffel Project. Others will be

Schools under Registration Review that seek to reverse cycles of school failure by changing scale and using advanced technology. By 2001, the Eiffel Project will add to the core of 13 Small Schools Partnerships by supporting a pedagogy of technology-based, collaborative inquiry in at least 17 additional schools, serving an additional 8,000 students and 350 teachers. The key criteria in this extension are the willingness of teachers at each school to take responsibility for shaping the curriculum and educational program and the commitment of all involved -- students, teachers, administrators, and parents -- to working at a scale at which interpersonal, face-to-face recognition of each other as autonomous agents, responsible for their actions, is the controlling norm.

Implicit in their chosen scale, small schools encounter significant limits, particularly in large cities. Urban schools, large or small, must cope with significant diversity among students. In CCE's Brooklyn International School, students speak 36 different languages. Throughout the City, students draw on disparate experiences and aspire to diverse visions. Small schools must cope creatively with complexity, and consequently networking -- interpersonal and technological -- has become essential in the school reform movement. Networks of and for small schools can provide deep and diverse resources to suit the remarkable range of human difference. The Small Schools Partnership is developing these sustaining interpersonal networks, and Columbia University will augment these with digital information networks adapted specially to serve small school reform. The interconnection of school-based personnel will also be supported by Media Centers, discussed at length in section 3b. These will exist as nodes on the electronic network and will form the connective tissue between school-based activities, community involvement, and overarching systemic management.

Digital libraries, multimedia educational programs, and wide-area networking -- three related and maturing technologies -- make advanced media a powerful engine for equity. These technologies have great educational significance. The libraries of the very richest schools represent minor academic resources compared to those of the digital library and digital museum, which become accessible at the desktop in school or home with appropriate connections to the Internet. Educational experiences, activated by multimedia simulations, can appeal to diverse learning styles and engross students of all backgrounds in cooperative, inquiry-based educational work. Wide-area networking can enable desktop

2) The Response: A Digital Pedagogy for New Learning Communities*

By itself, technology is a limp educational resource. To benefit complex persons and communities, effective educational ideas and actions must inform use of information technology. The Eiffel Project seeks to infuse technology with powerful pedagogical ideas, and to empower those ideas with the force of technical innovation. We explain our pedagogy in two sections. First, in "The School and the Child," we present our convictions about how the reform of schools combined with the astute use of technology can liberate the child to learn more effectively, more deeply, more meaningfully. Then, in "The School and Society," we examine how the reformed school opened to the world through digital networks will help children be more effective and sure as they encounter the complexities of public life, the workplace, and the culture.

2a) The School and the Child

To achieve its educational objectives, the Eiffel Project needs to make them real in the educational experience of participating students and teachers. Our mission is the radical improvement of educational experience for thousands of students and teachers, and as they model new educational possibilities, for millions more. Education is the end; reformed schools and new technologies are the means.

In this section we discuss four established educational elements – libraries, experts, project-based learning, and portfolios. Significant change is possible because information technology strengthens their

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* For focus and economy, we do not cite the literature throughout this project prospectus, except in the section on technical design. Robert McClintock more fully presents the intellectual context about the educational uses of technology central to this prospectus in "Renewing the Progressive Contract with Posterity: On the Social Construction of Digital Learning Communities," a U.S. Department of Education whitepaper on *The Future of Networking Technologies for Learning*, May, 1996.
(http://www.ed.gov/Technology/Futures/robbie.html) or
(http://daemon.ilt.columbia.edu/mcclintock/renew/index.html).
Readers will find a guide to the educational ideas informing the work of the Center for Collaborative Education and the Coalition of Essential Schools, of which CCE is a part, at the web sites for the Coalition and the Annenberg Institute for School Reform
(http://home.aisr.brown.edu/).
The New York Networks for School Renewal has an informative web site, which leads to information on participating schools and the organizations directing the project at
(http://www.nynetworks.org/).
The Institute for Learning Technologies documents its work extensively at its web site,
(http://www.ilt.columbia.edu/).

educational power. Technologically transformed, these all loosen the intellectual constraints operating in the school and thereby expand the educational potentialities of the child.

2a1) Use Digital Libraries to Enhance Learning

Digital libraries – the distributed, on-line collection of texts, images, sound, video, simulations, and data, along with powerful tools for using them -- radically reduce constraints on cultural and intellectual participation that traditionally operate in educational institutions. Columbia University is drawing out the implications of digital libraries for the advancement of learning through design initiatives by the Center for Research on Information Access, the Center for New Media, and the Center for Image Technology for New Media, and through implementation projects in art history, history, chemistry, earth sciences, journalism, and so on. Within this overall effort, the Institute for Learning Technologies (ILT) directs application of work on digital libraries to the reform of K-12 education.

Digital libraries can significantly loosen the constraints that have historically determined the spectrum of possible educational achievement by the young. Digital libraries are a key, emerging agency that makes feasible the basic aim of enabling students growing up under conditions of adversity to attain unprecedented levels of excellence. Whether modeling El Niño effects with data from the Lamont-Doherty Earth Observatory, researching Renaissance portraiture with the Columbia Art Humanities digital image archive, or comparing Orson Welles' and Roman Polanski's interpretations of *Macbeth* using a multimedia database constructed by the New Lab for Teaching and Learning, students can be engaged in serious disciplinary study when they have access to digital libraries. To enable students and teachers to make full use of digital libraries in their daily educational work, we will concentrate on four tasks:

- **Infrastructure**. Extend local area networks into classrooms and link these to the world's information infrastructure by very high-speed connections, permitting small groups of students to work collaboratively to employ digital libraries in responding to significant questions and difficult problems.
- **Content**. Work with scholars, practitioners, teachers, and community leaders to develop comprehensive and specialized collections; tools of analysis, synthesis, and simulation; and strategies of engagement to make the digital library a routinely accessible and easily usable resource in the educational work of students and teachers.
- **Support**. Provide schools and teachers with effective professional development experiences that will enable them to adapt to the emerging pedagogical possibilities and provide students with tools to consult hierarchies of on-line expertise that will sustain an inquiry-driven learning process.

- **Evaluation**. Engage in the continuous formative evaluation of such efforts in order to assemble a record of practical experience, which can then lead through progressive reflection to improved practices and an understanding of guiding principles.

2a2) Interact with Mentors and Experts at a Distance

One-on-one adult mentoring is tremendously effective in helping young people cope with the complications of integrating all the disparate elements of human development. Wide-area networking can greatly lower the cost in money and time that such mentoring entails. Multimedia, wide-area networks, and desk-top videoconferencing will likewise enable problem-solving groups in schools and communities to interact with diverse strata of experts, who can help the groups advance their efforts. The Eiffel Project will work to design and implement ways to use digital technologies to enable working groups of students to interact, frequently and easily, with mentors and experts.

To make interactions between students, mentors, and experts sustainable and effective, it is important to recognize and respect the constraints inherent in adult responsibilities. Mentors and experts cannot ignore imperatives of their own work to take up the concerns of children. Rather, the educational work must synchronize with their professional efforts or it will become a complicating, distracting chore. The Eiffel Project will work with both the business community and the academic community to design ways to enable their members to work educationally as mentors and experts while minimally deflecting them from their primary goals.

Junior Achievement of New York City, a strong chapter of a national effort by business people to provide volunteers to teach children at all levels about the economics of work and life, will join in the Eiffel Project to use advanced media to facilitate their mentoring work. Currently, Junior Achievement volunteers go to a school to teach specially designed courses and to provide counsel and advice. This procedure has limits arising from the constraints on the volunteer's time and it leaves the student at a distance from the world of practice that the volunteer represents. As schools become wired, so do businesses, and it becomes possible for the students to gain virtual access to the operations of the work world, with volunteers from it acting, not as emissaries, but as hosts. Junior Achievement will work through the Eiffel Project to implement these possibilities as an important means of strengthening the understanding of

economic life that children in participating schools develop and as a productive way to improve the school-to-work transition.

Small groups of students, working to solve difficult problems, often need to discuss their ideas with people who have greater expertise than they, or their teachers, may have. Wisdom and skill are scarce qualities, however, and eminent scholars would be overwhelmed were every curious novice to take his questions directly to the highest possible authority. Through the Eiffel Project, we will use distance learning technologies to create a relationship between schools and universities that enhances educational processes in each domain without deflecting people in either from their proper concerns. Students will develop the capacity to judge when someone else has satisfactorily helped to clarify their questions. If responses to queries have been sufficient, students should go on to other matters, and if they have not, they should push on with their inquiries, seeking other, more productive interlocutors. On the university side, responding to school-based queries can become an important enhancement to learning in higher education. Consider the academic cliché that someone never learns anything so well as when she must teach it. Undergraduates will advance their study of a subject by helping children in schools answer difficult questions, interacting with them through distributed learning technologies. Queries that the undergraduates find too difficult to help with, they can refer to graduate students, and from there, if necessary, to research scholars, professors, and other professionals. A team from the Institute for Learning Technologies and the Center for Imaging Technologies for New Media has developed a prototype desktop videoconferencing system by which universities can announce the availability of respondents, and students in schools can initiate exchanges as suits their inquiries. As part of the Eiffel Project, we will develop the prototype into a working system and test it in key subject areas.

2a3) Synthesize Knowledge through Project-Based Problem Solving

As it exists, the school separates the fabric of learning into discrete strands according to grade, subject, period, and lesson, and the curriculum converts powerful intellectual means into the operative ends of educational work -- e.g., whereas the historian *uses* chronology, the high-schooler learns it. Advanced media in education permit the reintegration of intellectual activity in the school, as students use powerful on-line tools and work with the contents of the digital library to pursue answers to the questions

and issues that animate scholarship, science, and professional practice. How can a major research university, collaborating with diverse schools, shift the process of curriculum development away from packaging prescribed epitomes of answers to be learned by cohorts of pupils toward a process of selecting and putting powerful questions worth engaging all students in the effort to answer them?

A successful response to this question must meet key constraints – 1) development costs need to be limited; 2) a unified set of changes affecting the educational process from beginning to end needs to be introduced; 3) changes need to be on one side radical and thorough, yet on the other relatively well-aligned with existing practices; and 4) educational results need to be dramatically better than those of the *status quo ante*. Columbia University and its partners will use advanced media to develop a pedagogy of project-based problem solving designed to meet these constraints. This effort will build on a range of prior work by the New Laboratory for Teaching and Learning at the Dalton School developing powerful curricular prototypes such as *Archaeotype*, at the Ralph Bunche School with Internet-based inquiries such as The Great Penny Toss, and through ILT's Harlem Environmental Access Project.

Basically, the new curricula will have three components -- questions or problems requiring solution, tools or intellectual strategies for working on the problems, and resources or data and materials upon which the tools can operate. The first task of curriculum design is to lay out highly generative sets of questions, put forward without answers, which students can address at one or another level of sophistication:

- FAQs, or Frequently Asked Questions, pronounced "facts." For any subject there are many FAQs, which can be organized according to difficulty and scope. A FAQ requires a clear, informative response. In educational experience, it is useful to work up answers to many FAQs, developing in the process a clear overview of a subject.
- HAQs, or Hotly Argued Questions, pronounced "hacks." HAQs generally elicit more heat than light, and the challenge to the student is to understand why the question so provokes the passions. In educational experience, a HAQ should elicit a clear presentation of all sides of the argument, with a dispassionate weighing of the strengths and weaknesses on each side. Such treatment of a HAQ will develop perspective and intellectual independence.
- LUQs, or Largely Unanswered Questions, pronounced "lucks." The object in engaging with a LUQ is not to try heroically to answer it, but to ascertain what aspects of it are subject to comprehension and to be able to explain why the question remains largely unanswered. In educational experience, a LUQ leads the student to reflect on the limits of knowledge and to set her sights on extending it.
- PIQs, or Profoundly Important Questions, pronounced "picks." With a PIQ, the key is to grasp the importance of the question and to feel the urgency of developing a response to it, as well as the import of that response. In educational experience, a student comes to realize that a PIQ can affect the

fundamental prospects of life, personal or collective, as operative answers to PIQs contribute to defining what it means to live and to be human.

Tools and resources gain meaning in relation to such sets of questions because tools and resources are what a problem-solving student employs in seeking to respond productively to questions that have been effectively posed. On-line tools and resources suit a problem-solving pedagogy because they are comprehensive and unbounded, sustaining the questioning process without extrinsic limitations. We believe that academic groups can be very helpful curricular resources for students and teachers in schools by identifying key sets of questions, building powerful tools with which students can address those questions, and opening paths to significant resources, grist for the educative mill of inquiry.

Initially, scholars from Columbia's African Institute, researchers from classics, history, and archaeology, and scientists from the Black Rock Forest Consortium, Biosphere II, and the Lamont-Doherty Earth Observatory will work with students and teachers in the Eiffel Project to develop and test this model of problem-solving curriculum development. It allows for high-level academic involvement in the process while keeping operative control of inquiry and learning in the hands of teachers and students at the school level. Each year, academics will lay out a distinctive set of questions for their respective fields and they will work to provide a growing repertoire of tools and resources useful in pursuing generative questions from each field. But organizing and putting questions so that collaborative groups embark on a course of problem solving, and activating and using the tools and resources, will remain the work of teachers and students, done distinctively in each school. We envision the University annually publicizing its technology learning challenges across a variety of fields, posting sets of FAQs, HAQs, LUQs and PIQs, along with continually developing sets of smart tools and intellectual resources linked to them. Collaborative groups of students, with teachers on site and mentors and experts at a distance, would use the on-line system of tools and resources to develop their unique responses to these learning challenges, posting them to the world on their local websites. As the Eiffel Project proceeds, we will extend this pedagogy across all the areas of learning as quickly as resources permit. We believe that such a pedagogy can meet the four key constraints indicated above and lead to the radical restructuring of the curriculum in ways that will be highly conducive to effective learning by all students.

2a4) Integrate Educational Experience through Portfolios

Portfolios are an educational resource that can enable students to tie together all the lines of experience indicated in previous sections, using networked multimedia tools to create a public persona that expresses the cumulative character of their studies, achievements, and interests. In Coalition schools, the portfolio constitutes a representation of a student's total academic experience, either within one course or across many. It assembles academic work that exhibits the student's development through his studies. As for the professional, so for the student: a portfolio presents cumulative accomplishment through assembled work. As such, the portfolio – along with the accompanying exhibitions or performances -- stands as documentation of where the student has been and what the student has done through reflective action.

A networked, multimedia information environment extends and reconfigures the portfolio as a curriculum tool in three important ways:

- First, as the student works in more diverse media, the palette of tools with which he may engage his subjects broadens. In the print-based school, most activity is limited to reading and writing textual material; in a digital school, students work with image, audio, video, and text more freely and continuously. They learn the "grammar" of video and audio editing, just as they always have the grammar of text. Two key partners, the Educational Video Center, which has pioneered use of video production as a means of education, and the Institute for Learning Technologies, which has done the same using web-site production as an educative tool, will join to integrate these techniques into the project's portfolio designs.
- Second, as the student works in a networked information environment, he can extend the audience for his portfolio as widely as the student or his teachers desire. The networked school thus connects two fundamental concepts in the small schools effort -- portfolio and exhibition. Exhibition ceases to be set apart and becomes inherent in the portfolio, through which students and teachers can engage each other's work. Work can be shared asynchronously; students can make their work accessible, allowing others in the virtual community to comment, advise, respond at their convenience. In a sense, work is always on exhibit except where workers feel it is not ready for public view.
- Third, as the student works through the inherent web-like structure of a hypermedia "document," the portfolio ceases to be an assemblage of finished works. The virtual portfolio becomes a dynamic combination of refined, polished works with works-in-progress, notes, annotations, and even passing thoughts. In this sense, the hypermedia portfolio is a fuller realization of the basic notion of the portfolio because it easily allows the student to document all his thinking, and it allows the student to keep active the total corpus of his academic and other intellectual experiences and acquirements throughout his academic career as the portfolio is built over time.

In the context of the Eiffel Project, the portfolio will be a central structure, used in novel ways that build on past successes. One of the participating Partnership schools -- the Central Park East Secondary School (CPESS) – has been at the forefront of graduation by portfolio for many years. June 1996, CPESS

graduated its sixth high school class by performance-based assessment. Students must prepare and defend 14 different portfolios of material to graduate. We will build on this experience with portfolio assessment in order to use it in new ways in new schools.

For instance, in addition to dissemination of project work within the network of project collaborators, students, teachers, and schools can begin to disseminate their portfolios and share their knowledge and ideas on a national, and even a global, scale. Working with Eastman Kodak Company, our consortium will use digital imaging to experiment with the documentation of multimedia portfolios in CD-ROM format. Since few members of the larger educational community enjoy the broadband network connectivity that makes high-speed multimedia networking feasible, CDs represent a simple, and increasingly inexpensive, means for teachers and students to exhibit their work. Of course, students will mount this work on the Web, as well, to promote easy use by those with adequate connections.

Portfolios and exhibitions not only enable students to integrate their educational experience: they equally enable the Eiffel Project itself to integrate its pedagogical accomplishments and present them to the general public. The portfolio process can play an integral role in teachers' professional development and in program dissemination as well. As CPESS students can represent their work in multimedia portfolios, so too can their teachers. Through such documentation, parents and the public can assess, critique, exhibit, and acclaim teachers' work. Thus the teacher portfolio is a professional development, a dissemination, and an accountability mechanism all in one. Whole schools can use the multimedia portfolio in similar ways to exhibit their innovations and disseminate successful programs and projects.

Such online resources will enable the Eiffel Project to engage parents more productively. For instance, through a carefully placed network of off-site nodes, available at hours outside the typical 9:00 to 3:00 school day, parents will be able to access teachers and school web-sites and portfolios, enhancing their role as stakeholders in the education of their children. As we add schools, so will we add such community service providers, for instance, the Harlem Parents Tutorial Project, with a 25-year history of parent training, as key in administering off-site parent access to the network and the adult involvement in the education of their children that the network provides.

Educational accountability remains an intractable public problem largely because the work and fruits of education are hidden from view behind classroom walls. What the Eiffel Project enables students and teachers to accomplish with respect to each of its pedagogical objectives will be visible to anyone who cares to look. How students and teachers work as educators -- how they develop the small schools ethos, use digital libraries, collaborate in learning, interact with mentors and experts, synthesize knowledge while solving problems, engage in civic issues, seize workplace opportunities, create cultural meanings from multiple traditions, and integrate it all into expressions of unique personhood -- will be public knowledge, evident through the portfolios of project participants. The school and the child leads through emerging networks to an entirely new relation between the school and society, one that opens innumerable opportunities, enabling children to develop their capacities to the fullest possible extent.

2b) The School and Society

Conditions of social, economic, and cultural life deeply affect educational work, and the Eiffel Project must not ignore these realities. Educational initiatives alone cannot solve social, economic, and cultural problems, even though these problems often lead educational initiatives to fail. A powerful *pedagogy* must go beyond the school, beyond the educational process in the narrow sense, to work in concert with broader civic, economic, and cultural initiatives. Education cannot solve social problems, but a community that acts in concert to overcome its difficulties presents children with a deeply educative context and a resonance can build between enlightened educative effort and visionary social action.

In search of such resonance, the Eiffel Project will work closely with the Upper Manhattan Empowerment Zone (UMEZ), and in our scaling up efforts additionally with the Kingston-Newburgh Enterprise Zone. Technologies that can empower school reform can also enable more integral, effective social action. Networking technologies will enable people who live under difficult circumstances and face complex, many-sided problems to link in their everyday perception challenges and resources that they now encounter as seemingly separate sectors of activity -- schooling, employment, health, housing, safety, and the environment. A powerful pedagogy should empower people to see action in one sector as an action contributing to the whole ensemble, which in its complexity determines the quality of life.

2b1) Engage in the Civic Concerns of Public Life

Through the project, students in schools should be able to engage with representatives of their communities, to work on health, environmental, and social issues, to develop habits of service and involvement, and to form a sense that they face significant choices and that they command significant resources with which to put their choices into action. It is particularly important that children growing up under difficult circumstances learn to engage in the effort to take control of those circumstances, to experience life as a series of challenges to which people can respond purposefully. Through the Eiffel Project we intend to seek out diverse opportunities to use information technologies to engage children in thinking and acting on real civic concerns. In this project, we will work with the UMEZ and other groups seeking to effect long-term social change and human betterment in health, housing, employment, safety, and environment, to apprise children of serious issues and to engage their participation in deliberation and action. We have piloted these practices through ILT's Harlem Environmental Access Project by using wide-area communications to encourage students to recognize the breadth and diversity of concern for the environment. For instance, using data provided by the Environmental Defense Fund, students investigate the effects of different solid waste management systems. Just as the technology supports their research efforts, so it supports their reporting. Through web-mounted hypermedia presentations, students offer their findings to the world at large, staking out well-documented policy positions they can link to those of professionals. Thus, they use the technology to address the public about what is to be done, to model effective initiatives for it, and to engage in the give and take of trying to persuade people with power to act in different ways. These are invaluable lessons for anyone to learn about the relation of thought and action.

2b2) Achieve Productive Potential in the Workplace

If the information economy exists anywhere, it is the economy of the New York-New Jersey-Connecticut Metropolitan Area. The Eiffel Project should deploy information technology in the schools with, for, and through the diverse employers in the region who constitute that information economy in communications, media, publishing, banks, universities, medicine, and government. The Eiffel Project will use high-speed digital telecommunications to build continuous, powerful connections between participating

schools and the information economy of the City, region, and world, and its volunteers from Junior Achievement and elsewhere will work with students and employers to ensure that these connections provide learning opportunities and apprenticeships that will enable students to achieve their full potential within the information workplace.

This use of technology is crucial. Several generations of inner-city students have learned to distrust large, bureaucratic schools, experiencing them not as stepping stones to self-advancement, but as source and legitimization of their frustrations, limits, and stigmata. Small school reform is important in helping the disadvantaged regain some conviction that schools present them with significant opportunities because they encourage students to affirm and take responsibility for their own education, seeing it not as an external imposition but as an inward expression of their hopes and potentials. This shift in the subjective meaning of the school for the child is of immense importance, but by themselves reformed schools, however meaningful, can be too easily left distanced from real channels of economic opportunity when the child and the school are starved for both capital and skills. Here digital communications transform schooling and make it significant for disadvantaged students, as they gain direct exposure to the levers of power and innovation in the global information economy and experience their education as a matter of developing their potential for productive action in this much larger arena. Digital technologies will become ghetto blasters of a very different sort.

2b3) Create Cultural Relevance within Community Experience

Educators must be careful to avoid a deficit model of education, especially when a high percentage of their students are disadvantaged. New technologies can radically alter the traditional politics of the curriculum, which have been narrow and exclusionary for centuries. For instance,

- Through collaboration with Columbia's African Institute, the Eiffel Project will use digital information resources to draw a diverse group of interested students from participating schools, into an ever-deepening engagement with traditions, cultural achievements, historical and contemporary realities.
- The Sister Clara Muhammad School, a participant in the Harlem Environmental Access Project, is already using its broad-band access to the World Wide Web to greatly strengthen its basic aim, a tri-lingual curriculum in Arabic, French, and English.
- At the Brooklyn International School -- a CCE school participating in the Eiffel project -- students speak 36 different languages. A teacher has high school students study westward expansion by conducting detailed analysis of diverse American family histories using multimedia resources. This year

investigations included a slave family, two Sioux Indian families, an abolitionist family and a plantation owning family.

As the Eiffel Project proceeds, it will build more and more channels linking the advanced study to the world's cultures and traditions with interested groups in the schools. It is often incanted as cause for dismay that New York City's school children speak over a hundred different native languages. By building links to the full range of cultural scholarship in universities, museums, and institutes, the Eiffel Project will make this multiplicity of linguistic and cultural identification one of the great strengths of the emerging educational system.

3) Implementation: A Research University Serving the Reformed School

In this section, we seek to explain our strategies for implementing the Eiffel Project, with sections on the needed technological infrastructure, development of content, and the provision of on-going support. New York City is one of those points where the energies and talents of the country and the world concentrate, and we seek through the Eiffel Project to bring these concentrated resources to bear on the challenge of using school reform, augmented through advanced media, to break the constraints of traditional schooling.

3a) Develop Good Technical Infrastructure

In extending high-speed Internet access to schools through the Harlem Environmental Access Project and the Living Schoolbook Project, we have learned the importance of adapting plans to the unique character of each school site and working with key people in each school to ensure that a full transfer of technical know-how takes place. We expect to bring at least 12 schools into The Eiffel Project each year during the life of the project, as well as two CBOs annually. In each location we seek to introduce essentially ubiquitous access to a robust, manageable infrastructure that readily accommodates future growth. The wide-area infrastructure will use T1 connections (1.5 megabits per second) for the most part, introducing ATM and/or cable modem connections when and if these become cost competitive and highly dependable. Our aim is to progress from initial broad-band connectivity to a fully developed technical infrastructure in the school through a series of four stages – first, Preparatory Access, then followed by Base Connectivity, providing T1 connections, library access, and one classroom equipped for small-group

problem solving; Level One, equipping one third of the school's classrooms for such work; and Level Two, making one computer per five students available in all the classrooms of the school. Details of these stages are given in Appendix 5, Technology Budget Models, along with explanatory diagrams. Early on in the project, 12 Media Centers, with 8 more added each year, will be created in key locations that will have important roles in promoting communication between localities served by the project and in developing the links between on-line portfolios and exhibitions as a means of assessment.

3b) Create Content: Potent Curricular Resources and Intellectual Tools

Key representatives from all project schools will function as participatory design teams, working with content and technical specialists. Curriculum development should take place as close to the classroom as possible. Our Technology Learning Challenge will match local, corporate and foundation funds with federal support to implement four interrelated educational applications of new media. These include:

- On-line curriculum development among Small Schools Partnerships practitioners and electronic dissemination of curriculum products via the Internet and the WWW to interested New York City K12 schools and other educators outside the City;
- Production and dissemination of multimedia student and teacher portfolios and school profiles in conjunction with the Eastman Kodak Company, using its technology for low-cost CD-ROM production.
- Design and implementation of diverse professional development activities, including Design Studios for Teachers modeled after those conducted by ILT in the context of HEAP.
- Implementation of Media Centers affiliated with participating schools that will serve as facilities supporting curriculum development, professional development, student research, demonstrations, new media workshops, and related research, development, implementation, and evaluation efforts.

CCE and ILT -- two organizations with extensive experience supporting innovative curricular reforms in small, restructured schools -- share a fundamental commitment borne out repeatedly by both organizations' experiences: for innovative curriculum development to succeed it must flow from teachers, and it must receive support and guidance from administrative structures. That is, neither a largely top-down nor a largely bottom-up model of design and implementation is likely to result in curricular innovation of a significant scale. Teachers must be deeply invested in curricular ideas that they share in germinating, and they must have access to informed counsel, support resources for development, evaluation capacity, and dissemination channels. Our proposal seeks to realize this interaction of classroom-level and system-level activity through the proposed Media Centers that will function as agencies helping to manage

technology-enabled innovation at the appropriate level -- above the classroom, but below the overarching system. ILT's many formal evaluations of diverse educational technology initiatives, taken together, indicate that one difficulty mitigates the success of new programs far more than any other -- namely, inadequate coordination of distributed efforts. The Media Centers will provide the crucial management and support layer these studies have called for again and again.

Much of the exciting educational activity in Partnership Schools is ripe for enhancement through new media. At one participating CCE school, students studying momentum and deceleration in physics explored the dynamics of roller coasters using frame-by-frame analysis of a laserdisc. Then, they had to design and actually build their own roller coasters. Their designs were put to the test when a marble was rolled along the track; if it broke an egg at the end, students returned to the drafting table and the machine shop. This innovative project work could be profoundly enhanced by Computer-Aided Design tools. At Columbia's School of Engineering and Applied Science, numerous CAD-supported mechanical and electrical engineering design programs have been developed that can significantly extend these interdisciplinary math, physics, engineering and design curricula.

Portfolio assessment is at the core of most of this project-based curricular work at CCE schools. Exploring the ways that networked multimedia can enhance and/or transform the concept and role of the student portfolio must be a process characterized by both relatively unconstrained experimentation and careful monitoring. Teachers and students must be free to develop and pursue new projects and products, guided by their imaginations and, in the case of teachers, by their experience as educators, thus beginning to define the curricular forms of the 21st century. But they must also be situated such that their experimentation is as informed as possible and is thoroughly and formatively assessed. This means that teachers must be in on-going contact with colleagues experimenting in similar ways; they must have access to emerging technologies so they can explore them and consider possible classroom applications; they must have technical support for development and for implementation; they must work with formative evaluators who can help them plan and respond to outcomes rationally.

We envision the Media Centers as sites through which teachers and students will lead the way toward new curricula oriented around multimedia portfolios with precisely these development assets at hand.

Students will use the Centers as research facilities during the course of their work; workshops and demos will be conducted at them; teachers will present their work to colleagues and to other interested parties; software development support will be provided; teacher-in-residence programs will locate particular teachers with strong experience in successful innovation at the Centers to work with other teachers on projects; libraries of multimedia resources will be housed in them and high-speed WAN connections at the Centers will provide opportunities for teachers to plan for a time when such broadband connectivity is ubiquitous. Different Centers will no doubt emphasize different areas of activity and develop different particular strengths. But all will be guided by the aim of providing a locale that brings together the range of development resources described above.

3c) Provide Students, Teachers, and Communities Enabling Support

Strong, on-going provisions for teacher development and support are essential. The Eiffel Project will hold design workshops during summers and will provide an on-going program of on-site support buttressed with "just-in-time" training delivered in classrooms over the project's desktop video-conferencing capacities.

The Institute for Learning Technologies has pioneered innovative professional development programs in the context of the Harlem Environmental Access Project that will be extended and further developed in the Eiffel Project. Design Studios for Teachers bring together teachers, technologists, content experts, and even students for extended, multi-session workshops on the development of curricular applications of networked multimedia. These Design Studios are more than mere technical training for teachers. Teachers work with the advanced technologies in the context of real curriculum development and in a setting where ILT associates and relevant content experts are at hand. The Design Studio is more a collaborative research and development think tank than it is teacher training in any particular technology. Advanced computer tools are brought to bear on complex educational problems by a cohort of experienced educators and educational technologists over an extended period of time. During the course of this work, teachers acquire significant technical facility in a broad range of applications and can return to their schools prepared to lead their colleagues in novel directions with new tools and resources. The Eiffel

Project will feature numerous Design Studios, and the Media Centers will augment these formal workshops with less formal, but continuous, staff development through design.

4) Project Management and Evaluation

The management structure for the Eiffel Project will ensure that all aspects of the project are carried out effectively. This structure includes four main management layers: a Directorship layer, an Implementation Management layer, a Lead Teacher layer, and an Advisory layer. The Directorship layer and the Implementation Management layer together form the Project Management Group.

The Directorship layer consists of the three Co-Principal Investigators. They will be responsible for the overall conduct of the project. They will convene and chair the Project Management Group; hire and appoint staff; convene Advisory Boards; submit annual reports; and be responsible for preserving the vision of the Eiffel Project throughout its operations.

The Implementation Management layer consists of three project managers: the Project Infrastructure Manager, the Project Content Manager, and the Project Support Manager. All three Project Managers will be responsible for advising the Co-PIs and serving in the Project Management Group. The Project Infrastructure Manager will be an ILT position and will have lead responsibility for technology options and decisions; for preparing assessments and technology plans for project schools; and for managing the installation and maintenance of the technological infrastructure of the project. The Project Content Manager, also an ILT position, will have lead responsibility for digital library resources and related educational programs; for working with scholars and professionals to develop curricular resources; and for collaborating with participating teachers to ensure that these resources are effective at the school and classroom levels. The Project Support Manager, a CCE position, will have lead responsibility for professional development within the project; for organizing Design Studios for Teachers; for utilizing the school Media Centers to promote understanding of the project among parents and community groups; and for implementing just-in-time support via desktop videoconferencing.

The Lead Teacher layer consists of a cohort of Lead Teachers -- one will be appointed at each school added to the Eiffel Project curriculum network -- responsible for helping the teaching staff at each participating school develop confidence with new equipment and become artful in using it in the classroom.

Lead Teachers will serve as on-site liaisons with Project Support Teams, scheduling their visits and setting agenda for work with them. Lead Teachers will regularly apprise the Project Management Group of relevant developments relating to the organizational goals and pedagogical objectives of the overall project. They should also serve as resource persons for the evaluation teams. Each connected CBO will identify a senior staff member to serve in a similar manner.

The Advisory layer consists of two advisory boards: the Parent-Community Advisory Board (P-CAB) and the School-University Advisory Board (S-UAB). The P-CAB will be formed of parent representatives and representatives of participating community organizations. It will meet regularly, sometimes with the Project Management Group, to discuss community participation and to plan strategy for enfranchising new community partners. It will also be responsible for coordinating public events relating to the project and its exhibition. The S-UAB will be formed of key teachers and university personnel associated with the project. It will meet regularly, sometimes with the Project Management Group, to discuss issues relating to interaction of the schools with Columbia and its constituent schools and departments.

Evaluation of the Eiffel Project will consist of four areas of assessment, each by an organization skilled in that domain of program evaluation: school performance; "sampling studies" of students' higher order critical skills of analysis; school-based studies of individual curricular initiatives; and formative evaluation of overarching development process.

School performance audits are an essential element of the restructuring process for many Coalition schools. As the school's curricular, temporal, and physical structures are re-engineered, the school is monitored for effects on student and faculty, and the implementation agenda is tracked as well. This assessment activity has both a summative and a formative dimension. Part of the aim is to document, through rigorous methods, the educational effects of the restructuring of the schools; the school performance assessment is also intended, however, to provide important formative information to individuals leading the redesign effort of a particular school. New York University is currently conducting school performance assessment of many Annenberg-supported Coalition schools in New York City, and this work will be extended through the Challenge Grant to encompass the additional schools and particular technological issues related to the Eiffel Project. In particular, NYU evaluators will seek to identify ways

that Coalition schools may benefit from participation in a large network of restructuring schools. The effects of the new media access and associated professional development activities on faculty will form a second important focus of study. The Eiffel Project's success is heavily predicated on its strategies for empowering teachers with new skills, new tools, and substantial support resources. Much of NYU's school performance assessment will examine the effectiveness of these efforts, with both formative and summative objectives.

"Sampling studies" will help determine the extent and nature of the projects' effect on students' critical skills. Much of the curricular development associated with the project will be aimed at enhancing students' abilities to address complex problems with sophisticated tools in diverse disciplines. As part of the Eiffel Project's assessment, the National Center for Research on Education, Students, and Teachers (NCREST) will investigate the effects of the project on critical thinking skills. NCREST will conduct controlled studies with samples of students. In these studies, students will receive a battery of unfamiliar problem solving situations, testing their approaches to the problems. The evaluations will consider a range of abilities, including students' ability to orient themselves in a new problem area; to formulate a well-conceived experimental plan; to understand implications of findings and of new information; to consider a question or problem from diverse perspectives; to use, make sense of, and dismiss evidence of various kinds; and to communicate understanding.

In addition to formative evaluation of particular curricular initiatives at each school, a project of this scale demands formative assessment of the development process at the macro-level. Project leaders need feedback relating to the strengths and weaknesses of the inter-institutional collaboration; they need to understand which administrative structures are encouraging good innovation and which are hindering it; they need to be apprised of emerging patterns of difficulties at the distributed school sites and of patterns of success as well. The Institute for Learning Technologies conducts such process-oriented formative assessment in the context of all its projects, and ILT will implement this level of assessment for the Eiffel Project as well. Because a primary goal of the project is to marry the academic resources of a major research university to the restructuring program of an established reform movement, it will be important to monitor continuously the extent to which these interactions are occurring with good effect. The Institute

has substantial experience exploring the use of networking technologies to support such inter-institutional collaboration; a major focus of this area of assessment will be building on that accumulated knowledge through prototyping of new arrangements, including substantial use of desktop videoconferencing over the Internet.

5) Project Dissemination, or Scaling the Project Up

In our view, the dominant dissemination issue for project work ensconced within the National Information Infrastructure is how to scale the project up. As discussed in section 2a4, multimedia portfolios representing students', teachers' and whole schools' work will be used to share this work both within and beyond the Eiffel Project's network. And participants will routinely interact with peers and colleagues on the Internet in the course of their work. Dissemination is part and parcel of wide-area networked project work. The real question is how to extend the project itself.

A Technology Learning Challenge must address issues of scaling explicitly -- how can it provide a generally applicable model for implementation elsewhere? Discussion of scaling should identify key dimensions along which scaling proceeds. We concentrate on four:

- **Scope**: How to scale across the full intellectual scope of a child's educational experience.
- **Penetration**: How to scale to affect the whole community, not just its most favored parts.
- **Reach**: How to scale out to all locations and draw from all sources so that it is universal in both availability and import.
- **Resources**: How to scale up funding and participation sufficient to produce historical change.

Too much technology in education lacks **scope** with respect to the full process of education as a person develops from early childhood into a productive adult. Scaling up means going from isolated products to changes in the whole process, changes that encompass the entire educational experience. The Eiffel Project will work to scale up with respect to scope by building up coverage of more and more subjects through digital resources, interacting with a wider and wider range of mentors and experts, developing an extensive repertoire of problem-solving resources, and generally through curricular resources and intellectual tools. A strength of the Eiffel Project as it unfolds over time is the thorough-going involvement of a major research university, for we need to work systematically to reshape the whole

curriculum and to do it over an extended period of time in which the cumulative effects of an entirely restructured educational process can become evident and fully effective.

The Eiffel Project in its fundamental character is an effort to scale up with respect to **penetration**, for it addresses the needs of under-served populations directly, working primarily in schools serving predominantly African-American, Latino, immigrant, and economically disadvantaged children, specifically including Schools under Registration Review among those it seeks to reach, and cooperating with key groups such as the Upper Manhattan Empowerment Zone. As disparities of income are dangerously increasing in contemporary life, so disparities of education widen. New York City can become a serious dystopia, leading the nation to a two-tiered future of fundamental division between haves and have-nots, if these disparities are not ameliorated effectively in practice. New York City must find ways to integrate its large disadvantaged groups into the electronic future. The Eiffel Project will address that problem and the City needs to sustain the integrating, democratizing effort for the sake of its long-term economic strength, and for its civility as a vibrant human habitat.

As a specific test of its **reach**, its scalability to other localities beyond New York City, the Eiffel Project is working in the Kingston-Newburgh Enterprise Zone to see whether educational resources we are developing in New York City schools and locales will prove useful in the Newburgh Enlarged City School District, specifically in improving educational opportunities for African-American and Latino families living in Newburgh's depressed downtown section. Newburgh is representative of numerous small to mid-sized cities where the affluent have abandoned downtown areas in favor of near-by suburbs, leaving behind a weak commercial core with a run-down housing stock and high unemployment and a local political impetus to avoid and neglect these growing ghettos. Long-range plans, for instance that recently released by the Regional Planning Association, put a high priority on the resuscitation of these decaying downtown centers in order to reverse environmental degradation arising from unchecked suburban sprawl and to energize the overall economy, which has been left stagnant by the decline of industry and manufacturing. Newburgh's downtown, in its demographics, its needs, and its opportunities, is much closer to Harlem, the South Bronx, or Bed-Stuy, than it is to its contiguous communities. We postulate that what the Eiffel Project does in these New York City areas will have great relevance to improving educational opportunity

and general economic strength in areas such as Newburgh, which, like New York, must succeed in the information economy, and we will work with the schools there and an innovative housing renewal project to test this postulate. This will entail establishing high-speed Internet connections to the Newburgh schools and extending new pedagogical resources to children through the schools and to their homes, particularly those resources concerning participation in civic life, engagement in the workplace, and developing distinctive cultural strengths. Should it prove successful, it will chart an important path for extending the reach of the Eiffel Project to other places with similar problems throughout New England, the Mid-Atlantic, and Mid-Western states.

Resources deployed through the Eiffel Project could expand in scale almost limitlessly: first, by deploying a more and more complete, state-of-the-art technological infrastructure in, between, and around participating schools; second, by developing all the interesting opportunities for new curricular tools and resources that pertain to full education of the whole person living in a complex world; third, by providing fuller and fuller support to teachers, students, and parents engaged in the activities of school reform and the educational use of technology, and fourth, by including more and more schools within New York City, its region, the country, and around the world, all serving children of vast, undeveloped human potentials. The true learning challenge is to trigger a chain reaction of further effort by empowering key elements and energizing them to draw more and more resources into the work.

Financial support for the Eiffel Project will aggregate from four sources. First, this proposal seeks approximately $2 million annually for five years from the U.S. Department of Education. Second, the sponsoring coalition will provide substantial matching resources through contributed effort, equipment, services, and volunteer effort. Third, the sponsoring coalition is raising funds for component activities within the project from diverse granting agencies -- federal, state, local, and private. Fourth, the Eiffel Project will raise funds systematically to support the work of the project from a wide cross-section of New York City businesses. The Eiffel Project will build in continuous large-scale fund raising above its base budget, seeking to raise circa $10 million annually, and it plans to extend this fund raising at least 5 years after Challenge Grant funding ceases. We outline these goals in Appendix 4, Long-term Fund Raising.

New York City and the region have great strengths, distinct competitive advantages in an effort to become an essential center of educative leadership in the 21st century -- an extraordinary concentration of major universities, numerous centers of corporate research, and unparalleled concentrations of cultural holdings in major museums and libraries. The Eiffel Project must mobilize all these advantages. It must capture the public imagination and command its participation. It can, by pursuing its essential objective -- *to meet progressive expectations with a high profile, large scale project that will demonstrate that the small schools reform movement, empowered with advanced media, can break the constraints of the traditional school, thereby enabling all children to achieve unprecedented levels of excellence.*

Appendix 1: Eiffel Project Consortium Members

We seek to create an open, growing consortium supporting the Eiffel Project. To join, contact Heather Lewis at the Center for Collaborative Education or Robert McClintock at the Institute for Learning Technologies.

Center for Collaborative Education
1573 Madison Avenue
New York, NY 10029
Phone: 212-348 7821
Fax: 212-348 7850
contacts: Heather Lewis, Co-Director
Priscilla Ellington, Co-Director

Center for New Media
Columbia University Graduate School of Journalism
New York, NY 10027
contact: John V. Pavlik, Ph.D., Executive Director

Center for Research on Information Access
Columbia University in the City of New York
535 West 114th Street
New York, NY 10027
Phone: 212-854-7443
Fax: 212-222-0120
email: klavans@columbia.edu
contact: Judith L. Klavans, Ph.D.

Community School District Five
433 West 123rd Street
New York, NY 10027
Phone: 212-769-7500
Fax: 212-932-3109
contact: Paul Reese, Computer and Technology Coordinator

Community School District Four
319 East 117th Street
New York, NY 10035
Phone: 212-860-5946
email: mark_g_steinberger@cce.org
Mark Steinberger, District Technology Coordinator

Countee Cullen Public Library
104 W. 136th St.
New York, NY
Phone: 212-491-2070
contact: Phyllis Mack, Director

Eastman Kodak Company
Education Solutions and Services
343 State Street
Rochester, NY 14650
contact: Anne W. Miller, Director

Educational Video Center
55 East 25th Street, Suite 407
New York, NY 10010
Phone: 212-725-3534
Fax: 212-725-6501
contact: Steven S. Goodman, Executive Director

Environmental Defense Fund
257 Park Avenue South
New York, NY 10010
Phone: 212-505-0606
contact: Joel Plagenz

Fund for New York City Public Education
96 Morton Street
New York, NY 10014
Phone: 212-645-5110
Fax: 212-645-7409
contact: Beth J. Lief, President and CEO

Harlem Parents Tutorial Project
271 W. 125th St.
New York, NY
contact: Dr. Babette Edwards, Director

Image Technology for New Media Center
Schapiro Engineering Research Bldg.
Columbia University in the City of New York
New York, NY 10027
contact: Dimitris Anastassiou, Ph.D.

Institute for Learning Technologies
Columbia University
525 West 120th Street
New York, NY 10027
Phone: 212-678 3375
Fax: 212-678 4048
contact: Robert McClintock, Director

Institute of African Studies
410 W. 118th St.
Columbia University
New York, NY 10027
contact: George Bond, Ph.D.

Junior Achievement of New York, Inc.
107 Washington Street
New York, NY 10006-1856
Phone: 212-344-1033
Fax: 212-406-3697
contact: Douglas E. Schallau, President

Lander Street Partners
900 Third Avenue, Suite 1000
New York, NY 10022
Phone: 212-350-0214
contact: Arnold S. Moss

National Center for Research on Education, Students and Teachers
110 Main Hall
Teachers College
Columbia University
New York, NY 10027
contact: Linda Darling-Hammond, Ph.D., Executive Director

Newburgh Enlarged City School District
124 Grand Street, PO Box 711
Newburgh, New York 12550
Phone: 914-563-7200
Fax: 914-563-7218
contact: Dr. Philip E. Leahy, Superintendent

New Lab for Teaching and Learning
The Dalton School
108 East 89th St.
New York, NY 10128
Phone: 212-722-5160
contact: Frank Moretti, Ph.D., Executive Director

NYNEX
Educational Initiatives
1095 Avenue of the Americas, Rm 3418
New York, NY 10036
Phone: 212-395-2255
Fax: 212-944-2342
contact: Steve Kohn, Director

State Education Dept./The University of the State of NY/Albany, NY
Office of New York City School and Community Services
Intra/Interagency Team
55 Hanson Place, Room 482
Brooklyn, NY 11217-1580
Phone: 718-722-2784
Fax: 718-722-4599
contact: Ken Chieu, Associate

Upper Manhattan Empowerment Zone Development Corporation.
163 West 125th Street, Suite 904
New York, NY 10027
Phone: 212-932-1902
Fax: 212-932-1907
contact: Nancy Devine

Appendix 2: Eiffel Project Partner Schools

Sister Clara Mohammed School
102 116th Street & Lenox Avenue
New York, NY 10026
Voice: 212-662-2200
Fax: 212-662-2125
Principal: Abdur-Rahim Ali

Frederick Douglass Academy
2581 Adam Clayton Powell Jr. Blvd.
(149th and 7th Avenue)
New York, NY, 10039
Voice: 212-491-4107
Fax: 212-491-4414
Principal: Dr. Lorraine Monroe
Computer Coordinator: Joan Hazzard

The Mott Hall School (I.S. 223)
131st & Convent Avenue
Voice: 212-927-9466
Fax: 212-491-3451
Principal: Dr. Mirian Acosta-Sing
Computer Coordinator: Luis De Los Santos

Northview Tech for Communications Arts and Computer Sciences
(P.S. 155)
319 East 117th
New York, NY, 10035
Voice: 212-860-5885
Fax: 212-831-5059
Principal: Ms. Lavinia Mancuso
Computer Coordinator: Mark Steinberger

Wadleigh School for Science and Technology
215 West 114th Street
New York, NY, 10026
Voice: 212-749-5800
Fax: 212-749-6463
Principal: Beverly Betts-Davis
Computer Coordinator: Stephen Johnson

Manhattan School for Children
234 West 109th St. 3rd Floor
New York, NY 10025
Voice: 212-678-5867
Fax: 212-678-5856
Director: Susan Rappaport

School for the Physical City
55 East 25th St.
New York, NY 10011
Voice: 212-683-7440
Principal: Mark Weiss

Middle College High School
at Medgar Evers College
402 Eastern Parkway
Brooklyn, NY 11225
Voice: 718-733-7755
Fax: 718-773-7849
Principal: Charles L. Majors

Oceanhill Brownsville School
2021 Bergen St.
Brooklyn, NY 11233
Voice: 718-495-7736
718-270-8668
Fax: 718-270-8725
Principal: Ernest A. Logan

Benjamin Banneker Academy
77 Clinton Avenue
Brooklyn, NY 11205
Voice: 718-797-3702
Fax: 718-797-3862
Principal: Frank Bradley

Science Skills Center High School
at New York Technical College
186 Jay Street
Brooklyn, NY 11201
Voice: 718-643-9413
Principal: Michael Johnson

Ralph Bunche School, P.S. 1255
425 West 123rd St.
New York, NY 10027
Voice/Fax: 212-865-4351
Principal: Ms. Kay Francis Richards

Henry Highland Garnet School C.S. 175/I.S. 275
175 West 134th St.
New York, NY 10031
Voice: 212-283-0426
Fax: 212-283-6319
Principal: Carol Foster

Mary McLeod Bethune School C.S. 92
222 West 134th St.
New York, NY 10031
Voice: 212-690-5915/6
Fax: 212-690-5920
Principal: Dr. Steven Kaminsky

Bronx New School
3200 Jerome Avenue
Bronx, NY 10468
Phone: (718) 584-8772
Fax: (718) 584-8935
Director: Esther Forrest

Brooklyn New School
330 18th Street
Brooklyn, NY 11215
Phone: (718) 330-9288
Fax: (718) 965-9576
Director: Mary Ellen Bosch

Center School
270 West 70th Street
New York, NY 10023
Phone: (212) 678-2791
Fax: (212) 678-2929 (Call First)
Director: Elaine Schwarz

Central Park East I
1573 Madison Avenue
New York, NY 10029
Phone: (212) 860-5871
Interim Acting Director: Jane Andrias

Central Park East II
19 East 103rd Street
New York, NY 10029
Phone: (212) 860-5992
Director: Bruze Kanze

Central Park East Secondary School
1573 Madison Avenue
New York, NY 10029
Phone: (212) 860-8935
Fax: (212) 876-3494
Co-Directors: Paul Schwarz and David Smith

Coalition School for Social Change
220 West 58th Street
New York, NY 10019
Phone: (212) 247-3651
Fax: (212) 247-5467
Director: Charlene Jordan

Community Service Academy
4600 Broadway
New York, NY 10040
Phone: (212) 567-2589
Fax: (212) 567-2974
Director: Lydia Basset

Computer School
100 West 77th Street
New York, NY 10024
Phone: (212) 678-2785
Fax: (212) 721-9269
Director: Steve Siegelbaum

Crossroads School
234 West 109th Street
New York, NY 10025
Phone: (212) 316-5256
Fax: (212) 222-6700
Director: Ann Weiner

Early Childhood Center
334 Greenwich Street
New York, NY 10013
Phone: (212) 732-4392
Fax: (212) 766-5895
Principal: Sondra Weiss

Earth School
600 East 6th Street
New York, NY 10029
Phone: (212) 979-3396
Fax: (212) 979-3391
Director: Kathy McCullagh

Institute for Collaborative Education
127 East 22nd Street, 6th Floor
New York, NY 10010
Phone: (212) 475-7972
Fax: (212) 673-2822
Principal: Marcia Brevot
Co-Directors: John Pettinato and Michelle Blatt

International High School at LaGuardia
Community College
31-10 Thompson Avenue, Rm. M-B25
Long Island City, NY 11101
Phone: (718) 482-5455
Fax: (718) 392-6904
Acting Principal: Ruthellyn Weiner

Landmark High School
220 West 58th Street
New York, NY 10019
Phone: (212) 247-3414
Fax: (212) 247-3602
Director: Sylvia Rabiner

Lower East Side School
333 East 4th Street
New York, NY 10009
Phone: (212) 982-0966
Fax: (212) 477-0931
Director: Barbara Goldman

Manhattan Village Academy
43 West 22nd Street
New York, NY 10003
Phone: (212) 242-8752
Fax: (212) 242-7630
Director: Mary Butz

Metropolitan Corporate Academy
362 Schermerhorn Street, Rm. 310
Brooklyn, NY 11217
Phone: (718) 935-5911
Fax: (718) 935-2783
Director: Peter Kaufman

Middle College High School, LaGuardia
Community School
31-10 Thompson Avenue, Rm. L101
Long Island City, NY 11101
Phone: (718) 349-4000
Fax: (718) 349-4003
Principal: Cecilia Cullen Muscota

New School
3703 10th Avenue
New York, NY 10034
Phone: (212) 927-2736
Fax: (212) 567-6526
Director: Leslie Alexander

Neighborhood School
121 East 3rd Street
New York, NY 10009
Phone: (212) 387-0195
Fax: (212) 387-0198
Director: Judith Foster

New Program at P.S. 261
314 Pacific Street
Brooklyn, NY 11201
Phone: (718) 330-9275
Fax: (718) 260-9022
Director: Millie Fulford
Principal: Arthur Foresta

P.S. 234
292 Greenwich Street
New York, NY 10007
Phone: (212) 233-6034
Fax: (212) 374-1719
Principal: Ann Switzer

Public School Repertory Company
525 West 50th Street
New York, NY 10014
Phone: (212) 581-0971
Fax: (212) 581-9230
Director: Ellen Kirshbaum

River East
116th Street & FDR Drive
New York, NY 10029
Phone: (212) 860-6033
Fax: (212) 348-1167
Director: Sid Massey

Satellite Academy, Chambers
51 Chambers Street
New York, NY 10007
Phone: (212) 374-1410
Fax: (212) 964-5587
Coordinator: Allan Baratz
Principal: Alan Dichter

Satellite Academy, Forsythe
198 Forsythe Street, Rm. 210
New York, NY 10002
Phone: (212) 677-8900
Fax: (212) 260-3063
Coordinator: Anthony Conelli
Principal: Alan Dichter

Schomburg Satellite Academy
1010 Rev James A. Polite Avenue
Bronx, NY 10459
Phone: (718) 542-2700
Fax: (718) 589-3710
Coordinator: Judith Scott
Principal: Alan Dichter

School of the Future
127 East 22nd Street
New York, NY 10010
Phone: (212) 475-8086
Fax: (212) 475-9273
Director: Kathy Rhefield Pelles
Principal: Marcia Brevot

University Heights High School
University Avenue & West 181st Street
Bronx, NY 10456
Phone: (718) 220-6397
Fax: (718) 295-7572
Principal: Nancy Mohr

Urban Academy/Julia Richman Educational Complex
317 East 67th Street, Rm. 201
New York, NY 10021
Phone: (212) 570-5284
Co-Directors: Ann Cook and Herb Mack

Vanguard High School
317 East 67th Street, Rm. 401
New York, NY 10021
Phone: (212) 517-5175
Fax: (212) 517-5334
Co-Directors: Louis Delgado and Marian Mogulescu

Appendix 3 **Proposal Cover-Page as Submitted to the U.S. Department of Education June 21, 1996**

Summary 5-Year Budgets:
Reflecting reductions required of all semi-finalists
August 27, 1996

OMB No. 1810-0569
Form Exp.: 8/96

CHALLENGE GRANTS FOR TECHNOLOGY IN EDUCATION

This application should be sent to:
No. 84.303A
U.S. Department of Education
Application Control Center
Room 3633, ROB 3
Washington, D.C. 20202-4725

1. Application No.

2. Employer Identification No.
13-6400-434

3. Legal Applicant (local educational agency)

Legal Applicant Name
New York City Board of Education

Address (Complete)
110 Livingston Street
Brooklyn, NY 11201

Congressional District(s)
All NYC Congressional Districts

4. Project Director

Name and Title
Pricilla Ellington, Co-Director
Heather Lewis, Co-Director
Robert McClintock, Director

Address (Complete)
Center for Collaborative Education
1573 Madison Avenue
New York, NY 10029

Institute for Learning Technologies
Teachers College, Columbia U.
New York, NY 10027-6625

Telephone:
212 348 7821

Fax:
Area Code & Number
212 348 7850

212 678 3375

212 678 4048

5. Federal Funds Requested:

1 st Year	$1,892,314	4th Year	$1,874,893
2nd Year	$1,897,181	5th Year	$1,882,535
3rd Year	$1,867,400	TOTAL	$9,414,323

6. Consortium Members (other than Legal Applicant): fill in number of each.

1 Other LEA	3 Institution of higher ed.
_ SEA	4 Other non-profit
1 Library	4 For-profit firm
_ Museum	2 Other (Empowerment/Enterprise Zones)

7. Duration of Project
Starting Date: October 1, 1996
Ending Date: Sepbember 30, 2001
Total Number of Months: 60

8. Student Population Directly Benefiting from the Project
30,000 K-12 predominantly African-American, immigrant, and economically disadvantaged New York City students

9. Application Title
The Eiffel Project: New York City's Small Schools Partnership Technology Challenge

10. Brief Abstract of Application: (Do not leave this blank)
New York City's Center for Collaborative Education (CCE), with its Small Schools Partnerships (many of the City's oldest and newest K-12 restructured schools) and Columbia University, with its Institute for Learning Technologies (several funded projects to support small schools with digital libraries, multimedia educational scenarios, and wide-area networking) will lead a school/university/business consortium to apply advanced media to strengthen reform within the Partnership schools and to communicate and replicate their innovative teaching, assessment, and governance practices throughout New york City and the nation, with particular attention to schools serving the Upper Manhattan Empowerment Zone. Key corporations (Kodak, NYNEX, Time-Warner,) will provide resources to develop technology-based portfolios, high-bandwidth networks, advanced media centers, and digital libraries. Centers and Institutes from diverse components of Columbia University and other academic collaborators will provide mentoring, expertise, and intellectual content to enhance this effort; specialists from NCREST, NYU, and Teachers College will evaluate it.

11. Certification By Authorizing Official
The applicant certifies to the best of his/her knowledge and belief that the data in this application are true and correct and that the filing of the application has been duly authorized by the governing body of the applicant.

Name: Lewis A Spence
Title: Deputy Chancellor, Operations
Telephone: 718-935-1520

Signature: Lewis A Spence
Date: 6/19/96

TITLE PAGE FORM

Beth H. Israel, Director
Office of Projects and Grants
(212) 854-6851

BUDGET SUMMARY

#183 – New York City Board of Education

Revised Budget Summary required of semifinalists

BUDGET ITEM*	YEAR 1 Requested	YEAR 1 Support by LEA or other sources	YEAR 1 TOTAL	YEAR 2 Requested	YEAR 2 Support by LEA or other sources	YEAR 2 TOTAL
A. Direct Costs:						
1. Salaries (professional & clerical)	$166,500	$403,000	$569,500	$226,950	$525,300	$752,250
2. Employees Benefits	49,950	120,900	170,850	68,085	157,590	225,675
3. Employee Travel	0	7,564	10,528	0	7,564	10,528
4. Equipment (purchase)	717,000	1,491,060	2,208,060	846,460	1,230,990	2,077,450
5. Materials & Supplies	0	90,000	90,000	0	90,000	90,000
6. Consultants & Contracts	250,000	59,200	309,200	250,000	59,200	309,200
7. Other (equip. rental, printing, etc.)	47,250	141,750	189,000	31,500	94,500	126,000
8. Total Direct Costs	1,230,700	2,313,474	3,547,138	1,422,995	2,165,144	3,591,103
B. Indirect Costs:	0	0	0	0	0	0
TOTAL	**$1,230,700**	**$2,313,474**	**$3,547,138**	**$1,422,995**	**$2,165,144**	**$3,591,103**

	YEAR 3 Requested	YEAR 3 Support by LEA or other sources	YEAR 3 TOTAL
A. Direct Costs:			
1. Salaries (professional & clerical)	$202,358	$477,543	$679,901
2. Employees Benefits	60,707	143,263	203,970
3. Employee Travel	0	7,564	10,528
4. Equipment (purchase)	806,200	1,271,250	2,077,450
5. Materials & Supplies	0	90,000	90,000
6. Consultants & Contracts	250,000	59,200	309,200
7. Other (equip. rental, printing, etc.)	31,500	94,500	126,000
8. Total Direct Costs	1,350,765	2,143,320	3,497,050
B. Indirect Costs:	0	0	0
TOTAL	**$1,350,765**	**$2,143,320**	**$3,497,050**

*Items 1 through 7 are budget line subtotals that are to be described in the Detailed Budget

BUDGET SUMMARY

#183 – New York City Board of Education

Revised Budget Summary required of semifinalists

BUDGET ITEM*	YEAR 4			YEAR 5		
	Requested	Support by LEA or other sources	TOTAL	Requested	Support by LEA or other sources	TOTAL
A. Direct Costs:						
1. Salaries (professional & clerical)	$206,405	$487,094	$693,499	$210,533	$495,085	$705,618
2. Employees Benefits	61,921	146,128	208,050	63,160	148,526	211,685
3. Employee Travel	0	7,564	10,528	0	7,564	10,528
4. Equipment (purchase)	733,732	1,343,718	2,077,450	661,380	1,416,070	2,077,450
5. Materials & Supplies	0	90,000	90,000	0	90,000	90,000
6. Consultants & Contracts	250,000	59,200	309,200	250,000	59,200	309,200
7. Other (equip. rental, printing, etc.)	31,500	94,500	126,000	31,500	94,500	126,000
8. Total Direct Costs	1,283,558	2,228,205	3,514,727	1,216,573	2,310,945	3,530,482
B. Indirect Costs:	0	0	0	0	0	0
TOTAL	**$1,283,558**	**$2,228,205**	**$3,514,727**	**$1,216,573**	**$2,310,945**	**$3,530,482**

*Items 1 through 7 are budget line subtotals that are to be described in the Detailed Budget

Appendix 4: Responses to Clarification Questions to Challenge Grant Semifinalists

1. **The application provides little detail on the project's benefits to communities. Please discuss this thoroughly, including a description of how the project will extend new pedagogical resources to children's homes.**

We have four basic strategies for extending new pedagogical resources to children in inner-city homes and communities: educating parents to help them understand the new pedagogical resources; making technology resources in school available to parents and community members after school, weekends, and during summers; providing access to those resources through community-based organizations; and helping economically disadvantaged families acquire advanced technologies in their homes. Here are examples of ways in which consortium members have initiated distinct efforts to implement these strategies. We will expand and add to these beginnings as the project develops.

- Innovating schools need to make special efforts to help the parents of their students understand their pedagogical efforts. This is particularly true in inner-city settings where parents often have difficulty getting access to educational information. The CCE Schools have pioneered regular, pro-active efforts to educate parents about the schools' educational principles. Such cultivation of parental understanding and involvement is becoming standard in NYC's small schools movement. It will be the foundation for work extending the Eiffel Project's benefits to homes and communities.
- An important mission of the Media Centers in Eiffel Project schools is to afford parents and community members a fuller understanding of the educational principles of the effort. These centers will host regular meetings with parents, showing them how their children are using technology to augment their educational opportunities. In addition, the Media Centers will provide parents opportunities to use these resources in work preparedness programs, for many parents need to upgrade their skills to succeed in an employment market that is increasingly knowledge-based.
- In Columbia's Harlem Environmental Access Project (HEAP), a building block of the Eiffel Project, the Countee Cullen branch of the New York Public Library has been equipped, along with participating schools, to afford children, parents, and the community access to HEAP outside school facilities and hours. Likewise, CCE is collaborating with branch libraries in the South Bronx and East Harlem to develop programs for parents of children in its schools and will deal with technology-based pedagogies along with other educational matters in these.
- In mid August, a community-based partner in Eiffel, the Harlem Tutorial and Referral Project, submitted a proposal to the Corporation for Public Broadcasting for "Project P.A.R.E.N.T. – Parents Accessing Resources by Engaging New Technologies." This project, developed with ILT, seeks $81,000 from CPB and will roughly match it in kind. "In an area with some of the lowest educational performance levels anywhere in the country, this project will offer new technological resources to parents as a means of redressing their inability to gain vital information, and hence become constructively involved in the education of their children."

- Since submitting our Challenge Grant proposal, we have been exploring ways in which Eiffel Project facilities can support technology-based programs in CBO's. For instance, a planned technology-based skills-development program sponsored by the New York City Chapter of 100 Black Men and the Church of the Master will link with the extensive technology facilities nearby in the Ralph Bunche School. Extending school technology facilities to CBO's after normal hours can effectively make sophisticated technologies available to people who cannot afford to acquire them for their homes.
- So too can developing project technology facilities directly in CBO's. ILT is collaborating with the Harlem Center for Digital Technology to help provide connectivity, curricular resources, and training opportunities for their Digital Apprenticeship Program, which "addresses the issue of technological equity by providing poor youth with a structured process to earn while acquiring digital competencies, character development and work preparedness" during summer and after school and on Saturdays.
- The Lander Street Project in Newburgh is a direct effort to extend new pedagogical resources and communications technologies into the homes of children in low-income families. Housing units in the Lander Street Project will be wired (ethernet), equipped with networked computers, and connected to the servers of the Newburgh Enlarged City School District nearby, which will in turn have Internet access through the Columbia system via a T1 connection. The Eiffel Project will provide Lander Street tenants training and support in using the home-based technologies and it will evaluate whether these resources help children in these families benefit from expanded educational opportunities. This effort seeks to build a case for making advanced technologies integral components of 21st century low-income housing projects. We are working to arrange for a similar New York City trial, currently at a Harlem site on 116th Street.
- High on the Eiffel Project agenda for implementation in collaboration with the Upper Manhattan Empowerment Zone is a program permitting families to acquire home computers at very low-cost through used-equipment donations. Already, the Ralph Bunche School is maintaining a small dial-in modem pool, connecting home-based users to its servers and the Internet. Preliminary experience here has uncovered hidden costs in such plans: the combination of old equipment and unskilled, novice users leads to substantial support problems. Before embarking on a large donation program, we want to make sure that they are not less cost effective than they appear to be on the surface.

In addition to such ground-up efforts to provide families and communities access to advanced media in education, it is important to address key structural issues that affect how well people can benefit from improving educational resources. The discussion in the proposal, under 2b2) Achieve Productive Potential in the Workplace, is integral to extending new pedagogical resources to children's homes, as it is essential in motivating effort for everyone, including students and their families, to address the long-term secular shift in the New York Metropolitan Region from an economy offering good industrial jobs to one in which manual labor is shrinking steadily while high-skilled, knowledge-based employment is growing. It is imperative to show, through efforts such as the Eiffel Project, that the least advantaged in the Metropolitan Region can succeed in the complex, high-skilled, ever-changing job markets around them by making full, disciplined use of the new educational resources to which they have access. Here are the numbers for New York City (from a recent *New York Times* article):

Job-base:	3,300,000	over 20% held by suburban commuters
Total net job gain since 1992:	88,000	1992 was a recession bottom; net gain predominantly in knowledge-industry jobs.
Unemployed in NYC:	271,000	not on welfare, looking for work
Adults on welfare in NYC:	470,000	will be required to seek work

New York City's technology learning challenge is thus severe. We must meet it with all-out effort.

2. **The project aims in part to improve students' problem-solving skills, but the application does not state in which content areas (e.g., mathematics, science, or language arts, etc.) these efforts will be focused. Please discuss with which curriculum areas the project will integrate technology.**

On page 26, the proposal states that "a strength of the Eiffel Project as it unfolds over time is the thorough-going involvement of a major research university, for we need to work systematically to reshape the whole curriculum and to do it over an extended period of time in which the cumulative effects of an entirely restructured educational process can become evident and fully effective."

The small schools movement in New York City involves whole schools and it is based on the proposition that each of those schools is responsible for the whole of its curriculum. The Eiffel Project proposes to develop the uses of advanced digital technologies in support of these small schools, facilitating their efforts to design and implement their curricula. We are **not** proposing a limited curriculum development effort targeted to specific subjects to be housed, in part, at Columbia University, and to be implemented in selected classes of selected grades in selected schools. We are **instead** proposing a thorough-going engagement by Columbia University with a fundamental City-wide effort to reshape the whole educational experience that children receive in schools, using digital technologies to bring academic and professional resources to bear in support of small schools reform in ways that have previously not been feasible. We expect general educational strategies, and the uses of technology to support them, modeled by the small school movement to scale out to the whole system and to affect the educational experience of children throughout it. Participants in the Eiffel Project have an extensive track-record in changing the ethos of schooling through changes in teaching and learning and through technology programs that support a wide range of curricular initiatives – the Dalton Technology Plan (social studies, astronomy, chemistry, paleontology, English, French, art and design, geometry and algebra), the Living Schoolbook Project (English, Spanish, social studies, current events), the Harlem Environmental Access Project (earth science), the Columbia Gateway Engineering Lab (calculus, design), the Edison Project (chemistry), the Amiens Project and the Museum Educational Site Licensing Project (art history), the EarthView Project (earth science), *Where Are We?* (mapping and abstraction skills), *Discovery Web* (general science), the Reinventing Libraries Project and Library Power (digital libraries in support of the

school curriculum), and so on. All of these efforts enable students to engage primary sources and real data, to work with powerful tools, to pursue difficult questions; they provide an open-ended curriculum consisting in diverse supports for student inquiry. In short, within the limits of available resources, we expect the digital pedagogy, outlined in Section 2 of the proposal (pp. 7-18), to affect the whole educational experience and to integrate technology throughout the school.

3. **The application states . . . that the budget narrative will provide "a detailed description of funds to be provided to the Eiffel Project by consortium members," yet we find no such description in subsequent pages.**
   A. **Please provide the description, including a statement of the nature and amount of contributions to be made by all corporations.**
   B. **If the NYNEX contribution is to be connectivity, how do you plan to pay for connectivity after the grant has ended?**

With respect to Item A, the table at the end of this response to Question 3 provides the information requested for Year 1 of the project. With respect to Item B, the NYNEX contribution includes some connectivity. After the five years of the grant, we expect to pay for it by subsequent fund-raising for the project and/or by the New York City Board of Education assuming some or all of the connectivity costs as a part of its support of the City's schools. A major outcome of the Challenge Grant should be a City-wide school connectivity plan providing specifications for reaching all schools with broadband connections as well as a rationale for why scarce resources should be committed to implement it. More needs to be said, however, in response to Question 3 concerning the total financing of the Eiffel Project.

Winning proposals in the Challenge Grant competition will receive substantial funding for five years, with the requirement to match that federal funding, at better than one-to-one, from non-federal sources. The Eiffel Project plans to extend these funding goals considerably, both in amount and in duration. To succeed, the Eiffel Project must be large in scale, involving many children and teachers, sustaining its influence over a long period, showing that educational attainment can spread out across a higher spectrum of achievement. The small schools movement seeks to reform education as a whole by demonstrating new possibilities in a substantial set of unique, autonomous schools, making new technologies support their drive to innovation, and then transforming the larger system, by contagion and conversion, by using technological supports to facilitate similar changes in traditional schools.

Consider the key question. What is the necessary order of magnitude -- in time and expense -- required to demonstrate unequivocally the feasibility of significant improvements in the educational attainments of all children, doing it with palpable effect within greater New York, one of the 20 to 30 large metropolitan regions in which most of the world's population now lives? Each year, New York City has roughly 1 million students in its public schools, with over 2.5 million in the New York Metropolitan Region. We seek to demonstrate that the educational process those million children experience day in and day out

can become significantly more effective for each and all. What portion of the million students does the demonstration need to influence in order to demonstrate something feasible and significant for all of them? Year after year, each of those million children in the public schools is working cumulatively on his or her whole education, which cannot really be disaggregated into a plethora of parts according to grade and subject. A reform of the educational process is not necessarily a simple function of the reform of 5th grade social studies or 9th grade earth science. What portion of the whole child's whole educational experience needs to be encompassed within a project for that project to demonstrate significant and feasible reform of the educational system?

Assume the Eiffel Project fulfills the goals reflected in the proposed budget for the Challenge Grants for Technology in Education. What level of demonstrative presence would it have attained? Approximately 70 schools would have been wired to the Internet with broadband connections with active access through this in at least the library and one classroom adapted for small groups using computers to learn through problem solving. Two-thirds of the schools would also have media centers to further exploit the connectivity, with each student being able to work in the center about one period per week. One-third of the schools would have equipped one-third of their classrooms with multiple computers (on a 1 to 5 student ratio), adapting those classrooms for a problem-solving pedagogy. Five schools would have extended this classroom model to all their classrooms. At the end of five years, 30,000 students, 3% of the City's public school population, would have started to use sophisticated connectivity about 10% of their time in their educational program. 10,000 of those students, about 1%, would have started to use it about a third of their time; and 2,500, 0.25%, would have started to use it all of the time. At the end of five years, the average duration of these use levels would have been 2.5 years, not a long time in view of the fact that we require each child to engage in 12 years of schooling, often preceded by 2 years of pre-schooling and 4 or more years of post-secondary education. Relative to the goal of providing a decisive demonstration that significant improvements in the educational process for all children in a major metropolitan system are feasible, these use levels are low and their duration short. Hence, although the Eiffel Project can get an invaluable start through the Challenge Grants for Technology in Education, it cannot really succeed only by fulfilling the goals laid out for that grant – the Eiffel Project should unfold on a considerably larger scale and

last for a considerably longer period. For this reason, a long-term funding program for the Eiffel Project is essential. To this end, we have a set of 10-year goals.

Financial support for the Eiffel Project will aggregate from five sources. First, the Project seeks approximately $2 million annually for five years from the U.S. Department of Education through this proposal. Second, the sponsoring coalition will provide substantial matching resources through contributed effort, equipment, services, and talent over the 10-year period. Third and fourth, the sponsoring coalition is raising funds for component activities within the project from diverse granting agencies -- federal, state, local, and private. State, local, and private grants count as part of the Challenge Grant match, the third category, whereas the fourth, federal grants, do not, although they add to the scale and strength of the effort. Fifth, the Eiffel Project will raise funds systematically to support its work from a wide cross-section of New York City businesses and philanthropies. Here are the targets.

Eiffel Project Funding Targets	**1** Challenge Grant Funds	**2** Consortium (matching)	**3** Non-Federal Grants (matching)	**4** Federal Grants (non-matching)	**5** Corporate Support (matching, to be raised)	**Total**
Year 1	$2,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$6,000,000
Year 2	$2,000,000	$1,000,000	$1,250,000	$1,500,000	$2,000,000	$7,750,000
Year 3	$2,000,000	$1,000,000	$1,500,000	$2,000,000	$3,000,000	$9,500,000
Year 4	$2,000,000	$1,000,000	$1,750,000	$2,500,000	$4,000,000	$11,250,000
Year 5	$2,000,000	$1,000,000	$2,000,000	$3,000,000	$5,000,000	$13,000,000
Year 6	$0	$1,000,000	$2,000,000	$3,000,000	$6,000,000	$12,000,000
Year 7	$0	$1,000,000	$2,000,000	$3,000,000	$7,000,000	$13,000,000
Year 8	$0	$1,000,000	$2,000,000	$3,000,000	$8,000,000	$14,000,000
Year 9	$0	$1,000,000	$2,000,000	$3,000,000	$9,000,000	$15,000,000
Year 10	$0	$1,000,000	$2,000,000	$3,000,000	$10,000,000	$16,000,000

On page 9 we detail consortium matching funds (2) and non-federal grants (3) for Year 1. Examples of non-federal grants that will be available for the first year are a $293,000 grant by the New York State Science and Technology Foundation to ILT for the Living Schoolbook Project, which will be included within the Eiffel Project; a New York City Council grant for technology to the Frederick Douglass Academy of $200,000; and significant portions of the grant, from the Annenberg Foundation and other philanthropies, to support Networks for School Renewal. Many sources of Federal funds strengthen the over-all capacities of the Eiffel Project and we will continue to seek funding for curriculum development, networking

infrastructure, teacher development, and evaluation projects systematically from the NSF, other parts of U.S. Department of Education, the Department of Commerce, and other agencies.

As important as these sources are likely to be, the fifth source, corporate support and private philanthropy, will be most helpful in expanding the Eiffel Project to the required scale and duration. The business and philanthropic communities of the entire New York region have two strong reasons why backing the Eiffel Project at a substantial level of support, over an extended period of time, makes good sense. First, competitiveness and economic health: the strength of New York City and its surrounding region, as well as the strength of the corporations doing business there, depends increasingly on success in the information economy. When it was an industrial manufacturing center, New York needed to attract a docile, low-skilled work force. With manufacturing in significant decline and the information industries its main source of competitive advantage, the City and the Region need a highly educated and educable work force. Educational excellence, attainable by all, becomes increasingly important to its economic strength. Second, quality of life: a great cosmopolitan center, such as New York, provides a very effective way to attract and concentrate the diverse, exuberant talents needed to implement new systems of communication and cultural creativity. To attract such talents spontaneously, the conditions of life need at once to be safe and civil while pulsating with cultural vibrancy. Such conditions will best thrive where educational opportunities are both extensive and excellent, and where participation in them is universal. The City needs nothing short of the very best educational opportunities for all its citizens.

Beyond these needs, New York City and its region have remarkable advantages with which to become the educative leader for the 21st century – great concentrations of media, museums, libraries and archives, theater, corporate headquarters, and universities. It makes sense to concentrate large-scale effort on a technology learning challenge here in a global city, and the sources of corporate and private philanthropy in the City and region must be added to the national contribution sought through the Challenge Grant to underwrite a sustained, unparalleled effort, a truly global response.

The following table gives a fuller picture of matching funds for Year 1. In anticipation of our response to Question 5 below, we drop out overhead costs. Contributions for subsequent years should be roughly equivalent to those for Year 1. The table does not include amounts to be derived from projects and

proposals pending with federal sources such as NSF, which is considering several proposals related to Eiffel. It also does not include amounts to be derived from the broad corporate and philanthropic fund-raising described above. Should these targets be met, matching amounts for subsequent years will considerably exceed those itemized here. The Eiffel Project has already neared its $3,000,000 target in matching funds for Year 1, putting the $6,000,000 total for the Year 1 Eiffel Project target within range of attainment.

Matching Contributions for Year 1		
Center for Collaborative Education:		
1996-97 CCE operating funds	$270,400	Salaries, project leaders & lead teachers
Time-Warner Media Centers	$380,000	CCE's 1996-97 share of Time-Warner grant
Annenberg Foundation	$80,000	Networks for School Renewal
Columbia University:		
1996-97 ILT operating funds	$200,000	Strategic Initiative ILT Funds
Columbia Eiffel Equipment @ ILT	$95,120	One time expenditure for 5 yr. project
Columbia share of New Lab Projects	$40,000	Strategic Initiative Fund
Image Technology for New Media Center	$40,000	Video conferencing control protocols, etc.
Center for New Media	$25,000	Use of CNM facilities and volunteered time by CNM students and staff
Center for Research on Information Access	$25,000	Use of CRIA facilities and volunteered time by CRIA students and staff
Columbia African Institute	$25,000	Volunteered time by Institute students and staff
Other Columbia contributions	$100,000	Biosphere 2, Center for Environmental Conservation and Research, Black Rock Forest Consortium, AcIS, etc. Use of facilities and volunteered time.
NYC Board of Education	$90,000	Furniture, etc. @ 12 schools initial year
Fund for New York City Public Education	$182,000	Time-Warner Grant to Annenberg Schools. 4 Media Centers @ $45,500 each
Educational Video Center	$40,000	Use of EVC facilities & volunteered time
Junior Achievement of New York	$25,000	Materials & volunteered time
Lander Street Partners	$90,000	Equipping 37 units @ T1 Connectivity Level
New Laboratory for Teaching & Learning	$40,000	Match to Columbia New Lab
Teachers College, Columbia University:		
1996-97 ILT operating funds	$151,500	Operating budget & endowment income
NY State Living Schoolbook Project	$293,000	Activities encompassed in Eiffel Project
Eastman Kodak Company	$50,000	Imaging equipment & technical expertise
NYNEX Corporation	$198,200	Living Schoolbook connectivity & school technical infrastructure contributions
Access Information Fund	$40,000	Estimated value from Reinventing Libraries Project to Eiffel Project schools
Harlem Tutorial Union	$81,000	Pending CPB Project
Participating Schools:		
Frederick Douglass Academy	$200,000	NY City Council Grant for Technology
School for the Physical City	$50,000	Apple PIE Grant, 1996-97 & 1997-98
TOTAL Matching Contributions	**$2,811,220**	Indirect costs not included (see #5 below)

Appendix 5: Technology Budget Models

The technological approach described here represents a combination of models presented in recent reports on K12 networking[i] and the Institute for Learning Technologies' (ILT)[ii] experience gained from three years of managing both the Harlem Environmental Access Project[iii] (HEAP, an NTIA-funded collaboration between Columbia University and the Environmental Defense Fund) and the Living Schoolbook Project[iv] (LSB, a New York State funded collaboration among Teachers College, Columbia University; the Syracuse University School of Education; and NYNEX). The underlying philosophy of this resultant approach is essentially provide ubiquitous access to a robust, manageable infrastructure that readily accommodates future growth. Core participants will be introduced to the technology in the Preparatory Stage, and each project site will begin with a classroom cluster and T1 WAN connection. Depending upon the success of the common T1 Connectivity phase, all sites will be eligible for expansion to Level One or Level Two Classroom configurations[v].

Preparatory Stage

Our approach begins with a preliminary site assessment of existing technology, professional readiness, and a willingness to integrate new technologies into existing curriculum. Once this is complete,

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[i] Rothstein, Russell I. (1994). *Connecting K-12 Schools to the NII: A Preliminary Assessment of Technology Models and Their Associated Costs.* (http://rpcp.mit.edu/Pubs/net_k12/abstract.html).
Rothstein, Russell I. and Lee McKnight (1995). *Networking K-12 Schools: Architecture Models and Evaluation of Costs and Benefits.* (http://rpcp.mit.edu/Pubs/net_k12/abstract.html).
McKinsey & Company (1995). *Connecting K-12 Schools to the Information Highway.* (http://cavern.uark.edu/mckinsey/contents.html).
Gargano, J. and Wasley, D. (1994). *K-12 Internetworking Guidelines.* (http://www.isi.edu/in-notes/fyi/fyi26.html).
Keltner, B. and Ross, R. (1995). *The Cost of School-Based Educational Technology Programs.* (http://www.rand.org/publications/MR/MR634/MR634.html).

[ii] http://www.ilt.columbia.edu/

[iii] http://www.ilt.columbia.edu/k12/heap/

[iv] http://www.ilt.columbia.edu/k12/lsb/

[v] All models presented here are approximate and will be modified according to the unique conditions of each participating site.

we select in cooperation with the school principal or site director, a core technology group (3-4 members), one of whom will later fulfill the role of technology coordinator -- ILT's primary site liaison.

Beginning day one, each member of the core technology group will receive a laptop computer and a dial-up account with full Internet and email access. Professional development with this manageable group begins immediately. Prompt exposure to the resources that this group will later train others on establishes, early on, a localized base of technical expertise that proves invaluable once others begin employing National Information Infrastructure (NII) resources in their curriculum. Laptops allow these engaged professionals an opportunity to familiarize themselves with the resources of the NII in the setting of their choice -- either work or home.

Quantity	Item	Price each	Total Cost
4	Laptop computers (with modem/ethernet PC cards)	2,500.00	10,000.00
	Preparatory Stage costs per site		

T1 Connectivity (see Diagram 1):

The initial phase comprises a two-fold process: 1) a thorough technology assessment and 2) requesting the installation of a T1 circuit, ordering the necessary wide area network (WAN) hardware, and requesting Class C address allocation. With the assistance of the core technology group, ILT begins an in-depth assessment of existing technology to determine which resources can be integrated into the local area network (LAN). ILT will attempt to integrate all existing hardware that does not require an unreasonable expenditure (> 15% of current value) to do so.

Throughout the T1 connectivity phase ILT will provide and manage email accounts, world wide web and file space. By the end of Level One, however, each site will be ready to manage such services itself.

Each site will receive one classroom cluster (six computers)[vi] and two stand-alone models, to be placed where the core group deems most appropriate (generally the library). To ensure sufficient access to the network and allow for future high bandwidth technologies, each workstation (whether part of a work group or a stand-alone unit) will have an individual ethernet connection to a centralized patch panel via category 5 twisted pair wire (10baseT). At the patch panel, a modular network hub will be used to activate the circuits and provide a uplink to a Cisco 2500 series route, which routes packets (capable of routing AppleTalk, Internetwork Packet eXchange, and Transmission Control Protocol/Internet Protocol) onto the T1 WAN. Modular hardware (i.e., hardware that will facilitate an Ethernet, Fast Ethernet, FDDI, or ATM uplink) is necessary to ensure a smooth transition from one level to the next and will be chosen with particular attention to how it can be used in future versions of the LAN. All WAN hardware is chosen according to proven reliability as well as local and remote management options. Since ILT assumes full responsibility for WAN management, all network hardware will support full SNMP (simple network management protocol) to allow for centralized management (i.e., remote monitoring, configuration of network and runtime parameters).

Quantity	Item	Price each	Total Cost
	T-1 installation	1,200.00	*
	Monthly lease of T-1 (60 months, assuming that all participants will receive 5 years of connectivity regardless of when they enter the project)	500.00	30,000.00
	NYSERnet downstream annual fee (5 years)	500.00	2,500.00
1	Serial port in ILT Infrastructure (see below)		1,400.00
1	CSU/DSU plus cable in ILT Infrastructure (see below)		1,500.00
1	Cisco 2501 router plus software and cables		3,000.00
1	CSU/DSU plus cable		1,500.00
1	24 port shared ethernet hub with variable media uplink port		3,000.00
1	NetDay Kit (wire, jacks, data comm tools, etc.)		400.00
1	1000 ft. of Category 5 twisted pair cable		350.00
1	Patch Panel Rack plus shelf		500.00
8	Personal Computers (incremental volume discounts are assumed throughout)	2,000.00	16,000.00
	T1 Connectivity costs per site		**59,150.00**

[vi] Classroom clusters consist of 1 computer for every 5 students, assuming an average of thirty students per classroom.

* waived with 5-year lease agreement

Level One Classroom (see Diagram 2):

Those sites chosen for upgrade to Level One Classroom will realize a substantial increase in capacity and ubiquity of networked computer resources. This level builds on and extends the infrastructure of the T1 Connectivity level. Since it is impossible to guess how the culture of each site will evolve, the T1 Connectivity phase (whether 1 year or 5 years long) serves as an incubation period allowing for the maturation of curricular technology integration. Level One Classroom provides access to eight additional classrooms, which represents approximately one third of the total number of classrooms.[vii]

With increased demand on the network, a switched high-speed backbone[viii] will be applied to ensure responsive LAN performance and file server access. Otherwise, this infrastructure is simply a replication and expansion[ix] of the T1 Connectivity phase. Level One Classroom phase will add an on-site file server. In providing "home directories" for students and faculty, the file server will serve web-based content, email, and potentially act as a dial-up remote access server. As mentioned earlier, ILT provides such services during the T1 Connectivity phase. By the time a site is ready for expansion to Level One Classroom phase, the core group will be proficient enough to manage these services on-site.

Quantity	Item	Price each	Total Cost
48	Personal Computers (8 classrooms x 6 PCs totaling 56 new PCs school-wide)	1,750.00	84,000.00
1	24 port shared ethernet hub with variable media uplink port		3,000.00
1	12 port switched fast ethernet hub with variable media uplink port		7,000.00
3	1000 ft. of Category 5 twisted pair cable	350.00	1,050.00
100	RJ45 connectors	1.00	100.00
1	Patch Panel Rack plus shelf		500.00
1	Midrange file server (for communications, email, web content delivery)		5,000.00
	T1 Connectivity Costs per site		**100,650.00**

[vii] Assuming an average of 25 classrooms per school.
[viii] Fast ethernet is modeled here, though project technologies will remain under constant review.
[ix] Although the diagram illustrates this network vertically, transcending multiple floors, it could as easily transcend adjacent rooms or approximate buildings.

Level Two Classroom (see Diagram 3):

Level Two Classroom access fulfills the ratio of one computer for every five students throughout the entire school, achieving truly ubiquitous access to NII resources. Here again, the network is be scaled to the next level of complexity. Level Two Classroom access infrastructure simply replicates and expands the basic T1 Connectivity model (a model that will be, by now, very familiar) throughout the entire school. Given the preceding years experience and professional development, the local technology savvy will be significant and allow us to fully realize a complex network that will be reliable and manageable.

Quantity	Item	Price each	Total Cost
96	Personal Computers (16 classrooms x 6 PCs totaling 152 new PCs school-wide)	1,500.00	144,000.00
2	24 port shared ethernet hub with variable media uplink port	3,000.00	6,000.00
3	1000 ft. of Category 5 twisted pair cable	350.00	1,050.00
200	RJ45 connectors	1.00	200.00
1	Patch Panel Rack plus shelf		500.00
1	Upgrade file server (cpu, memory, raid storage, client licenses)		9,000.00
	Level Two Classroom costs per site		**160,750.00**

ILT Infrastructure (see Diagram 4):

This project will substantially scale the WAN infrastructure developed and installed during the HEAP and LSB projects. All components within the gray box of Diagram 4 are detailed here. This additional infrastructure will accommodate participant sites with the necessary connectivity and access to NII resources. All other components are currently in place and operational. In order to facilitate the additional T1 circuits, we will add (over the span of the project) up to 4 additional Digital Link 15 port chassises. To route data to and from these T1s, we will add a Cisco 7513 router chassis and the necessary number of 8 port serial interface processors. For optimal inter-router connectivity, we will place a Fiber Distributed Data Interface (FDDI) backbone between both the ILT gateway Cisco 7000 router and the Columbia University gateway Cisco 7000. The NEC FD1840A 135 MB fiber inverse multiplexer, currently in place, will accommodate up to 84 T1 circuits, which is adequate for the scope of this project. As is apparent from the diagram, this infrastructure poses no problems concerning potential bottlenecks as the various connections

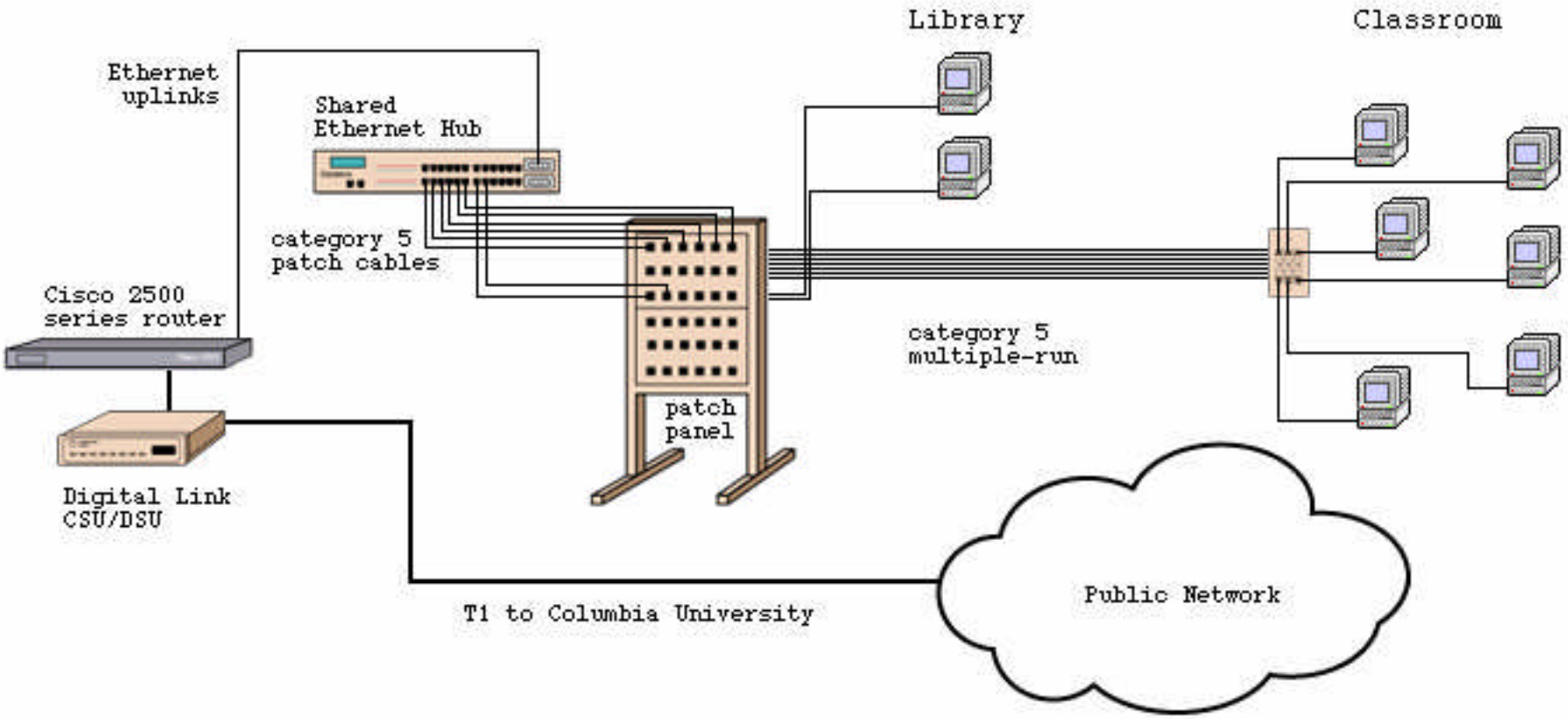
are all greater than 45 Mbps. More importantly, as more substantial broadband technologies become available, this infrastructure will scale as required.

Quantity	Item	Price each	Total Cost
	CSU/DSU card plus cable for chassis	1,500.00	*
	8 port serial interface processor (11,200.00 per 8 sites)	1,400.00	*
3	FDDI multimode interface processor	12,600.00	37,800.00
1	Cisco 7513 chassis (32 DRAM, 16MB Flash, desktop, SMARTnet, dual power)		42,720.00
1	Silicon Switch Processor		5,600.00
1	Network management workstation		5,000.00
1	Spectrum 4.0 net manage software		4,000.00
	ILT Infrastructure costs		**95,120.00**

* included in T1 Connectivity costs

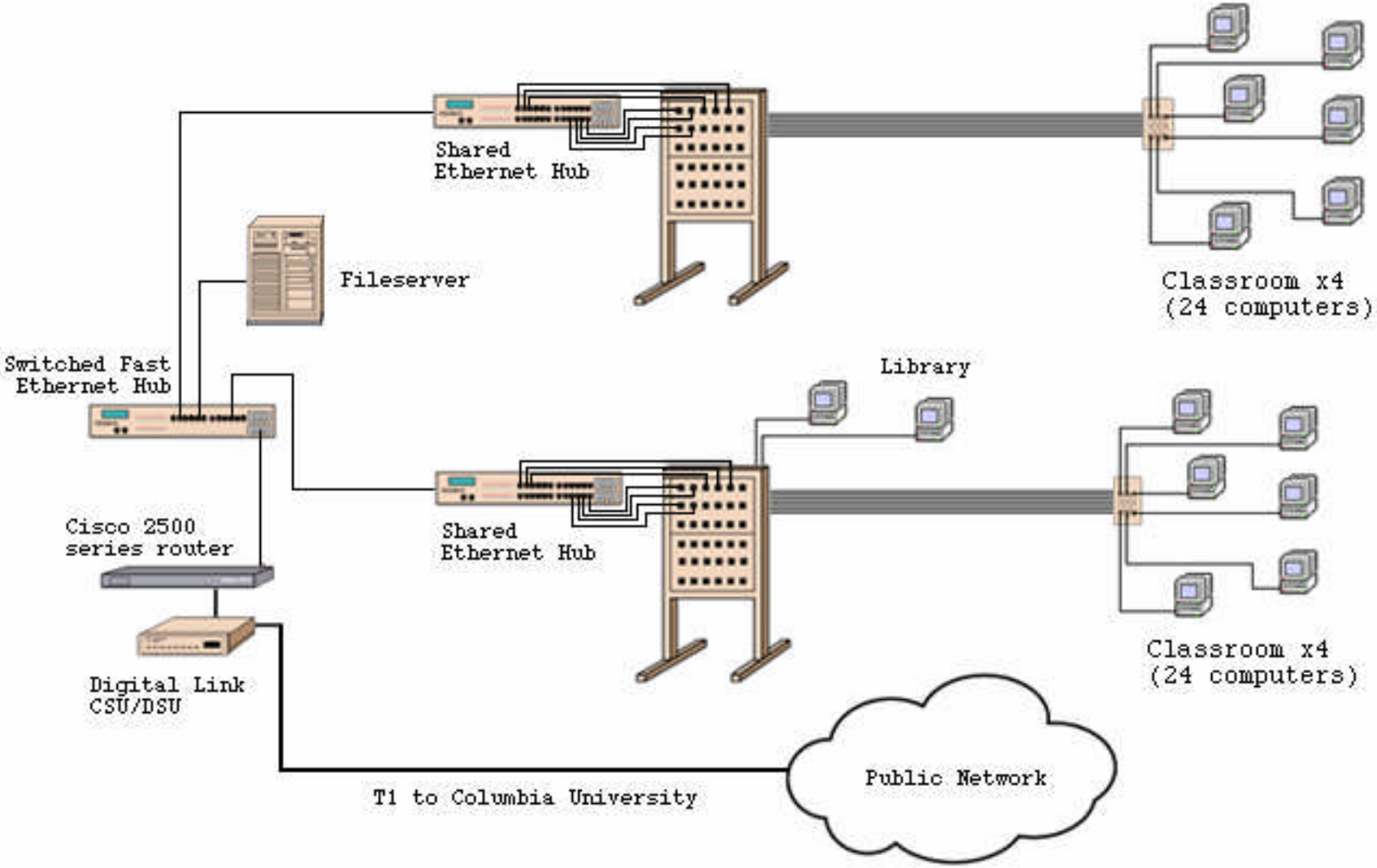
Longer-Term Technology Plans

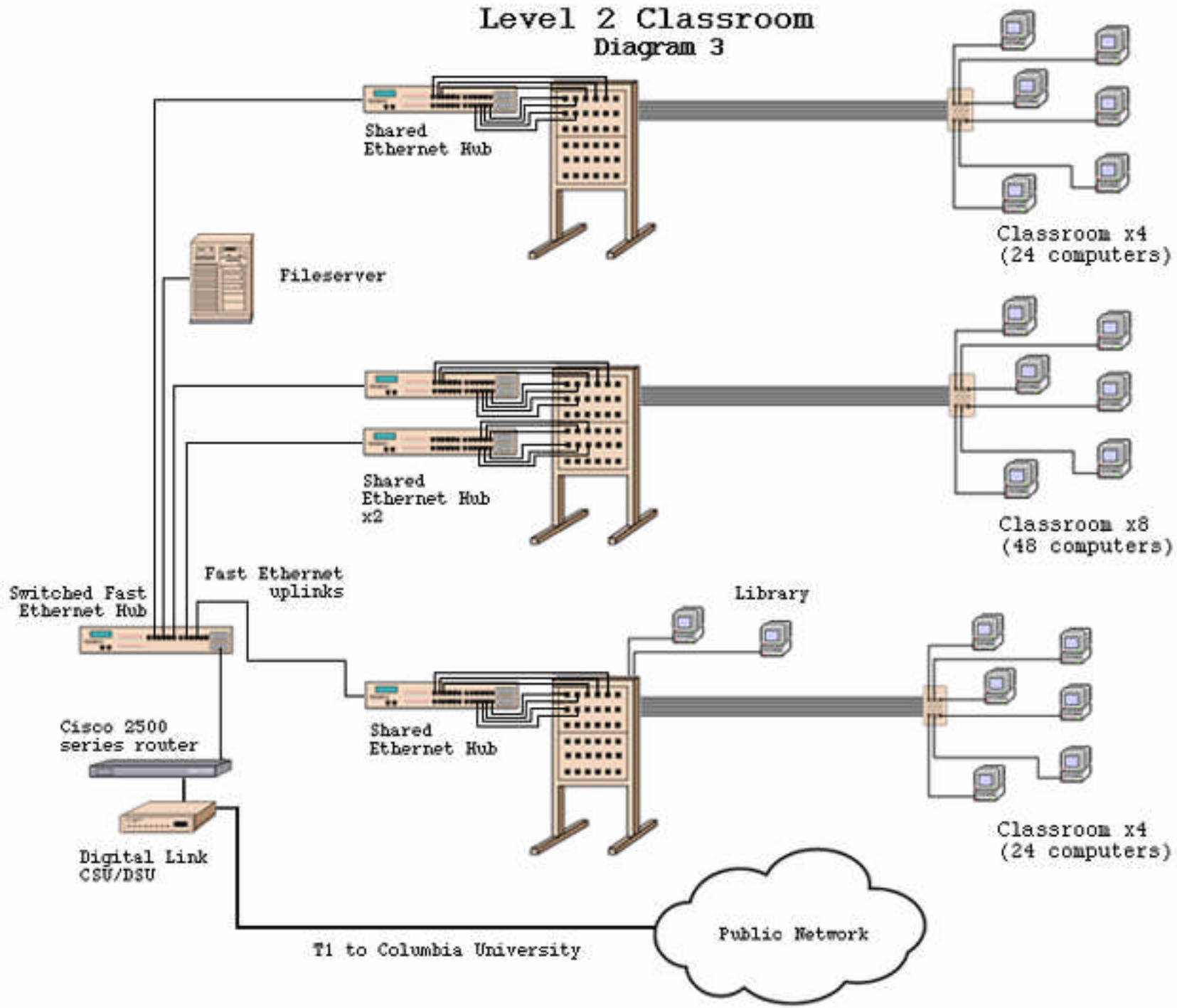
T1 Connectivity
Diagram 1



Level 1 Classroom

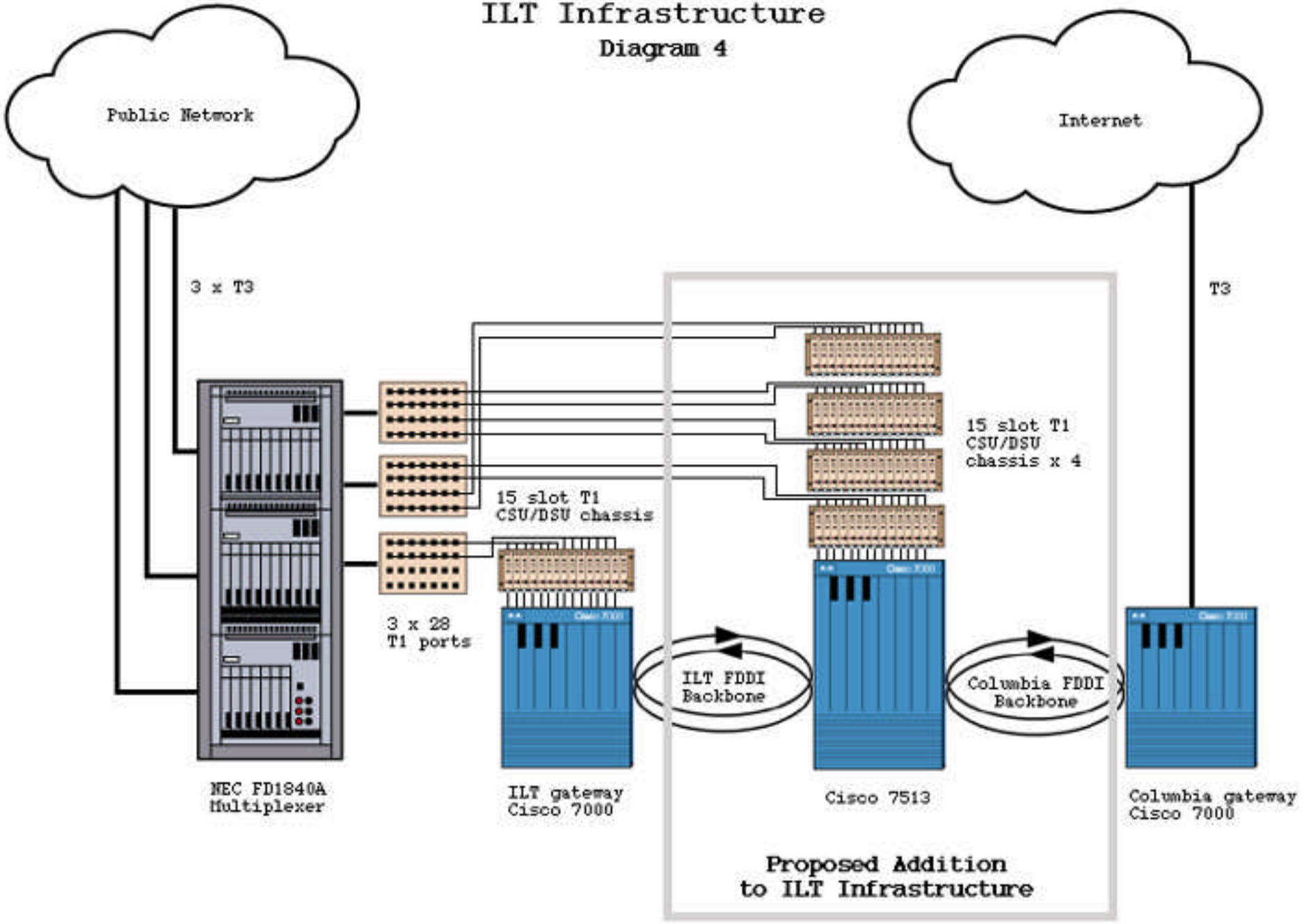
Diagram 2




Level 2 Classroom
Diagram 3
Shared
Ethernet Hub
Classroom x4
(24 computers)
Fileserver
Shared
Ethernet Hub
x2
Classroom x8
(48 computers)
Switched Fast
Ethernet Hub
Fast Ethernet
uplinks
Library
Shared
Ethernet Hub
Cisco 2500
series router
Classroom x4
(24 computers)
Digital Link
CSU/DSU
Public Network
T1 to Columbia University

ILT Infrastructure

Diagram 4



Appendix 6: Biographies of Key Personnel

(listed in alphabetical order)

Dimitris Anastassiou is the Associate Director for Multimedia Applications of Columbia's Center for Image Technology for New Media (ITNM) and Co-Director of Columbia's Image and Advanced Television Laboratory. Dr. Anastassiou is conducting research in signal processing and coding for digital video, including HDTV. He is the recipient of an IBM outstanding Innovation Award and an NSF Presidential Young Investigator Award. Dr. Anastassiou is a professor within the Department of Electrical Engineering; his research interests include digital image/video communications and processing with emphasis on multimedia applications. His most recent article is entitled "Sub-Pixel Edge Localization and the Interpolation of Still Images," with K. Jensen (IEEE Transactions on Image Processing, March 1995).

Linda Darling-Hammond is William F. Russel Professor in the Foundations of Education at Teachers College, Columbia University. She is also Co-Director of the National Center for Restructuring Education, Schools, and Teaching (NCREST), has just finished a term as president of the American Education Research Association, and is the author of many books and articles on school restructuring and teacher education.

Priscilla Ellington is Co-Director of the Center for Collaborative Education, with particular responsibility for the Elementary School Change Services, which provides professional development opportunities and consultation. She is a parent who helped establish the Brooklyn New School. Before joining CCE, she designed training tools in both visual and print media for professional development, outreach, and public information.

Judith Klavans is Deputy Vice President, University Libraries at Columbia University. She is also Director of The Center for Research on Information Access (CRIA), established in 1995 to act as a vehicle for linking different projects on the Columbia campus involved in developing and using digital technology. Dr. Klavans studies computational linguistics and natural language processing, developing representational and relational schema via semantic nets. Prior to coming to Columbia, she worked at the IBM Thomas J. Watson Research Center, extracting information from machine-readable dictionaries. Current books include "The Balancing Act: Combining Symbolic and Statistical Approaches to Language".(with Philip Resnick, MIT Press, to appear in 1997) and "Clitics and Cliticization: The Interaction of Morphology, Phonology and Syntax" (Garland Press: New York, 1994).

Heather Lewis has been Executive Co-Director of the Center for Collaborative Education since its founding in 1988. She has worked as a parent organizer in District 15 (Brooklyn), where she helped created the Brooklyn New School. She has been a member of the steering committee of the Cross City Campaign for Urban School Reform since 1993. Ms. Lewis will be a Revson Fellow at Columbia University for academic '96-97.

Robert McClintock is Director of the Institute for Learning Technologies, Columbia University and a professor in the Departments of Philosophy and Social Sciences, and Communication, Computing and Technology, at Teachers College. He is Co-Director of the Dalton Technology Project, New Laboratory for Teaching the Learning, and he has been principal investigator for two projects that bring high-speed networking to inner-city schools, the Harlem Environmental Access Project, funded in 1994 by TIIAP, and the Living Schoolbook Project, supported since 1994 by the New York State Science and Technology Foundation.

Frank Moretti is Executive Director of the New Laboratory for Teaching and Learning and Associate Headmaster of the Dalton School. Dr. Moretti is also an Adjunct Associate Professor of Communications and Education, Teachers College, Columbia University and has served as Director of Degree Programs for NYU's Liberal Arts School of Continuing Education, Director of NYU's General Studies Program School of Continuing Education, Director of Methodology Workshops at Bloomfield College, and Assistant Professor

of Education and Director of Teacher Education at Bloomfield College. A Classicist by training, Dr. Moretti has written extensively on Virgil, on the history of education and on the role of technology in education. He is a founder of Learn Technologies Interactive, an educational technology start-up that is part owned by Time Warner Electronic Publishing. Dr. Moretti currently serves on the boards of the City Volunteer Corps, the National Conference Committee, and the National Advisory Board of Columbia University's Center for American Culture Studies.

Dr. John Pavlik has been the Director of the Center for New Media at the Columbia University School of Journalism since January 1996. Before returning to Columbia, where he served as Associate Director for Research and Technology studies at The Freedom Forum Media Studies Center from 1988 to 1994, Dr. Pavlik was Director of the School of Communication at San Diego State University, where he was also Professor of Communication. He is the author of "New Media Technology: Cultural and Commercial Perspectives" (Allyn & Bacon, Simon & Schuster Educational Group) and numerous other books and journal articles as well as computer software for journalism and media education research.

Paul Reese developed the computer mini-school at the Ralph Bunch School (PS125M), where he has taught since 1985. He is also teacher-in-charge and Computer Coordinator of Community School District 5, with responsibility for teacher instruction, supervision of student teachers, and in-service computer instruction. Mr. Reese has written and spoken extensively on the integration of new media in K-12 urban schools.

Appendix 7: List of Application Authors

Robert McClintock and Joshua H. Reibel were lead authors of the proposal and worked on all sections closely together. They are, respectively, Director and Senior Research Associate of the Institute for Learning Technologies, Columbia University. McClintock authored approximately 60% of the whole; Reibel authored approximately 40%. The lead authors received consultation from Heather Lewis, Co-Director of the Center for Collaborative Education, as well as suggestions from Bonnie Singer of the Washington Alliance Group. Shawn Mishler, Manager of Technical Systems for ILT, contributed the technical models for budgeting purposes, and Marianne Bakia, Graduate Research Associate for ILT, helped set up the budget forms. Staff of both the Institute for Learning Technologies and the Center for Collaborative Education read early drafts and provided editorial comment.

Appendix 8: Letters of Commitment

Center for New Media, Columbia University. John Pavlik, Executive Director

Center for Research on Information Access, Columbia University. Judith Klavans, Director

New York City Board of Education, Community School District 5. Paul Reese, Computer and Technology Coordinator

New York City Board of Education, Community School District 4. Mark Steinberger, District Computer Coordinator

Eastman Kodak Company. Anne W. Miller, Director, Education Solutions and Services

Educational Video Center. Steve S. Goodman, Executive Director

Fund for New York City Public Education. Beth J. Lief, President & CEO

Harlem Tutorial and Referral Project. E. Babette Edwards, Ph.D., Executive Director

Image Technology for New Media Center, Columbia University. Dimitris Anastassiou, Director

Institute of African Studies, Columbia University. George Clement Bond, Director

Junior Achievement of New York, Inc. Douglas E. Schallau, President

Lander Street Partners. Arnold S. Moss, President

Newburgh Enlarged City School District. Phillip E. Leahy, Superintendent

New Laboratory for Teaching and Learning, The Dalton School. Frank A. Moretti, Executive Director

The State Education Department, Office of New York City School and Community Services. Ken Chieu, Associate, Intra/Inter Agency Team

Office of Projects and Grants, Columbia University in the City of New York. Beth H. Israel, Director

Teachers College, Columbia University. William J. Baldwin, Associate Dean

Upper Manhattan Empowerment Zone Development Corporation. Nancy Devine, Assistant to the Director

The Center for New Media

at the Columbia University Graduate School of Journalism

June 18, 1996

No. 84.303A
U.S. Department of Education
Application Control Center
Room 3633, ROB 3
Washington, DC 20202-4725

Dear Grants Administrator:

The following letter is offered in support of "The Eiffel Project: New York City's Small School Partnership," a challenge grant for technology in education submitted by the Center for Collaborative Education and Columbia University.

The Eiffel Project addresses a critical issue in today's world of school reform: empowering inner-city children to learn through the effective application of digital technology to small schools in New York City. We anticipate many ways that The Center for New Media can participate in this visionary project. Central to the mission of the Center is to advance the art of storytelling, particularly in the realm of news. The Eiffel Project will provide an opportunity to bring new forms of storytelling, forms that are interactive, multimedia and individualized, to children in K-12 schools, especially in inner-city environments traditionally underserved by the resources of advanced digital technology.

We encourage you to award a challenge grant for The Eiffel Project, and will support this project in any way we can.

Sincerely,

John V. Pavlik, Ph.D.
Executive Director

Columbia University in the City of New York | *New York, N.Y. 10027*

Judith L. Klavans, Ph.D.
Director
(212)-854-7443
klavans@columbia.edu

Center for Research on Information Access
535 114th Street
Phone: (212) 854-7443
Fax: (212) 222-0120

June 20, 1996

Professor Robert O. McClintock
Institute for Learning Technologies
Teachers College, Columbia University
525 West 120th Street
New York, NY 10027-6611

Re: Columbia University Challenge Grant for Technology in Education

Robbie

Dear Professor McClintock,

I am writing in support of the Eiffel Project: New York City's Small Schools Partnership Technology Learning Challenge that the Center for Collaborative Education and Columbia are submitting to the Department of Education. As you know, as the Director of Columbia University's Center for Research on Information Access, my responsibilities include leadership in the Digital Library Program at Columbia University. Columbia boasts one of the most integrated digital library programs in the country, precisely due to the coordination between the service components of the University including the Libraries and the Academic Information Systems division, the instructional components across disciplines, and the research components of the University specifically focussing on new technologies and content areas for the digital library.

In order to ensure coordination of digital library research, testbed and evaluation components, and to ensure that as the activities are carried out in accordance with the vision of the Columbia Digital Library, Columbia University has established a dedicated Research Center, entitled the Center for Research on Information Access (CRIA). The Center, housed in and associated with the Libraries, is also closely associated both with Academic Information Systems (AcIS) and with the Department of Computer Science. As the director of CRIA, I am directly involved in research projects throughout the University. I will be pleased to be involved with the Eiffel Project since it fits in well with the mission of CRIA.

The agenda of CRIA will no doubt be strengthened by the availability of a test-bed of schools integrating digital library resources into their educational activities. Furthermore, I am currently seeking industry partners for several projects in instructional areas. This project would be the natural recipient for such funding since its focus is on the use of technology in education.

You have also asked me to serve as a member of the management group for this proposal. I could commit up to 20% of my time to this important project. In addition to my time on this project, I am currently seeking funding for a large content-oriented project focussing on training and retention of women and minorities in science and engineering. If this is funded, I will have a staff working on collection acquisition and tool design for developing and accessing content in digital form. In this case, I would also expect my staff to interact and contribute to the Eiffel Project and vica versa. Thus, each project will be able to strengthen the other by working collaboratively.

Developments in digital library technology – locally, nationally and internationally – have provided a focus for realizing the potential of digital information to be used in service of making information available widely and inexpensively to as many people as possible. Like the Eiffel Project, we are committed to providing resources to the larger community, including schools, public libraries, community groups, and families, above and beyond our mission within the University community.

I will support your project both with my time, and with whatever financial resources I am able to pledge.

Best regards,

Judith Lynn Klavans, Ph.D.

New York City Board of Education
Community School District Five
433 West 123rd Street, New York, N. Y. 10027
Tel: (212) 769 - 7500
Fax: (212) 932 - 3109

Bertrand J. Brown, Ed D.
Superintendent

Constance Wingate
Deputy Superintendent

June 14, 1996

Dr. Robert McClintock,
Director Institute for Learning Technologies
Teachers College, Columbia
New York, NY 10027

Dear Robbie,

I look forward to working with you in the The Eiffel Project, US Department of Education Challenge Grant. For the past several years it has been a privilege, a joy and a challenge to collaborate on the Live Text project. We are positioned to be an active partner in this new venture. Ralph Bunche School, in CSD#5, is already a leader in student use of the GII. The school established the first K12 Gopher in cyberspace and also one of the first school WEB servers. The school publishes an electronic on-line newspaper and continues to use network resources to support a number of student project learning activities.

Building on the experience at Ralph Bunche several schools in Community School District Five have begun using network resources. Neighboring Adam Clayton Powell Junior Jr. High School has leased line access to the RBS network and hence to the Internet. With the support of a Commerce Department grant we have connected PS175/IS275 to the RBS network. Additionally, RBS has four phone lines connected to a LAN dial-in server. The school is able to offer PPP network access to a number of community schools, staff and students with computers at home.

Internet training workshops for staff at district schools have begun and will continue next school year. We have and are currently identifying additional talented and motivated educators for training and support. Interest and enthusiasm is high.

Sincerely,

Paul Reese
Computer and Technology Coordinator

COMMUNITY SCHOOL DISTRICT FOUR
NEW YORK CITY PUBLIC SCHOOLS
319 EAST 117TH STREET
NEW YORK, NEW YORK 10035

Evelyn Castro
Acting Superintendent
Mark Steinberger
District Computer Coordinator
(212) 860-5946
Internet: mark_g_steinberger@cce.org

June 19, 1996

Dr. Robbie mcClintock
Director
Institute for learning Technologies
Teachers College
525 West 120 Street
New York, NY 10025

Dear Dr. McClintock:

The Eiffel Project will be an excellent opportunity to expand our collaboration with both the Institute for Learning Technologies and the Center for Collaborative Education. Community School District Four has found the technological and curriculum development support that has come from ILT to be very valuable. Three of our schools are founding members of the Center for Collaborative Education and have benefitteded that support for more than ten years.

The Harlem Environmental Access Project (HEAP)is an excellent example of the effectiveness of online interschool collaboration. Watching students use the Internet and create web pages has been inspiring.

We look forward to this expanded collaboration.

Sincerely,

Mark Steinberger

June 20, 1996

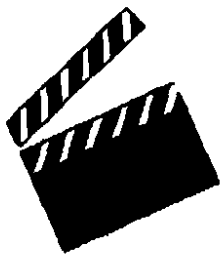
It is my pleasure to support the Center for Collaborative Education's Challenge Grant application. Kodak's participating in the recent National Education summit has reinforced the importance of this proposal.

As part of this project we will provide you with support as consultants and be willing to serve on an advisory board to guide you. We will be active in evaluating the quality and effectiveness of the products that will be produced as part of the grant. We will also include you in piloting new products as we expand our educational market in the future.

Sincerely,

Anne W. Miller
Director, Education Solutions & Services
Eastman Kodak Company

/mpm



educational
video center

June 20, 1996

Professor Robert MCClintock
Director, Institute for Learning Technologies
c/o Teacher's College, Columbia University
525 West 120th Street
New York, New York 10027

Dear Professor MCClintock:

The Educational Video Center is very pleased to be a part of the Eiffel Project, sponsored by the Office of Educational Research and Improvement, U.S. Department of Education. EVC has a long history of serving Center for Collaborative Education (CCE) networks, providing teacher development support for the use of video in the classroom.

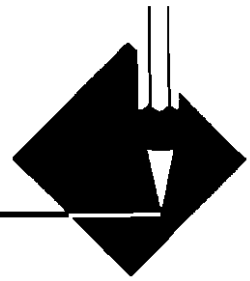
The Educational Video Center is a not-for-profit media center that has been teaching video production and media analysis to youth and educators in the New York City area since 1984. As you may already know, EVC is currently collaborating with the Institute for Learning Technologies. We look forward to this new opportunity with enthusiasm.

Sincerely,

Steven S. Goodman
Executive Director

55 East 25th Street, Suite 407 • New York, NY 10010 • Tel: (212) 725-3534 • Fax (212) 725-6501

Fund for New York City Public Education



June 18, 1996

Robert McClintock
Director
Institute for Learning Technologies
Teachers College Columbia University
525 West 120 Street
New York, NY 10027-6625

Dear Robbie:

The Fund for New York City Public Education enthusiastically supports the Institute for Learning Technologies' proposal for the Small Schools Partnership, which is being submitted to the U.S. Department of Education for the Challenge Grants for Technology in Education.

Four of the public schools that the Fund has helped develop through its New Visions Schools initiative will be part of the partnership. They are: Benjamin Banneker Academy; Middle College High School at Medgar Evers; Oceanhill-Brownsville High School; and Science Skills Center High School. These schools, which are located in Brooklyn, New York, share a strong conviction that technology can be a powerful tool for learning and achieving academic excellence.

The Fund will work with the Institute for Learning Technologies to recruit up to eight additional small schools to participate in the project over the coming five years. Time Warner has made a commitment to provide up to $5 million for technology in the small schools that are being developed by the Fund and its partners through a project called the New York Networks for School Renewal. Time Warner funds for technology that are allocated to our schools that participate in the ILT's Small Schools Partnership will be able to be used as a match for federal funds received through the Challenge Grants for Technology in Education.

We look forward to working with you on this project.

Sincerely,

Beth J. Lief
President & CEO

96 Morton Street
New York, NY 10014
212 645-5110
Fax 212 645-7409

Columbia University in the City of New York | New York, N.Y. 10027

Image and Advanced Television Laboratory
IMAGE TECHNOLOGY FOR NEW MEDIA (ITNM) CENTER Schapiro Engineering Research Bldg

June 19, 1996

TO WHOM IT MAY CONCERN:

As Director of Columbia University's Image Technology for New Media (ITNM) Center, I write to register my strong support of The Eiffel Project.

At the ITNM Center, we are researching and developing image and video technologies with powerful educational applications. Real-time videoconferencing, video-on-demand, and integrated groupware applications can support important educative collaborations at a distance if they are developed with simple user interfaces.

The Eiffel Project is a K-12 educational enterprise of unusual scope and scale that can prototype these advanced networking applications in truly complex settings. These schools are already committed to continuous collaborative work and their curricula are structured to accommodate such activities. The broadband networking of significant numbers of these small, restructured schools realizes an ideal testbed for networked imaging technologies. We believe the work of teachers and students in these schools will be significantly enhanced by such advanced tools.

Among the strengths of this important project is its founding in existing collaborative efforts. The ITNM Center has been working with the Institute for Learning Technologies on design of applications for managing real-time desktop videoconferencing in schools and for delivering video-on-demand services to teachers and students at work in school. We believe these applications will effectively support K-12 education because their design reflects the understanding not only of engineers, but of educators steeped in the emerging needs of teachers and students in real schools.

Once again, I enthusiastically endorse this compelling joint effort of Columbia University and the Center for Collaborative Education, and I look forward to participating actively in the project should it win funding.

Sincerely,

Dimitris Anastassiou
Professor of Electrical Engineering
Director, Image Technology for New Media (ITNM) Center

Columbia University in the City of New York | *New York, N.Y. 10027*

INSTITUTE OF AFRICAN STUDIES 420 West 118th Street

June 20, 1996

Professor Robert McClintock
Institute for Learning Technologies
Teachers College, Columbia University
New York City, New York 10027

Dear Professor McClintock:

I wish to congratulate you on your work in developing the Eiffel Project for the use of technology in New York City's small school reform movement. I found the meeting we had recently to be most informative and stimulating. The discussions pointed to potential domains of cooperation between the Institute of African Studies (IAS) and the Institute for Learning Technologies (ILT) and its programs, such as the Harlem Environmental Access Project and the proposed new projects.

IAS has an excellent and highly productive faculty that is drawn from all segments of the Columbia University community. As you know, the IAS recently received a Title VI grant from the Department of Education to establish a National Resource Center (NRC) in African Studies. A central concern of IAS and the Africa NRC is to provide academic and intellectual leadership in research, teaching, training and dissemination of information on Africa. Outreach to K-12 schools, teachers and students, both locally and nationally, is an integral part of the Center's mission. It is apparent to us that cooperation with your Institute is essential to our vision and mission of academic excellence and public responsibility.

In addition to the recent Title VI grant, one other recent initiative is contributing to the flourishing of African Studies at Columbia: the development of courses in "African Civilizations" (formally part of the Extended Core Curriculum), supported by NEH which will be offered for the first time in the Spring of 1996. The course development effort for African civilization has involved most members of the Institute's core faculty and has been headed by Professors Marcia Wright and Mohamed Mbodj of the Department of History. The Institute is developing another interdisciplinary course for advanced undergraduates and graduate students entitled "Issues in Contemporary Africa" with Title VI support. This new course will be under the direction of the Institute's Director and Assistant Director, both of whom are social scientists.

The Title VI grant, the expansion of Outreach activities, the new African Civilizations and Issues in Contemporary Africa courses, as well as the introduction of a program in Pan-African Studies at Barnard, combine to make this a most propitious and pivotal time for African Studies at Columbia. One critical complementary component of this new thrust is to develop the technological capacity to enhance the reach and effectiveness of our K-12 outreach programs, as well as our course development and research efforts. Thus, we wish to propose to you the following: that seed money be provided for the development of a prototype for an African International Resource program. The prototype will form the basis for submitting proposals to

major funding agencies such as the National Endowment for the Humanities and the National Science Foundation. This funding would provide the resources to establish a full fledged program in learning technologies for African Studies at Columbia. The program would serve IAS's central objectives of enhancement of scholarship and training of Columbia students on the one hand, and outreach programs to the broader community and especially the public school, system on the other. Collaboration in these efforts with ILT will be highly productive.

Sincerely yours,

George Clement Bond

George Clement Bond
Director

Junior Achievement
of New York
Inc.

107 Washington St.
New York, New York 10006-1856
212 344 1033
Fax No. 212 406 3697

Douglas E. Schallau
President

June 3, 1996

Robert O. McClintock, Director
The Institute For Learning Technologies
Teachers College - Columbia University
525 West 120th Street - Box 136
New York, NY 10027-6625

Dear Robbie:

Because of our discussions over the past few months I am aggressively encouraging Junior Achievement on a nationwide basis to think seriously about the significant potential for wide area networking (WAN) applications in our programs. I am convinced that the combination of our high quality K-12 curriculum content delivered by volunteer role models using WAN applications can have substantive impact on students' lives.

Therefore, should The Eiffel Project proposal be approved, I am very interested in participating and making available whatever value-added components Junior Achievement of New York has to offer. Our organization will be proud to be a part of this project of substance.

Please let me know how we can be of continued assistance.

Most sincerely,

Doug

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Lander Street Partners
c/o Arnold S. Moss
900 Third Avenue
Suite 1000
New York, NY 10022
(212) 350-0214

June 19, 1996

Mr. Robert McClintock
Director
Institute for Learning Technologies
Teachers College
Columbia University
525 West 120th Street
New York, NY 10027

Dear Robbie:

On behalf of Lander Street Partners, I would like to express my enthusiasm and complete support to work with the Eiffel Project on your efforts to develop home-school interactions with digital technologies in our affordable housing development on Lander Street in the City of Newburgh. It is my understanding that T1 connections will be established by Eiffel to the Newburgh Enlarged School District and that they will be extended to the Lander Street Project in the spring of 1997. Thereafter, we will work together to plan technology installations in our apartments and to monitor results of the program.

Please contact me for my additional assistance you may need.

Best regards.

Sincerely,

Arnold S. Moss

NEWBURGH ENLARGED CITY SCHOOL DISTRICT

Phillip E. Leahy, Ed.D. Superintendent of Schools

Ralph A. Pizzo Deputy Superintendent
Charles A. Winters Associate Superintendent / Finance
Walter S. Milliman Associate Superintendent / Elementary Instruction & Magnet Schools
William J. Swart, Ed.D. Associate Superintendent / Secondary Instruction & Pupil Services
Vicente A. Hamlin Associate Superintendent / Human Resources

124 Grand Street P.O. Box 711
Newburgh, New York 12550
(914) 563 - 7200
FAX (914) 563 - 7218

June 19, 1996

Dr. Robert McClintock, Director
Institute for Learning Technologies
Teachers College, Columbia University
525 West 120th Street, Box 136
New York, NY 10027

Dear Dr. McClintock:

On behalf of the Newburgh Enlarged City School District, I am enthusiastic about this opportunity to work with Columbia University and the Center for Collaborative Education on the Eiffel Project. Newburgh suffers from the same inner city problems as New York, albeit with a lower profile, and we are equally interested in the potential of wide area networking between schools and community centers to provide critical opportunities for our next generation of citizens.

The T-1 network connection between Columbia University and the Newburgh Enlarged City Schools District will enable us to learn from and communicate with school reformers you are working with, and bring needed resources to the Lander Street Project.

Sincerely,

Dr. Phillip E. Leahy
Superintendent of Schools

PEL/es

nlt.

new laboratory for teaching and learning

June 20, 1996

To Whom It May Concern:

I wish to register my enthusiastic endorsement of The Eiffel Project, a most promising collaboration of Columbia University, the Center for Collaborative Education, and the New York City Board of Education.

As Associate Headmaster of the Dalton School and Executive Director of Dalton's New Lab for Teaching and Learning, I have collaborated with Robert McClintock, co-PI of The Eiffel Project, on numerous advanced media projects for education. Much of our work—including the *Archaeotype* Project and *Project Galileo*—are prototypical of and the foundation for the project here proposed. Under the auspices of the Dalton Technology Plan, the Institute for Learning Technologies and the New Lab for Teaching and Learning have worked towards the reconfiguration of K-12 education much in the same manner the Eiffel Project does in its network of small, restructured New York City schools. In these projects, students engage difficult questions and mobilize the intellectual tools and resources typical of advanced scholarly work; they are supported by electronic networks by which they access remote expertise; work is project-based, interdisciplinary and collaborative; teachers work closely with technologists in all phases of design, development and implementation; and the use of space and division of time are re-designed to be consistent with new emerging student needs.

A dimension of Dalton's success relates to its access to university-level resources and personnel. Such support and access can help power the small schools effort to redesign itself as a part of the larger effort to reconfigure America's urban public schools. Colleges and universities have always been centers with powerful intellectual and educational resources capable of providing for those who have access the substance of a true education; only recently have emerging information and communications technologies enabled these institutions to share them effectively with the K-12 schools. For the nation at large to recognize the significance of this development, a large-scale, comprehensive demonstration must be supported and implemented in a prominent and historically troubled urban center. The Eiffel Project represents just such an undertaking, and it is one that is led by one of our most forward thinking educational technologists and one of our most successful school reformers.

Columbia has started to underwrite development work by the New Lab and we are working with ILT and numerous other components of the University on two projects—one in earth and environmental studies and the other in ancient history—that will directly benefit the educational program in schools participating in The Eiffel Project.

A project of this scale and scope, with such experienced leadership and a coherent plan for its implementation is unusual indeed. I strongly encourage its support.

Sincerely,

Frank A. Moretti

[illegible] Street [illegible]

THE STATE EDUCATION DEPARTMENT/THE UNIVERSITY OF THE STATE OF NEW YORK/ ALBANY, N.Y. 12234

OFFICE OF NEW YORK CITY SCHOOL AND COMMUNITY SERVICES
INTRA/INTERAGENCY TEAM
55 HANSON PLACE • ROOM 482 • BROOKLYN • NEW YORK 11217-1580 • TELEPHONE: (718) 722-2784 • FACSIMILE: (718) 722-4539

June 19, 1996

Professor Robert McClintock, Director
Institute for Learning Technologies
Teachers College
Columbia University
119th Street and Broadway
New York, NY 10027

Dear Professor McClintock:

On behalf of the Intra/Inter Agency Team of the Office of New York City School and Community Services, I wish to thank you for your interest and commitment in representing the interests of the New York State Schools Under Registration Review (SURR) in your application for the Challenge Grant for Technology.

In spite of your busy schedule, you took time to meet with me to discuss the instructional technology needs of the SURR schools. As a dedicated professional, you make it possible for me to effectively provide for the telecommunications access of these schools which serve severely challenged, underprivileged populations.

The Office of New York City School and Community Services (the Intra/Inter Agency Team) will continue to make available my time and services in order to support the requirements of the Challenge Grant for Technology. This year, 100% of my time has been made available to support and direct technology initiatives, such as the Technology Partnerships, the Learning Technology Grant, three technology conferences, two Internet workshops, the New York State Technology Education Network, the New York State Advanced Telecommunications Grant, and the Challenge Grant for Technology.

The Learning Technology Grant allocation for 20 New York City public schools and their non-public school partners is valued at over $940,000, all of which can be used to help support the needs and requirements of the Challenge Grant. The purpose of the Learning Technology Grant is to integrate technology across the curriculum, to enhance teaching and learning, and to improve student achievement using a variety of modalities made possible through the use of multimedia applications and telecommunications access.

The Technology Partnerships valued in New York City schools alone at over $1,000,000 has

resulted in contributions of curriculum based technology products to 20 SURR schools. These contributions include multimedia products from Microsoft Corporation and Internet based products, such as Internet in a Box and Wentworth World-Wide Media's Classroom Connect newsletters, training videos and books.

As this school year comes to a close, the Office of New York City School and Community Services has allocated as much as $500 for each SURR middle level and high school to use to purchase products which help provide and support Internet access, such as Wentworth's products and the Netscape Navigator application.

Since November of 1994, I have been involved in the planning and implementation of six technology conferences, all of which were focused on teaching and learning through the use of technology.

It is my expectation that in 1996-97 I will continue to be able to devote time and resources to the instructional technology needs of the SURR schools. The Intra/Inter Agency Team can also serve as the conduit by which SURR schools are encouraged to utilize various funding sources to support the requirements of the Challenge Grant.

I recently attended presentations on videoconferencing in New York City. Staff from Picture Tel Corporation and Educational Technology Associates/Apple Computers are looking forward to meeting with us should we request consultations in regard to their videoconferencing products.

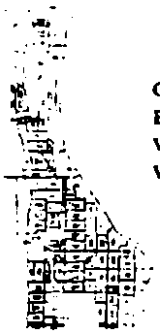
Please contact me if you require any additional information. My telephone numbers are (718) 722-2778 and -2784. My email address is kchieu@inx.net.

Sincerely,

Ken Chieu

Ken Chieu
Associate
Intra/Inter Agency Team

cc: S. Evans-Tranumn
R. Skinner



Central Harlem
East Harlem
West Harlem
Washington Heights

Upper Manhattan Empowerment Zone
Development Corporation
163 West 125th Street • Suite 904 • New York, NY 10027
Tel. (212) 932-1902 • Fax (212) 932-1907

June 7, 1996

Technology Challenge Grants Program
Office of Educational Research and Improvement
U.S. Department of Education

To Whom It May Concern:

On behalf of the Upper Manhattan Empowerment Zone Development Corporation (UMEZDC), I write to support the Eiffel Project, for which a coalition led by the Center for Collaborative Education and Columbia University seeks funding through the Challenge Grants for Technology in Education.

The objective of the Eiffel Project is to demonstrate unequivocally the power of the school reform movement, augmented through advanced media, to break the constraints of the present system of schooling and to do so with substantial focus on improving the educational opportunities of children living under conditions of poverty in the Empowerment Zone. Attainment of this objective will substantially advance the goals of the UMEZDC and we look forward to cooperating with the Eiffel Project as it unfolds.

Within the context of the Empowerment Zone, two features of the Eiffel Project stand out as particularly significant strengths.

Scale and duration. The Eiffel Project is both large and well focused, and designed to unfold over an extended period of an initial 5 years with Challenge Grant funding, with that extended for another 5 years with private sector support. This scale and duration accords well with the efforts by the UMEZDC to improve conditions in Upper Manhattan through sustained, comprehensive initiatives. This looks like a project that can make a difference.

Leadership. Key consortium members in the Eiffel Project have strong track records in school reform and the creative use of educational technology and they bring very significant organizational strengths, which will enable them to develop and sustain a project with large-scale effects. This looks like a project that can implement its ideas.

The Eiffel Project has not sought a commitment of funds from the UMEZDC. It has sought its willingness to help implement the project's activities within the Zone. The UMEZDC is eager to cooperate with the Eiffel Project by helping it to establish productive linkages to community groups, by helping to coordinate project initiatives in schools with parallel efforts to improve housing, employment, health, and security; and by helping the project raise resources in the greater New York City community to advance our shared purposes. As the Eiffel Project unfolds, the UMEZDC will also entertain, on a case by case basis, applications by specific schools or groups serving Zone children for financial support that will supplement resources that the Eiffel Project can provide.

I look forward over coming years to working closely with the Eiffel Project.

Sincerely,

Nancy Devine