A
Pedagogical
Framework

Prepared for

the
New York City Board of
Education
and its

Taskforce
on
Teaching
and
Learning
in
Cyberspace

Autumn, 2000

Smart Cities:
New York

Electronic Education for
the New Millennium
Executive Summary

Institute for Learning Technologies
Teachers College
Columbia University

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An Initiative to Support
Teaching and Learning in Cyberspace

A large
on-line
educational
community
can generate
substantial
revenue
to sustain
services
to its
members.

The New York City Board of Education is planning unprecedented initiatives using information technologies to improve education.

Through these initiatives, the Board seeks to make its huge scale, its proverbial weakness, the basis for its future strength.

Through its Taskforce on Teaching and Learning in Cyberspace, and a related feasibility study by Andersen Consulting, the Board has established the probability that the astute provision of Internet services can generate substantial resources, both for and through the educational use of digital technologies.

By providing advanced Internet services connecting all students and their families, as well as teachers, school staff, and the interested public, to a high-quality educational ISP/Portal, present to anyone at any place and any time, it can transform the conditions of educational work, in school and out.

An educational strategy for reaping the pedagogical benefits of this initiative follows.

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Cumulative Revenue

$2,800 M ----- $4,700 M

**The New York Education Zone**

Key elements in the technology initiative

Starting with the 2001-2002 school year

- All students, 4th grade and up, along with teachers and administrators, will rapidly receive digital devices for use in school and home.

- The Board will provide an ISP/Portal with an Education Zone for content, resources, and communication in support of educational work throughout New York City.

- These provisions will enable every child, every family, and every teacher to interact with resources in the Education Zone from any place at any time, in school and out.

As a result, the Education Zone becomes the education program of the City, the sum of the educational resources New York avails to its children, to its educators, and to its citizens in general.

See www.nycenet.edu/cyberspace/ for the Andersen Consulting study.

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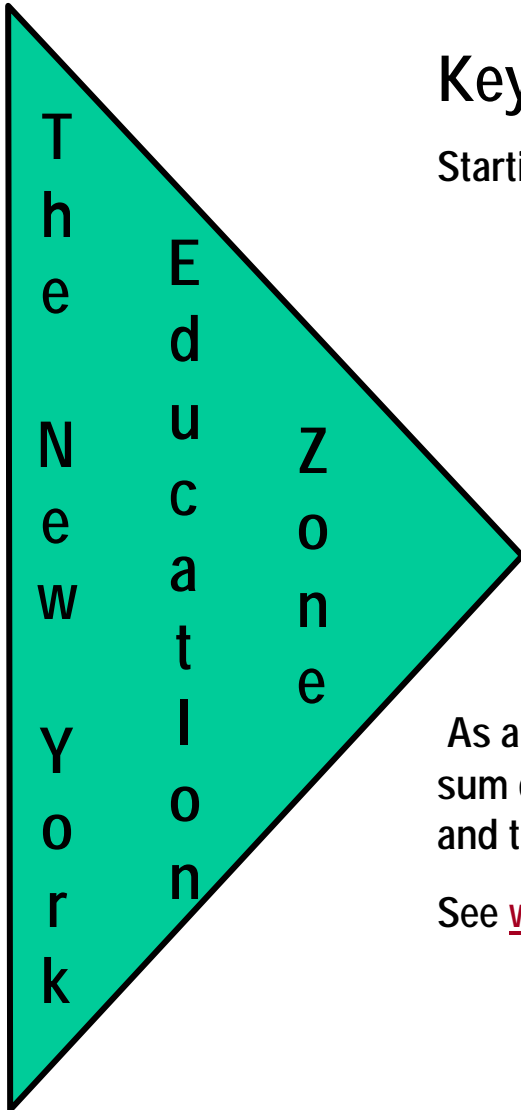
Raising the spectrum of educational achievement.

New conditions of teaching and learning make new patterns of accomplishment feasible.

- We know only past achievements, reached under past conditions.

- The Board's Technology Initiative would substantially change the conditions of teaching and learning.

- Therefore, let us think about achievements with a new vision of possibility.

→

Needed: A bold program of education for a transformative technology plan.

→

The Stakes of Change

New York City can fulfill its leadership in the historic democratization of education.

- In the late 19th century, New York City was a leader in making compulsory elementary schooling for all take hold as a civic responsibility and entitlement.

- In the early 20th century, the City again led efforts to extend compulsory schooling into adolescence and to provide opportunities for universal secondary education.

- Through the 20th century, the City has sought to enable a widening sector of the population, ever more diverse, to gain access to higher education.

- Early in the 21st century, by creating the Education Zone and engaging all in its activities, the City can complete the the democratization of education by making an intellectually rigorous, progressive education a reality for all.

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Strategies

Engagement
Intelligence
Communication

Three changes,
each with great educational significance.

Changing the conditions of learning and teaching changes
what goals are practicable and what means are effective.
It creates a new ecology of education.

Through 24/7 interaction with the Education Zone, all students, teachers,
administrators, and parents will have, at any time and any place,

Engagement

- Unlimited, selective access, opening universal participation in an
  unprecedented range of quality educational tools, resources, and
  experiences.

Intelligence

- Immediate, informative responsiveness by those resources, amplifying
  the working intelligence of students, and that of teachers, administrators,
  parents, and the whole community.

Communication

- Flexible opportunities for communication with others, facilitating the
  pursuit of curiosity and the construction of meaning.

Consider the educational possibilities these changes bring, especially in
putting the student in control of his or her education.

Strategies -- **Engagement**
Multiple intelligences
Cultural Diversities
Learning by Inquiry
Explanatory modules
Portfolio Assessment
A Curriculum of Questions

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Engagement

1st

CHANGE

Unlimited, selective access opens universal participation in an unprecedented range of quality educational resources

Providing access through the Education Zone to educational resources of great extent and deep quality makes important reforms much more feasible.

- Respecting multiple learning styles.

- Cultural diversities become intellectual assets.

- Learning by inquiry.

- Using explanatory modules on demand.

- Assessment through portfolio construction.

Educators will need to put powerful questions to students, thereby activating and directing their curiosity, leading them to exploit their opportunities for access.

- The curriculum becomes a cosmos of questions to be asked, not a compendium of lessons to be learned.

A curriculum of questions, not lessons.

Strategies -- Engagement
Multiple intelligences
Cultural Diversities
Learning by Inquiry
Explanatory modules
Portfolio Assessment
A Curriculum of Questions

**The
edZone:**

**Access
supports
engagement**

Educators will need to put powerful questions to students, thereby activating and directing their curiosity, leading them to exploit their opportunities for access.

- The curriculum becomes a cosmos of question to be asked,
  not a compendium of lessons to be learned.

Students, by virtue of making continuous selections about how to direct their attention and activity, take fuller responsibility as the primary agent shaping their own education.

Teachers have essential roles as guides and goads – informing and sustaining their students' inquiries. They serve less as the font of knowledge and more as the source of questions.

Parents are on the inside and can support their children's work, neither interfering nor ignoring. They can participate with their children and their educators in the pursuit of insight about difficult questions.

Schools have the opportunity to serve as community learning centers, shared resources and opportunities to participate in cultural life.

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Strategies -- Intelligence
Simulations
Basic skills
Better habits
On-line tools
Student feedback
Responsiveness

Intelligence

2nd

CHANGE

Immediate, informative response by educational resources amplifies the working intelligence of students, teachers, and parents.

Embedding capacities for immediate, intelligent response in educational resources provides enhanced learning experiences.

- Deepened understanding through quality simulations.

- Improved basic skills through use of adaptive, integrated learning systems.

- Better habits through the automatic flagging of errors in spelling, grammar, usage, and calculations.

- Superior output through regular use of on-line tools for searching, storing, analyzing, and synthesizing knowledge
  -- a Cyber Pilot.

- Complex tracking of student progress and interests, with feedback to students, teachers, and parents.

Educators will need to adapt learning goals to a situation in which the everyday tools of education amplify the capacities of all persons to spell, write, remember, organize, calculate, select, analyze, and synthesize.

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Strategies -- Intelligence
Simulations
Basic skills
Better habits
On-line tools
Student feedback
Responsiveness

Adapting the curriculum to new learning goals.

**The
edZone:**

**Responsiveness
evokes
intelligence**

Technology enabled change in educational practice occurs when new means alter the fundamental repertoire of skills that the well educated person needs to master.

Hitherto the tools of education have been illuminating, but not actively responsive. Digital technologies permit the design of responsive educational resources.

Technologies increasingly assist and amplify basic skills – the ability to spell and to write with correct grammar and diction, to calculate simple and complex functions, to categorize and remember, to diagram, to map, to annotate, even to translate.

In the edZone, where responsive tools become available to all people at all places all of the time, opportunities for the cultivation of intellect and intelligence increase and the fundamental question – What knowledge is of most worth? – will be hotly debated anew.

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Strategies -- **Communication**
Collaborative learning
Problem-solving
Mentoring
Virtual Apprenticeship
Just-in-time PD
Educational linkages

Communication

3rd

CHANGE

Flexible opportunities for communication with others, facilitating the pursuit of curiosity and the construction of meaning.

People must make their knowledge meaningful in their lives, which they do by communicating with each other. Good digital technologies will allow students, teachers, and parents to engage more easily and widely in communicating about the significance and value of their educational work.

- Fuller use of opportunities for collaborative learning.

- Enhanced problem-solving as students can reach beyond the classroom and school for input and answers.

- Mentoring across age groups.

- Constructivism as a group endeavor becomes fully feasible.

- Improved teaching through just-in-time professional development and consultation with experts on-demand.

- Linking the school, the home, and the community in a shared field of educational interaction through the edZone.

Educators will need to transform the school into a communications hub, not a closed circuit.

Educating the whole person by the entire city.

Strategies -- Communication
Collaborative learning
Problem-solving
Mentoring
Virtual Apprenticeship
Just-in-time PD
Educational linkages

**The edZone links the school, the home, and the community
in a shared field of educational interaction.**

Traditionally schools and classrooms have been closed communications systems. So too the family. The result fragments educational work, making it hard for teaches, parents, and the public to join together in a shared effort.

Students experience this fragmentation as alienating, with education becoming a series of things that different groups and institutions seek to do to them.

Communication between school and home is awkward and creates a significant overhead draining the educational effort that each can sustain.

An alternative to increased communica-tion between closed systems is partici-pation by each in a shared, common field of educational interaction, the edZone. Coordination is spontaneous when all have the same resources and tools.

Students can better take responsibility for their education, able to explain their choices when they know that all have access to the same field of interaction.

Working with shared tools and resources, the school, home, and community can communicate through a fluid collaboration, not a mutual distraction.

Towards educational justice

in a cultural democracy.

The edZone provides all students with educational resources of great power and depth.

4th Grade
(2002-2003 and on)

New York City school population scores roughly the same as the rest of the State.

8th Grade
(2006-2007 and on)

All New York City 8th grade students pass the intermediate-level assessments in English, mathematics, science, and social studies.

12th Grade
(2010-2011 and on)

All New York City seniors graduate with Regents diplomas.

Equipped to succeed,
all students should graduate successfully.

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edZone Practice -- Goals
Educational Justice
Cumulative Education
Purposive Study

Cumulative educational experience.

Traditional schooling has been sequential, a progression from grade to grade.
In the edZone, education becomes cumulative,
an expansive mastery of resources in the culture.

The physical condition of books forces educational experience to be sequential. The mechanics and scale of books further accentuates the division of knowledge into discrete subjects.

Students must leave curricular materials for each year behind as they move to the next grade.   Students do not have the knowledge resources at hand to easily review, compare, or anticipate work slotted for some other time.

The curriculum becomes a set of discrete subjects, experienced in a strict order, the curricular scope and sequence.

All the resources of the edZone are available to any student from any place at any time. As a result, students can more easily build on the interconnectedness of experience and leaning, over time and across subjects.

Students easily draw on knowledge and ideas they experienced in prior grades in working on current problems. They can reach ahead when sudden insight shows where a questions might lead.

The edZone displaces curricular scope and sequence with a more powerful resource -- a cumulative curriculum.

Continuity with Learning Standards.

edZone Practice – Learning Standards
English Language
Social Studies
Mathematics—Science—Technology
The Arts
Other Languages
Physical Education & Career Development

Learning standards indicate the intellectual agenda that students should engage and master.

The standards and the resources requisite for meeting them should become a public reality, manifest in the cultural experience of all people at all times and all places.

The standards are not merely delegated to the school, closed within it and irrelevant to the rest of life. The conduct of life – the level of disciplined intelligence, judgment, and discourse expected in politics, business, the media, and personal conduct – should routinely excel the standards at their best.

The standards indicate the intellectual tools and resources students should be able to use with competence in addressing questions and problems of importance.

All students, teachers, and parents should continuously command usable, comprehensive resources supporting attainments that excel the standards. Student tracking and feedback should map achievements relative to the skills and capacities that the standards define.

edZone Practice – Using the edZone
All Grades
Grades K through 5
Grades 6 through 8
Grades 9 through 12
School to College
School to Work

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Using the edZone
All Grades.

Engagement

The edZone provides full access to the Learning Standards and the *Resource Guides* for each subject and to digital libraries of materials correlated to its scope and sequence.

It comprises clear, concise multimedia modules explaining the concepts and principles encompassed within the standards.

The edZone poses the powerful, generative questions motivating the advancement of knowledge within the scope and sequence.

Intelligence

Across the range of the Learning Standards, the edZone provides sustained simulations, engaging participants in using the techniques of the relevant disciplines and professions to create knowledge and know-how.

The edZone continuously provides tools to exercise and develop basic skills.

The edZone will map a user's work relative to the scope and sequence and provide feedback about its quality relative to the learning standards.

Communication

The edZone serves as an educational communications hub, enabling –

- Students to collaborate in and out of school on difficult problems.

- Patterns of interaction in which older students mentor younger students in their studies.

- Broad participation in contests, quests, affinity groups, and interest driven learning.

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Building the edZone – Pedagogical Requirements
Student Requirements
Teacher Requirements
School Requirements
Parent Requirements
General Requirements

Pedagogical requirements.

Educators using technology to improve education, not technologists using education to improve technology.

Technological specifications – processing power, bandwidth, server capacity and through-put, etc. – should suffice to support full use of the Education Zone by all members of the City's educational community.

Providing the pedagogical requirements set by the Board to implement its educational plan should be an absolute priority that all bidders must meet in implementing the Board's technology plan.

- Tools for students must provide them with full control over their educational activities.

- Tools for teachers must enable them to interact effectively with each of their students, and their parents, individually and in groups, about all aspects of a student's educational work.

- Tools for schools must enable the school to serve, 24/7, as a communications hub for everyone connected with it.

- Tools for parents must engage them in the educational life of their children and offer adult educational resources, making the school an effective center of community learning.

Building the edZone – Pedagogical Requirements
Student Requirements
Teacher Requirements
School Requirements
Parent Requirements
General Requirements

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Pedagogical power –
the key to success.

It is worth investing in technologies sufficiently powerful to ensure that the edZone serves students, teachers, parents, and the whole City well.

- The comparative advantage in a portal sponsored by the Board of Education, relative to typical commercial portals, lies in the quality of its educational services. Users will stick with the portal and return to it regularly if they experience it as a compelling educational resource.

- The Board can leverage its huge scale by setting its standards and aspirations higher than smaller competitors can. The scale of participation is likely to be a function of the quality of the educational experience the edZone sustains.

- Open source development techniques and an open source business model should enable the creation of high quality content and powerful software tools at minimum costs.

- The edZone can set itself apart from alternatives through continuous, exacting peer-review of content and pedagogy.

Building the edZone – Civic Commitments
Higher Education and the Professions
Government – Business – Labor
Philanthropy, Religion, and Art
Journalism and the Media
Sports and Entertainment
Communities and Leadership

Commitments

**The
Smart
City**

An achievement
to which
all
contribute.

In a system where students are players and teachers are coaches, the whole community must join in as supporters and fans.

- Higher Education – Knowledge in the people's service.
- Professions – Expertise in the service of children and youth.
- Government – Making intelligent connections for all.
- Business – Volunteering for educational excellence.
- Labor – Solidarity supporting the dignity of creative work.
- Philanthropy – Resources where they count.
- Religion – Cultivating value and dedication.
- Art – Creativity making meaning through the City.
- Journalism – Information serving the pursuit of possibility.
- New Media – Design for living and learning.
- Sports and Entertainment – Get smart. Get with the message.
- Communities – Diversity makes the City work.
- Leadership – Educational vision and the future of New York.

The edZone is a work of the City as a whole.

Education –
by, for, and through the City.

Building the edZone – Civic Commitments
Higher Education – the Professions
Government – Business – Labor
Philanthropy – Religion – Art
Journalism – the Media
Sports and Entertainment
Communities – Leadership

The edZone transforms the conditions of teaching and learning by making high-quality educational tools and resources ubiquitous and continuous throughout the City. The school ceases to contain the educational program, as that program comes to contain the school, the home, the community, the entire City.

With this change, the educational responsibilities of the diverse components of the City become more visible and explicit. All sectors of city life participate in the work of education and become accountable for the quality of their contributions.

The question ceases to be the old, rather divisive issue – what does business, or the press, or one or another community group, think the schools should do or stop doing. The question becomes more practical and participatory – how can business, or the press, or one or another community group, work through the edZone to help the progeny of the City develop its fullest potentials?

It will take much experimentation and effort to find all the ways different groups can answer this question with effect.