

**Office of the Vice-President
Domestic Policy Office**

Old Executive Office Building
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Washington, DC 20501

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To:	Andy R	From:	Jim Kohlenberger
Fax:		Pages:	x66223
Phone:		Date:	
Re:			

Andy,
Attached is the list of participants for
Tuesday's CEO Forum mtg in room 276
at 11:00.

Jim

1999 Annual CEO Forum Executive Meeting
Senior White House Staff Briefing
Tuesday, October 19th, 11:45am
Old Executive Office Building

Alan Weis
President & CEO
Advanced Network & Services, Inc.

George Vradenburg
Senior V.P. of Global Strategic Policy
America Online, Inc.

Lynn Silver
National Strategic Relations Manager
Apple Computer, Inc.

Michael Lorion
Vice President, Education Division
Apple Computer, Inc.

Morrison Webb
Executive V.P., External Affairs &
Corporate Communications
Bell Atlantic Network Services, Inc.

Rod Odom
President
BellSouth Business

Mark Root
Project Director
CEO Forum on Education & Technology

Ken Kay
Executive Director
CEO Forum on Education & Technology

Don Weatherson
V.P., Government, Education & Medical
Marketing
Compaq Computer Corporation

Claudia Mansfield Sutton
Vice President of Public Affairs
Computer Curriculum Corporation

Ronald Fortune
President & CEO
Computer Curriculum Corporation

Kevin Rollins
Vice Chairman
Dell Computer Corporation

Don Baer
Senior V.P.
Discovery Communications, Inc.

John Hendricks
Founder, Chairman & CEO
Discovery Communications, Inc.

Sean Rush
General Manager, Global Education
Industry
IBM Corporation

Therese Crane
President
Jostens Learning Corporation

Julien Studley
President & CEO
Julien J. Studley, Inc.

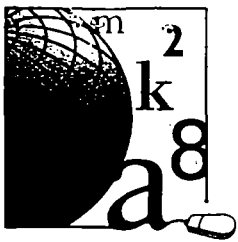
T. Michael Nevens
Director
McKinsey & Company

Don Cameron
Executive Director
National Education Association

Anne Bryant
Executive Director
National School Boards Association

Jeanne Hayes
President & CEO
Quality Education Data, Inc.

Alan Spoon
President
The Washington Post Company



CEO Forum
on Education & Technology

MEMORANDUM

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TO: CEO Forum Executives
FROM: Ken Kay, Executive Director
Mark Root, Project Director
DATE: October 18, 1999
RE: Meeting with senior White House staff

Subject

Meeting with senior White House staff

Purpose

- To brief the administration on both the Teacher Preparation STaR Chart initiative and the Year 3 Report on Digital Content;
- To enlist the administration's support in launching both initiatives; and
- To get an update on some of the administration's new ed/tech initiatives.

Date & Time

Tuesday, October 19, 1999
11:45am – 12:40pm

Place

Room ?????, Old Executive Office Building

Participants (bios attached)

1. Jim Kohlenberger, Vice President's Senior Policy Advisor
2. Tom Kalil, Senior Director to the National Economic Council

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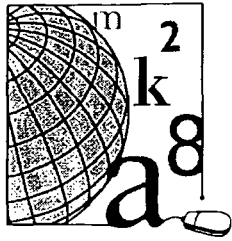


Summary of CEO Forum Initiatives

The following is a brief summary of each of the CEO Forum's initiatives:

About the CEO Forum: The CEO Forum on Education & Technology is a unique partnership of business and education leaders who are working together to help ensure that every child in the U.S. is equipped with the essential technological, critical thinking, and communications skills necessary to meet the challenges of the 21st Century.

- I. **The Year 1 Report on Hardware & Connectivity:** The CEO Forum's first report was published in 1997 and dealt with the issue of hardware and connectivity in K-12 schools. As part of this report, the Forum released its first iteration of the School Technology and Readiness (STaR) Chart (see below).
- II. **The STaR Chart:** The School Technology and Readiness (STaR) Chart is a self-assessment tool that helps elementary and secondary schools measure their level of technology readiness across the four pillars of education technology: hardware, connectivity, content, and professional development. The STaR Chart has been widely accepted by the K-12 education community as a helpful guide and planning instrument.
- III. **The Year 2 Report on Professional Development:** The CEO Forum's most recent report was released in February of this year and focused on the topic of professional development. The report has been widely disseminated to the K-12 education community and has been highly instrumental in getting schools to focus seriously on the need for more and better teacher training. As part of the report, the document contained an updated version of the STaR Chart.
- IV. **The Year 3 Report on Digital Content:** Work is currently well underway in completing the Forum's Year 3 Report on Digital Content. This report, due out in February/March of 2000, will help schools better understand the unique nature of digital content and the its many implications for educational use. (See attached.) As part of the report, the document will contain an updated version of the STaR Chart.
- V. **The Teacher Preparation STaR Chart:** The Teacher Preparation STaR Chart is a new self-assessment tool from the CEO Forum designed to help higher education institutions measure their level of readiness in preparing tomorrow's teachers to use technology. The chart is near completion and is due to be released in November/December of this year. (See attached.)
- VI. **The Year 4 Report on Outcomes & Assessment:** The CEO Forum's fourth and final report is due out in 2001 and will focus on the subject of outcomes and assessment and how technology is impacting student learning. As part of the report, the document will contain an updated version of the STaR Chart.



CEO Forum
on Education & Technology

Overview of the Teacher Preparation STaR Chart Initiative

Purpose

The purpose of the Teacher Preparation STaR Chart is to provide higher education institutions with a self-assessment tool they can use to assess their College of Education's level of readiness in preparing tomorrow's teachers to use technology.

Rationale

With an estimated two million new teachers entering the workforce over the next decade, it is essential that they be adequately prepared to use technology. This fall, the U.S. Department of Education reinforced this priority by launching a new grant program called Preparing Tomorrow's Teachers to Use Technology (PTTT). As a result, \$75 million in grants were awarded to 224 higher education institutions, school districts, and non-profit organizations to develop programs to address this need.

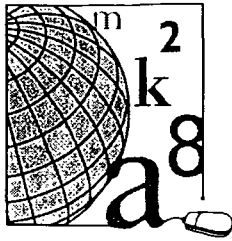
Possible Impacts

While the primary purpose of the Teacher Preparation STaR Chart is to serve as a self-assessment tool, the following are some possible impacts it could have on higher education institutions:

1. Colleges of Ed could use the self-assessment tool to help make a better case for greater parity among the other colleges within their institution;
2. K-12 school districts could make better hiring decisions about which higher education institutions to draw from; and
3. Students entering college could make more informed decisions about which institutions to attend.

Outreach Effort and Release Date

Over 50 individuals from higher education, K-12 school districts, and other organizations representing these constituencies have been involved in providing direct feedback on the Teacher Preparation STaR Chart initiative. The final product is scheduled to be released in November/December of 1999.



CEO Forum
on Education & Technology

Overview of the Year 3 Report on Digital Content

Purpose

The purpose of the Year 3 Report on Digital Content is to help the K-12 education community (i.e., school board members, superintendents, teachers, and parents) better understand the unique nature of digital content and the implications it can have on learning.

Rationale

When the CEO Forum was founded in 1996, the group decided that an annual report would be written on each of the four pillars of education technology: hardware, connectivity, content, and professional development. Now that the topics of hardware/connectivity and professional development have been covered by Forum's first two reports, it is time to ensure that they are being supported by the expanded resources and capabilities digital content has to offer.

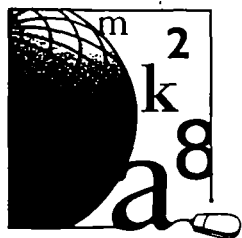
Educational Benefits

In comparison to more traditional content resources (e.g., textbooks, videos, film strips, etc.), digital content offers the following educational benefits to teachers and students:

1. Increases immediacy and relevancy of learning;
2. Improves student motivation through interactive learning;
3. Enables individualized learning;
4. Creates new communities of learners through collaboration;
5. Facilitates immediate feedback;
6. Encourages learning anytime, anywhere;
7. Promotes equity and access to information for all students;
8. Fosters student exploration and discovery;
9. Empowers students and teachers to be creative content producers as well as consumers; and
10. Inspires a collaborative learning environment and more robust roles for teachers and students.

Outreach Effort and Release Date

Over 40 individuals from the K-12 education and content development communities have been involved in providing direct feedback on the draft work that has been conducted so far. The final report on digital content is scheduled to be released in February/March of 2000.



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MEMORANDUM

TO: CEO Forum Executives
FROM: Ken Kay, Executive Director *KK*
Mark Root, Project Director *MR*
DATE: October 12, 1999
RE: Update on Teacher Preparation STaR Chart Initiative

Background

Since the fall of 1996, the CEO Forum has made significant contributions to helping K-12 educators understand, plan for, and assess their progress in integrating technology into their schools. At a meeting with members of the Senate and Secretary Riley last year, you agreed to embark upon a new project to help the nation's Colleges of Education better prepare tomorrow's teachers to use technology. This memo is intended to update you on this new initiative being called the "Teacher Preparation STaR Chart."

The Teacher Preparation STaR Chart is designed to provide teacher education programs with a set of benchmarks against which they could measure their progress in integrating technology. It would also provide a set of goals towards which Colleges of Education would be encouraged to strive. Building on the proven structure of the K-12 STaR Chart, the Teacher Preparation STaR Chart would also serve as a self-assessment tool for Colleges of Education to use in measuring their levels of teacher preparation from "Low Tech" to "Target Tech."

Staffing

The Teacher Preparation STaR Chart initiative is being directed by Mark Root of Infotech Strategies. A separate Working Group of CEO Forum members, chaired by Lynn Silver of Apple Computer, has been meeting for the past six months to guide the project. Kathleen Fulton of the University of Maryland has been serving as the consultant to the initiative and has developed the attached drafts of both the STaR Chart and Narrative.

Process

An Outreach Meeting was held in August for the purpose of receiving feedback and input on the STaR Chart from the higher education and K-12 communities. The session proved to be very helpful in validating certain aspects of the work as well as highlighting areas that needed further attention.

Target Issues for Discussion

In addition to general comments on the attached STaR Chart and Narrative, we would also like you to discuss the following issues:

1. Overall, is the STaR Chart and the recommendations found on Page 8 of the Narrative stringent enough for Colleges of Education?
2. State certification requirements are an important lever for change but they can vary greatly. Do we want to encourage national technology standards for all new teachers?
3. Teacher preparation institutions complain that they do not received technology funding from the government or private sector comparable to what is given to the K-12 community. Do we wish to encourage a higher percentage be given to teacher education, due to the crisis they face, or will this be seen as an indirect solution that drains needed support for elementary and secondary schools?
4. Colleges of Education often point to the fact that the blame falls on them for poorly prepared teachers when, in fact, much of the education that teacher candidates receive (in some cases 75% of courses) are taken in academic subjects in other departments or colleges. How can we deal with this issue?
5. Some say teacher education, like much of higher education, may change radically under the competition of online training provided by commercial ventures. Should this competition be encouraged?

Roll-Out

The Teacher Preparation STaR Chart is scheduled to be released in November/December of this year. Efforts are already underway to try and involve Secretary Riley and/or Vice President Gore in participating in the announcement. Overtures have been made to both offices, and podesta.com will be responsible for coordinating public relations around the launch. A separate memo has been included in this briefing book outlining this roll-out plan.

CEO Forum on Education & Technology Teacher Preparation STaR Chart Narrative

Background

Over the past two years, the CEO Forum on Education & Technology has made significant contributions in helping K-12 educators understand, plan for, and assess their progress in integrating technology into their schools. The 1999 Year 2 report, *Professional Development: A Link to Better Learning*, included a series of recommendations to help ensure that teachers are well prepared to guide today's students to future success. While several recommendations focused on continuing professional development of teachers, the very first recommendation highlighted the importance of building a strong foundation of technology expertise in the initial preparation of all new teachers:

Recommendation #1: Schools of Education must prepare new teachers to integrate technology effectively into the curriculum.

Target goals for this recommendation were:

- National accreditation standards for schools of education should require that schools of education prepare new teachers and administrators to integrate technology into the classroom by 2000;
- Schools of education should provide faculty with the tools, incentives, and on-going professional development they need to integrate technology into the teacher training curriculum by 2001;
- New teacher and administrator licensure and certification programs should require proficiency integrating technology into the curriculum by 2003; and
- Technology funding for schools of education should be increased.

The Crisis of Preparing a New Generation of Teachers

The nation will need over 2.2 million new teachers to fill the nation's classrooms in the next decade, at rate of approximately 200,000 per year. Where will they come from? What will they need to know to be effective teachers? Many of the skills and understandings tomorrow's teachers need are those that teachers have always needed—deep knowledge of content in the field, a thorough understanding of learning and what it takes to make it happen, a sincere affection for children and commitment to nurturing the best that each can be, and a love of learning that is shared with all students. But, as we enter the new millennium, it is clear that these skills aren't enough. Teachers preparing students to succeed in the Digital Age must themselves be facile in working with technology as a tool to engage students and enhance their learning. If new teachers are not prepared to enter the classroom ready to teach with all the instructional tools of the trade—including those technology has made available—their professional education is incomplete. School systems must then play catch-up in providing remedial training for what should be the most technologically-ready generation of teachers.

Over the last decade, reports have sounded the alarm: new teachers are not entering the classroom well prepared to use technology. In a definitive report to Congress in 1995, *Teachers and Technology: Making the Connection*, the Office of Technology Assessment stated:

Despite the importance of technology in teacher education, it is not central to the teacher preparation experience in most colleges of education in the United

States today. Most new teachers graduate from teacher preparation institutions with limited knowledge of the ways technology can be used in their professional practice. (OTA, 1995, p. 2)

Businesses, foundations, and the private sector are beginning to turn their attention to this issue. In the spring of 1999, the U.S. Department of Education announced a new funding program, "Preparing Tomorrow's Teachers to Use Technology" to help Schools, Colleges, and Departments of Education (SCDEs) meet the challenge of educating teachers for the 21st century. Business, industry and foundations have also begun to respond to this challenge with special grant programs and initiatives. But, as recent surveys (AACTE, ISTE/Milken) have indicated, while some progress has been made, the problem remains. Most new teachers are not prepared to teach with technology when they enter the classroom.

A STaR Chart for Teacher Preparation

It was against this background that members of Congress, the Secretary of Education, and experts in the teacher education community encouraged the CEO Forum to develop a STaR chart for schools, departments, and colleges of education that would be as helpful to this group as the initial CEO Forum STaR charts had been for K-12 educators. Taking up this challenge, the Forum has developed this tool to:

- Provide teacher preparation programs with a set of benchmarks they can use to measure their progress in integrating technology into their programs;
- Offer explicit goals toward which SCDEs are encouraged to strive as they move from "low tech" to "high tech" in meeting target goals; and
- Draw national attention to the need for programs, policies, and funding to assure that all teachers entering the classroom are competent and confident in their ability to use technology effectively to meeting their teaching goals.

The Teacher Preparation STaR Chart was developed with the assistance of a group of stakeholders that included Education Deans, faculty members and students; Superintendents and K-12 staff; and representatives of the business community.

Key Considerations in Creating the Teacher Preparation STaR Chart

New teacher preparation with technology (Preservice) and the professional development of teachers already in the classroom (Inservice) have common elements, but present different challenges.

Higher education faces many of the same challenges for technology integration that are found in the K-12 education community. Leadership is critical. Without a vision and support for change, little will occur. Large and continuing expenditures are needed for providing and maintaining up-to-date hardware, software, and connections. Faculty need training and technical support. While these common elements occur across the K-16 spectrum, the opportunities and challenges faced by higher education provide a different environment for change than what occurs in the K-12 sector. These include, among others, a very differing set of:

- Funding streams and opportunities;
- Incentives and challenges for faculty use of technology; and
- Student experiences within and beyond the classroom.

The role of teacher education within the higher education institution is unique

Schools, colleges, and departments of education are a part of this technology context for higher education, but they have additional challenges which are unique to them. Many face major challenges in securing funding for technology from within the institution. They have a less affluent alumnae base to draw from than their sister professional schools like business or law; and are far less likely to be recipients of large gifts from donors or industry. Furthermore, many teacher education institutions are constrained in program design by such factors as:

- State certification requirements that determine the number of hours and kinds of programs they must provide for new teacher preparation;
- Program and institutional accreditation requirements for teacher education set by professional organizations such as the National Council for Accreditation of Teacher Education (NCATE);
- Local school district programs and policies that impact student teaching and field experiences; and
- State and national examinations often required of graduates for licensure, which in turn impact the kinds of courses offered in teacher preparation.

There are special opportunities for teacher preparation institutions for using technology

These same factors that influence teacher education programs should jumpstart teacher education reform through and with technology. Technology can bring new opportunities to teacher education including:

- New ways of understanding learning;
- Alternative and increased opportunities for teaching observations;
- New ways of reaching teacher education candidates located at a distance from campus; and
- Supporting new teachers during student teaching and first year teaching experiences.

But for these teacher education enhancements to occur, schools, colleges, and departments of education must be equipped with the technological infrastructure, both technical and human, that will support these improvements. How well do they meet this challenge?

Current status of technology in higher education: Where does teacher preparation rank?

While there has been regular data collection that documents the growth of technology infrastructure in the K-12 sector from both public and private sources (e.g., NCES, Quality Education Data, Market Data Retrieval) comparable surveys for higher education in general, and teacher preparation institutions in particular, are more limited:

- *The 1998 National Survey of Information Technology in Higher Education*, conducted by the Campus Computing Project (www.campuscomputing.net), using data provided by officials at 571 two- and four-year colleges and universities across the United States, provides a picture of technology in higher education. When Chief Technology Officers (CTOs) were asked to compare the information technology components of programs across campus, education schools ranked 2nd out of 10 for their use of technology for scholarship and

research. But When asked to rank how well they used technology for instruction, education schools fell to near the bottom: 7th out of 10.

Even more problematic were the CTOs responses to the question: How well are your schools preparing students with the technology skills needed over the next decade? Business and engineering schools ranked highest in producing prepared students, and education schools were again picking up the rear, ranked 7th out of 10 for preparing graduates for the technology skills they needed for their profession (SIIA 1999, p. 24).

A national surveys conducted in 1996 by the American Association of Colleges of Teacher Education (www.aacte.org/techsum.html) and one by the International Society for Technology in Education for the Milken Foundation (www.milkenexchange.org) provide a snapshot of technology in teacher education programs but they give a limited picture of infrastructure, funding, and use. Both reports acknowledge limitations in responses to subjective questions, submitted by a heterogeneous group of respondents with variable access to information needed to complete the surveys. Nonetheless, the data from both these reports suggest that, like the K-12 environment, advances in building the technical infrastructure in SCDEs have not been reflected in a comparable level of integration of instructional technology tools into teaching and learning activities.

Description of Teacher Preparation STaR Chart: The Categories

University leadership and support for technology

Schools, Colleges and Departments of education do not exist in a vacuum—they are part of the larger university context. If technology is in place, and the college or university as a whole is committed to integrating technology in all aspects of teaching and learning on campus, the SCDE will be far better positioned to assure that technology is a part of the learning environment for their students. But this leadership must translate into support for the teacher preparation program as a model for instruction for the campus, with budget expenditures reflective of this support. Most SCDEs receive over half (54%) of their funding from the institution as a whole.

Institutional support, from the President, the provost, the chief Information Officer, and other college deans, is critical.

Leadership in the Teacher Education Program

Just as the principal provides the vision for K-12, the Dean sets the tone for what will occur in the SCDE. He or she, and the department chairs and directors of teacher education who lead key units in the program, must be committed to using technology as a catalyst for reform if technology is to be integral to the visions for the future. The first step is a strategic plan that incorporates a vision in which technology is the catalyst that sparks broader goals of the teacher education program. This plan must be backed up by a line item budget for technology, something that is missing in some SCDEs. Overall, the teacher preparation institution kicks in, on average, only 9 out of every hundred dollars spent on technology. Those Deans and department chairs who make technology a priority commit more of their budgets to technology, and are more aggressive in seeking additional funding from private sources and grants.

Additionally, policies that provide incentives for faculty to learn about, experiment with, design and deliver technologically supported instruction send a message that technology use is valued as a component of professional practice. These policies must, in turn, be backed up by

resources and support that give faculty the tools they need, when they need them, and the assistance necessary to use them most effectively.

Partnerships with K-12 enhanced with technology

Teacher preparation programs that are moving forward with technology integration find that partnerships with the K-12 sector are critical in making possible a two-way flow of expertise and experience between faculty in teacher education and K-12 teachers in the classroom. By working closely with K-12 classrooms, teacher educators gain a better understanding of the ways technology is impacting student learning, and the kinds of tools that today's teachers employ as a part of their instructional repertoire. This interaction helps to assure that they instill in their teacher education students the skills and understandings relevant to the reality of the classrooms they will enter at the completion of their teacher preparation program.

Meeting standards

All education today is driven by standards, and teacher preparation is no exception. States determine standards that new teachers must meet in order to be certified; increasingly, these include standards related to technological expertise. Teacher education programs also must meet standards set by state and regional accreditation boards. Those institutions seeking national accreditation by the National Council for the Accreditation of Teacher Education (www.ncate.org) must meet technology expectations they have established. NCATE standards now require that accredited schools of education provide adequate access to computers and other technologies, and expect faculty and students to be able to use it successfully.

Technology resources in Schools, Colleges, and Departments of Education

The SCDEs should provide equitable and ubiquitous access for all faculty and students in the program, including those participating from off-campus sites. One or two wired classrooms or labs will not meet the teaching, research, and communication needs of the teacher education community. This does not mean that every classroom must be designed as a computer lab or that every faculty office be outfitted as a multimedia research facility; rather, innovative solutions should be considered such as making available portable computers with wireless telecommunications access when it is appropriate to use these resources for teaching activities, and setting up centralized research facilities for faculty and student use on an as needed basis.

The AACTE study (1997) found that, in most SCDEs, the ratio of students to computers is approximately 10 to 1, higher than the 7 to 1 ratio of students to computers in higher education overall (Green, 1997), or the 6 to 1 ratio now found in K-12 schools. Faculty have better access, but it is surprising to see that not every full-time faculty member in schools and colleges of education has access to a computer. (AACTE reported a ratio of slightly below 2 to 1). While close to 11% of higher education institutions require or strongly recommend microcomputer ownership for students in specific disciplines or programs (Green, 1997), less than 2% of those SCDEs responding to the AACTE survey (fewer than ten institutions) required that their teacher education students purchase a computer. (AACTE, p. 16)

Faculty Development and Support

Teachers teach as they were taught, and teacher educators teach new educators the way they themselves were educated. Teaching with technology is not the way most faculty in colleges of education were trained to teach. SCDEs face a huge challenge in getting teacher education

faculty up to speed with technology. Many have found it necessary to develop a faculty development program that offers multiple professional development opportunities, going beyond formal workshops to include one-on-one coaching, mentoring from peers, and informal “show and tell” curricular visions and supportive “hand-holding” opportunities from more accomplished colleagues. Some institutions have recruited students to serve as “technology teaching assistants” to faculty, similar to the Generation WHY model (kids.osd.wednet.edu) that has proven a successful model for teacher technology support in K-12 classrooms. And, when problems occur, friendly, skillful technical support must be there at the ready.

Furthermore, a different set of incentives are necessary to encourage faculty to take the time to learn technology and change their teaching approaches in order to use it most effectively. Unless hiring, promotion, and tenure decisions recognize innovative teaching and development activities with technology, faculty find it difficult to take time away from the pressure to “publish or perish” necessary to advance their professional careers.

Curriculum

While it is important to assure that education students have learned the basic skills of technology, research confirms (Milken/ISTE, 1999) that stand-alone technology classes may not provide the best way to assure that these skills are integrated in one’s teaching repertoire. Today, most teacher education institutions have specific information technology course requirements (85% in the Milken/ISTE study), but the majority of these are introductory technology classes. As this study noted:

...the possibility remains that stand-alone IT course are generally not an efficient way to help new teachers use technology in schools. The ISTE/NCATE standards recommend that teacher candidates “complete a well-planned sequence of courses *and/or experiences*” (emphasis added) that will help them understand and apply technology in education. About half the IT instruction teacher trainees receive is delivered as part of other courses and...these “experiences” are more highly correlated with technology integration than are hours of IT-specific coursework...If we want to encourage the use of technology as a tool for learning and problem solving, it makes sense that we would want teaches to model this activity for students at all levels and in all appropriate contexts.” (p. 23).

This must include appropriate technology integration in the courses teacher education students take in the content areas outside the SCDE, which, in some institutions, accounts for up to 75% of the teacher education program.

Field and Student Teaching Experiences

The ISTE/NCATE standard that calls for a “well-planned sequence of courses and/or experiences” includes the program of student classroom observations and practice teaching experiences. Many new teachers consider these the most important learning experiences in their teacher preparation program. Student classroom observations should provide opportunities to observe the integration of technology in teaching and learning in K-12 classrooms. Some of these observations can be enhanced by technology, as when video links bring the K-12 classroom into the SCDE classrooms, a setting in which a wider range of classroom observations can be offered to students. Using technology, these classroom “reality checks” can be viewed, recorded for continual review, analyzed and discussed with input from

both the teacher education faculty and the cooperating K-12 teacher. Wherever possible, student teaching and practicum experiences should also be chosen for opportunities where the teacher candidate will be exposed to classrooms where supervising teachers demonstrate best practices in technology integration, where a range of technology resources are available, and where the student teacher can design and deliver instruction which incorporates technology as a learning and problem-solving tool. Here too, technology can be an added resource to enhance the student teaching experience, as a tool that can help support on-going supervision and mentoring.

Faculty Competence

As faculty increase their confidence and skill in using technology, they move through a series of stages similar to what the Apple Classrooms of Tomorrow (ACOT) identified as levels of teacher expertise in K-12 classrooms. These are defined as:

- Entry: Educators struggle to learn the basics of using technology;
- Adoption: Educators move from the initial struggles to successful use of technology on a basic level;
- Adaptation: Educators move from basic use to discovery of its potential for increase productivity (e.g., use of word processors for student writing or Internet for research);
- Appropriation: Having achieved complete master over the technology, educators use it “effortlessly” as a tool to accomplish a variety of instructional and management goals; and
- Invention: Educators are prepared to develop entirely new learning environments that utilize technology as a flexible.

Faculty Use of Technology

This growing confidence and technology competence of faculty is reflected in the ways they use technology. As they become more expert, they use technology regularly as part of their teaching, research, communication, and personal productivity. They are able to “think with technology” as they design new ways to solve learning problems their students have faced in the past. As creators of technology applications and solutions, they model the kinds of skills their teacher education students will need as they move forward in increasingly technologically supported classrooms.

Students’ Technology Competency and Integration

Increasingly, state standards are raising the bar for the technology skills required of new teachers before they can be certified to teach. While many of these certification requirements are defined in terms of a certain number of courses taken or credit hours, new initiatives are developing performance based measures in which teacher candidates must demonstrate their technological competence in context. Thus the ultimate measure for the success of a SCDE in providing effective training in technology skills and integration is the pass rate of their graduates in meeting these standards. Furthermore, as school districts recruit candidates with advanced technology skills, the marketplace for hiring of graduates will be another important measure of success.

For students to develop these skills, course and program requirements need to call on them to design and deliver instruction incorporating new technologies both on campus and in the student teaching experience. The AACTE survey found that 40% of institutions require their

student to design and delivery instruction on campus incorporating various technologies. Twenty-eight percent required them to design and deliver instruction during student teaching which incorporates various technologies. However, a third of preservice students were not required to incorporate technology within their student teaching, and ten percent have no requirements to incorporate it with instruction on campus. (AACTE, p. 2-3).

Recommendations

States

1. Provide resources for SCDEs appropriate to the critical needs they have for infrastructure, faculty development, and outreach activities.
2. Require demonstrations of technology proficiency for all new teacher certification.

Federal Government

1. Recognize, reward, and disseminate effective models of preparing teachers to use technology.
2. Support the development of curriculum materials for teacher education that draw on what we know about learning (brain research, etc.).
3. Support research on learning and technology.

Colleges and Universities

1. Provide resources for SCDEs appropriate to the critical needs they have for infrastructure, faculty development, and outreach activities.
2. Provide incentives for faculty work with technology in all course offered in the institution.
3. Support technology collaboration across the campus.
4. Make innovation a priority (e.g., encourage on-line courses offered beyond the campus).

For Teacher Preparation Institutions

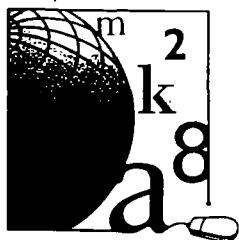
1. Integrate technology into other courses, not just stand alone classes.
2. Back up technology planning with necessary resources.
3. Focus on technology as a resource for meeting strategic goals.
4. Assure that technology is central to field experiences.
5. Provide technology as resource for distance mentoring of student teachers and first year teachers.
6. Provide multiple models of faculty support for the use of technology.
7. Provide a "technology warranty" for all teacher preparation graduates.

For K-12 School Districts

1. Require technology proficiency in new hires.
2. Offer technology fluent teachers as supervising teachers for student teachers.
3. Share expertise with SCDE faculty in two-way exchanges like Professional Development schools, collaborative teaching, offering K-12 teachers opportunities to serve as adjunct faculty in SCDE or take sabbaticals in SCDE.

For the Private Sector

1. Fund Colleges of Education on a comparable scale with that support given to business, engineering, medicine, and other professional schools.
2. Assist SCDEs with their funding needs.
3. Offer Sabbatical experiences in technology-rich environments for SCDE faculty.



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MEMORANDUM

TO: CEO Forum Executives
FROM: Ken Kay, Executive Director ^{KK}
Mark Root, Project Director ^{MR}
DATE: October 12, 1999
RE: Update on Year 3 Digital Content Report

Background

When the CEO Forum was founded in 1996, a decision was made to focus our attention on four distinct topics that would assist K-12 schools effectively use technology. The first year we dealt with the relatively straightforward subject of hardware & connectivity. In our second year, we focused on professional development and that report was just released this past February. Our Year 3 report will focus on digital content and serves as basis for this memo. Finally, Year 4 will culminate in a look at outcomes & assessment.

We are pleased to say that we are making very good progress in the development of the Year 3 report on digital content. The attached Concept Paper captures the framework for the initiative and, once we have your input and guidance, the drafting will begin.

To provide a framework for discussion, this memo includes a brief overview of the process to date as well as the target issues we would like to focus on at the meeting.

Staffing

The Year 3 Digital Content Report is being directed by Mark Root of Infotech Strategies. A separate Working Group of CEO Forum members, chaired by Claudia Mansfield Sutton of CCC and Don Baer of Discovery Communications, has been meeting for the past six months to guide the project. Michele Norman and Burck Smith, both with prior CEO Forum experience, have been serving as the consultants for the project and have developed the attached draft of Concept Paper.

Process

We have found that the topic of digital content has been the most complex the CEO Forum has faced yet. The primary challenge has been to define a manageable

scope for the project and to identify opportunities for the CEO Forum to add value to the ongoing debate about content.

The Working Group has concluded that the Forum should not attempt to evaluate specific content available, but should help people better understand the unique attributes of digital content that make it an unprecedented tool for teaching and learning.

To test our thinking and our approach, we recently hosted an Outreach Meeting involving a group of outside experts from the K-12 education and content communities. The session not only validated our thinking, but also produced some helpful insights that will make the report even more valuable to educators.

Target Issues for Discussion

In addition to general comments on the Concept Paper, we would also like to discuss three specific issues:

1. Do you think the Concept Paper defines digital content in a way that reflects technological realities and that will be helpful to the K-12 education community?
2. Do you think this document will be helpful to schools? If not, what improvements would you recommend?
3. Do the suggested CEO Forum Recommendations beginning on page 12 of the Concept Paper adequately complement the proposed report? Do you believe they represent the interests of the Forum and will be helpful to educators? Are you comfortable endorsing them?

Roll-Out

The Year 3 Digital Content Report is scheduled to be released in February/March of 2000. podesta.com will be responsible for coordinating public relations around the launch and a separate memo describing this process has been included as part of this briefing book.

**Digital Content:
Integrating Information, Technology & Learning**

Insert Date

Concept Paper

Year 3 Report
CEO Forum on Education & Technology

Inside Front Cover

[CEO Forum Member List]

The CEO Forum Four-Year Agenda

Year 1

The School Technology and Readiness Report: From Pillars to Progress (October 1997).

In our first report, we focused on the importance of integrating all elements of educational technology from hardware and connectivity to professional development and content.

- STaR Chart, a self-assessment tool for schools to gauge progress toward integrating technology to improve education.
- STaR Assessment, a benchmark measure of national progress toward integrating technology in schools.

Year 2

Professional Development: A Link to Better Learning (February 1999)

This second-year report focused on educator professional development, the foundation for effective use of technology in education.

- Ten Principles for Effective Professional Development
- STaR Chart Update
- STaR Assessment Update

Year 3

Digital Content: Integrating Information, Technology & Learning (XX 2000) This report focuses on the unique characteristics and benefits of digital content to personalize learning for all students, increase choice for all teachers and create a vibrant learning environment.

- Principles for Effective Integration of Digital Content
- STaR Chart Update
- STaR Assessment Update

Year 4

The final CEO Forum report, to be released in February 2001, will focus on educational outcomes and assessment.

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Letter from the CEO Forum Co-Chairs

Technology can be a catalyst for improvement, sometimes incremental, sometimes dramatic, yet always dependent on the energy and enthusiasm of the people who use it. Nowhere is this more evident than in schools across the country.

Today, more American schools have internal networks and access to the Internet than ever

Digital content animates information, linking it to the use of technology and the process of teaching and learning.

before. The number of schools reporting Internet

access has grown from XX to XX in just two years.¹ During the same time, the number of connected classrooms has increased from XX to XX.² In addition, 89 percent of teachers report using computers at home, and 88 percent of teachers report using computers for classroom management, lesson plans, and communications with parents and other teachers.³ Nevertheless, the hard work has just begun.

In two consecutive reports, the CEO Forum on Education and Technology has offered a snapshot of national progress as schools integrate technology into teaching and learning. We have provided data, statistics and examples of the presence and use of technology in schools as well on teacher professional development efforts around the country. Our goal has been and continues to be to help define effective ways to leverage technology as a tool to improve education and student achievement.

This year, we focus on digital content, a topic we have found to be the most complex and potentially the most significant we have considered to date. After all, connections without content are meaningless in education.

With this report, we are charting new ground. We hope to launch a new national discussion about the unique attributes of digital content that will enable unprecedented benefits for teaching and learning. We also hope to provide

a road map to ensure that those benefits effectively reach every district, school, teacher and student.

By its very nature, digital content animates information, linking it to the use of technology and to the process of teaching and learning. It creates an opportunity for education to be more interactive and individualized than ever before. In this environment, conversations about content must expand to not only include evaluation and acquisition, but also on the role of communication, collaboration, and creativity in learning.

Digital content expands the universe of material immediately available to students and teachers. Because it is malleable, it empowers teachers to tailor lessons to individual student needs, interests and abilities on a scale never before possible. It also empowers students to make important choices about their own learning, about the format for presentation of material and pace of information exchange that works best for them.

The particular challenges involved in effectively integrating digital content include:

1. Linking digital content to the curriculum;
2. Facilitating the use of digital content through school organizational structures;
3. Providing ongoing support for the acquisition, evaluation and effective use of digital content; and
4. Evaluating and assessing progress.

Clearly, the challenges are significant. We hope the following report provides schools and communities with a solid foundation for leveraging digital content in new and important ways

Ronald F. Fortune
President & CEO
Computer Curriculum Corporation

John S. Hendricks
Founder, Chairman & CEO
Discovery Communications, Inc.

Year 3 Highlights

[Two-page summary spread to be developed as report text is developed]

Section 1

Digital Content: Integrating Information, Technology & Learning

Key Message

Combined with the growing presence and use of technology and connections to the Internet in American schools, digital content provides an unprecedented platform to improve student achievement and to prepare all students for life and work in a digital world.

Setting the Context

- The question of whether technology belongs in education is no longer relevant; the presence and use of technology is pervasive in society and should be in schools.
- The ability to use technology to find, evaluate and manipulate information is valued, expected, and often demanded in the work force; schools must prepare students for life and work in a digital world.
- Technology, used well, improves motivation, enhances learning and provides necessary skills.
- The question of how to extend the learning benefits of technology to all students is relevant.
- Digital content activates and enables the segmentation of information so it becomes a malleable and flexible tool capable of effectively conveying information, learning and technology skills to a variety of learners as never before.

The Presence and Use of Technology *[Insert Statistics]*

At Home...

At Work...

At School...

From Content to Digital Content

- As education content increasingly becomes digital, schools and communities must re-examine the roles of teachers, students district leaders, parents and community.
- Schools and communities also must ask and answer tough questions about their objectives for students and about the school structures that will facilitate reaching those objectives.
- To ensure effective use of digital content, schools must
 1. Link digital content to the curriculum;
 2. Bolster digital content with changes to the organizational structure of the school;
 3. Provide ongoing support for the acquisition, evaluation and effective use of digital content; and
 4. Regularly evaluate and assess progress.

*Insert quote from outreach
participant on the use of digital
content.*

Defining Educational Content

- Educational content is anything presented to students to help them learn. It includes textbooks, filmstrips and worksheets. It also includes manipulative blocks to illustrate fractions and baking soda and vinegar to explain the properties of a gas.
- In today's technology-rich world, it also includes CD-ROMs, general-purpose web sites, interactive web sites and Internet-based project modules.

- The value of educational content (digital or not) does not come from content but from how content is used by teachers to teach and by students to learn; from how it is incorporated to facilitate student discovery.

Defining Digital Content

- Through the technological process of digitization, content becomes vastly more complex, multi-dimensional and potentially empowering for teachers as well as students.
- Digital content animates information, making it malleable and enabling teachers to bring best practices to scale by facilitating the presentation and use of information to be adjusted according to the needs, interests and varying abilities of students.
- Digital content also provides a framework that allows students simultaneously to gain practical experience with technology, learn basic skills, and develop real world capabilities such as finding, evaluating, manipulating and creating information to solve problems.
- Digital content need not replace traditional content, though as school technology infrastructures are expanded and enhanced, there may be some cost advantages that emerge in transitioning to a predominantly digital environment (e.g., distribution costs, storage costs, replication costs.)
- To ensure the benefits of digital content for education requires new attention to curriculum design and lesson planning; digital content is a new tool that requires a new approach.

Digitization

Digitization is the process by which information in any form (text, graphics, audio or video) is reduced to a single common denominator (the bit) that can be transmitted and received in a variety of formats by a variety of appliances.

Through digitization, information can be delivered to any corner of the globe and be shared synchronously or asynchronously. Digital information is malleable and can be organized, sorted and stored according to varying needs, interests and abilities. It can be accessed, searched and manipulated remotely anytime from anywhere. Digital information can also be updated and easily changes and can be reproduced and distributed at low or no cost.

Section 2

Presenting A New World of Educational Opportunities

Key Message

Digital content offers unprecedented opportunities and choices for teaching and learning in the classroom.

Setting the Context

- Digital content puts important choices and decisions about teaching and learning in the hands of teachers and students.
- Digital content expands teacher ability to identify and meet individual student learning needs by broadening the spectrum of opportunities for different kinds of learner to gain access to essential information and learning.
- Digital content creates multiple points of entry and engagement thereby extending the reach of educational benefits to the largest possible pool of students including students that are disenfranchised by learning differences and who traditionally underachieve.
- Digital content offers new pathways for creative teaching and interactive learning.

Vision

Insert scenario of the potential for learning in an environment enhanced by digital content.

Educational Opportunities

[This section will be the focal point of the report. In addition to descriptive text, we will feature statistics and real-world vignettes for each educational opportunity highlighted below.]

- ★ **Increases** immediacy and relevancy of learning
- ★ **Improves** student motivation through interactive learning
- ★ **Enables** individualized learning
- ★ **Creates** new communities of learners through collaboration
- ★ **Facilitates** immediate feedback
- ★ **Encourages** learning anytime, anywhere
- ★ **Promotes** equity and access to information for all students
- ★ **Fosters** student exploration and discovery
- ★ **Empowers** students and teachers to be creative content producers as well as consumers
- ★ **Inspires** a collaborative learning environment and more robust roles for teachers and students

Section 3

Content Integration Challenges

Context

- With every opportunity to integrate technology to improve teaching and learning, corresponding challenges emerge.
- Effectively integrating digital content requires consideration of a series of issues that will guide and effect decisions at every level from district leaders and local policy makers to school administrators and classroom practitioners.

Challenges

[Insert explanations of each issue and their role in ensuring the effective integration of digital content in schools]

- ★ Information literacy
- ★ Alignment of educational objectives, standards and available content
- ★ Identification and qualification of content
- ★ Equal access
- ★ Intellectual property protection
- ★ Copyright protection and fair use
- ★ Privacy, safety and security
- ★ Economic models – pricing, purchasing and commercialization

Information Literacy

With the proliferation of information and the increasing ability to access it anytime from anywhere, there emerges a need for students and teachers to be information literate. According to the National Forum on Information Literacy, people today must be able to recognize when they need information. They also must be able to identify, locate, evaluate and effectively use information needed to facilitate a particular decision or address a particular issue. The information literate person, therefore, is empowered for effective decision-making, freedom of choice and full participation in a democratic society.⁴

Emerging Technologies and Trends

In some cases, technology itself may provide a solution to some of these challenges.

- **Portal Services** – Advances in browser-based technology and web applications provide a new opportunity to aggregate content from multiple sources, integrate backbone systems into role-based self-service transactions, integrate workflow from multiple sources, access role-based analytical information and, if desired, facilitate commercial transactions all with single-click access. To leverage this trend to the benefit of students and schools, educators, administrators and parents must have a clear vision of the unique mission, needs and educational philosophy they wish to uphold.
- **Local, State and Federal standards databases** – Several companies and organizations are developing databases that list all educational standards and can match them to curriculum choices. [need more]

- **Portable Computing** – Following on advances in wireless technology, portable devices and the success of laptop learning in primary and secondary schools and campuses worldwide, renewed attention to infrastructure is emerging. Schools now have an opportunity to adjust their infrastructure plans to away from computers on the desk or in the lab. Today, schools can focus instead on linking students and teachers to information, providing portable points of access to a network rich with learning resources.
- **Outsourcing Administrative Systems** – Rather than maintain hardware and configure software, many schools are exploring “thin client” architectures to outsource their computing needs. Teachers and administrators enter financial, human resource, student and class information on local, cheap, or refurbished PC’s. The information is transmitted through a high-speed network and the Internet to computers located elsewhere. Schools can pay for these services on a licensing or transaction basis.
- **Others?**

Section 4

Principles for Successful Integration of Digital Content

Key Message

The effective integration of digital content requires a redefinition of the roles of teachers, students, administrators and parents as well as the organizational structures or schools.

Setting the Context

- Digital content allows schools to build more extensive collaborative learning environments in which teachers are connected with students, parents, administrators and other teachers.
- To capitalize on the opportunity, all education stakeholders -- from teacher and principal to student, administrator, business and parent -- must be involved.
- The roles and structures that characterize education today must be re-evaluated to ensure that school management, education accountability issues, decision-making processes and methods of evaluation facilitate, rather than inhibit, the effective use of digital content.

Insert quote from outreach participant.

New Roles and Responsibilities

Teachers

- Teachers are the critical link to better learning.
- With digital content, teachers have an unprecedented opportunity to make decisions about the appropriate use of content and classroom applications that will allow them to help students find individual pathways to meet learning objectives.
- To maximize the benefits of digital content, teachers need to be more involved in designing curriculum to meet specific student learning needs and must be free to leverage content to meet individual student preferences, skills, and learning styles.
- With digital content, teachers can become learning partners with their students, peers, and outside experts in a collaborative environment that promotes and encourages find identification and use of a range of appropriate resources.
- Teachers become producers of digital content, developing lessons and other material that can be posted on the Web.

Students

- Students are entering school with more technology experience and interest. They understand the range of learning options technology enables.
- With digital content, students can more easily collaborate, solving problems with peers, teachers, and outside experts from around the world.
- They become producers and reviewers of information, creating, posting and reviewing work online.
- Students can be information explorers uncovering layers of information on a subject or lesson more easily.
- Students become teachers and partners in the learning process, developing more confidence, independence, and responsibility for their own progress in learning.

District Leaders: Administrators, School Board Members, PTA members and Others

- As technology opens new opportunities to fulfill individual teacher and student needs, district leaders must carry the banner in the community for the integration of technology.
- They must provide ongoing support and the resources necessary to enable the use of digital content.
- District leaders must be decision-makers, facilitators, guides and advocates. They must lead the community team.

Parents and Community

- Parents, as they are the first line of support and encouragement for their children's learning.
- With digital content, parents can access school material as never before and can engage on a new level both with their children and with teachers.
- Digital content facilitates the creation of a learning community that extends beyond school walls.
- Members of the community can better participate and stay up to date.

Content Producers

- Digital content provides an opportunity for content producers to better partner with educators in the development of educational material.

CEO Forum Principles for Effective Integration of Digital Content

[Insert text and vignettes for each of the principles]

- The CEO Forum believes there are four essential objectives that must be met to ensure the effective integration of digital content in education:
 1. Link digital content to the curriculum;
 2. Facilitate the use of digital content through school organizational structures;
 3. Provide ongoing support for the acquisition and effective use of digital content; and
 4. Regularly evaluate and assess progress.
- Corresponding to each of these objectives, the CEO Forum offers the following guiding principles.

Link digital content to the curriculum.

- Identify learning objectives, not only for the school but also for individual students
- Tailor the acquisition and use of digital content to meet state and local standards
- Ensure leadership and commitment at the highest levels

Facilitate the use of digital content through school organizational structures.

- Develop new organizational structures within the school to facilitate discussions and decisions about content and its effective use (e.g., cross-disciplinary, cross-grade teacher working groups)
- Develop structures (e.g., committees, practitioner review boards) that allow teachers to efficiently identify, evaluate and test potential content
- Provide time for student and teacher collaboration (e.g., longer classes)
- Provide time and incentives for teacher and student content creation (e.g., teacher stipends, student awards)
- Develop partnerships with industry and the community.

Provide ongoing support for the acquisition and effective use of digital content.

- Include a budget line for digital content integration
- Invest in professional development for teachers and administrators
- Create a central repository for content created and collected
- Provide technical guidelines to ensure school network interoperability and availability of support
- Establish discretionary budget to enable teacher flexibility in purchasing content

Regularly evaluate and assess progress.

- Set benchmarks and develop a plan
- Establish and regularly apply relevant student and teacher assessment mechanisms
- Regularly evaluate and adjust digital content integration plan

Section 5

CEO Forum Recommendations

Key Message

Every segment of the education community must act to ensure that digital content creates a vibrant learning environment in which every student has an equal opportunity to improve performance.

Context

- The CEO Forum believes that implementing the following recommendations is essential to ensure the effective integrating digital content in American schools.
- The list of recommendations is not comprehensive, but rather captures the actions the Forum believes are fundamental.

CEO Forum Recommendations

[The following are options for CEO Forum recommendations]

Teachers

- Develop a strategy for assessing individual student abilities, skills and learning styles.
- Benchmark student performance as a measure of self-improvement as well as progress toward traditional learning objectives.

Students and Parents

- Pledge to understand and uphold school principles concerning the use of digital content at school and for school projects.

District Leaders, Administrators, School Board Members, PTA Members, Others

- Develop and implement a technology literacy strategy for teachers and students that will ensure that they not only recognize when information is necessary, but that they are able to identify, locate, evaluate and effectively use it to facilitate decisions or address particular issues.
- Take steps to ensure that teachers are aware of how to evaluate, acquire and use digital content.
- Incorporate teachers into district technology buying and curriculum decisions
- Solicit and catalogue teacher information needs
- Develop a range of incentives and performance measures for teachers and students that encourage and reward innovative uses of digital content.

**Insert quote from
outreach participant**

Content Producers and the Business Community

- Provide all new educational content in digital as well as non-digital format.
- Form an alliance with educators and the government to develop a strategy for cataloguing available digital content and for converting traditional content to digital form.
- Work with the education community to define and develop market relationships and economic models that will function more like the commercial market.
- Create templates that will promote best practice in the integration and use of digital content.
- Develop models that will allow teachers to develop effective digital content according to specific needs (digital content scaffolds)

Government

- Invest in research on the impact of digital content on student academic performance and job readiness.
- Participate in an industry/education/government alliance to develop a model for organizing and evaluating content.
- Work educators and representatives of the business community to develop a strategy for cataloguing available digital content and for converting traditional content to digital form.
- Consider appropriate opportunities to require content producers to provide educational material in digital as well as non-digital format.

CONCLUSION

[To be developed as text is finalized]

APPENDIX A

Understanding Content

[Two-page spread to be inserted in report, location to be determined]

Context

- An understanding of the unique value of digital content begins with an understanding of how digital content differs from traditional content.
- That begins with an understanding of the categories and configurations that characterize content, digital or not.

Categories of Content

- There are essentially four categories of content which are determined largely by the source of the information:

Original Material. This covers original data sources. Included in this category are eyewitness accounts, original film footage, raw data, original writings, photographs, interviews and public records, etc.

Interpreted Material. This covers typical resource publications and original material prepared or packaged for general purposes and consumption. Included in this category are documentaries, non-fiction books and journals, studies, news reports, compendiums, published research, digitized magazine archives, etc.

**Insert quote from
outreach participant.**

Educational Material. This covers original and interpreted material explicitly prepared or packaged for curricular purposes and consumption. Included in this category are basals, worksheets, flash cards, textbooks, study guides, etc.

Operational and Administrative Material. This covers material produced to inform the use of the other three varieties of content as well as material used to conduct the business of education. Included in this category are curriculum guides, standards lists and databases, lesson plans, assignments, assessments, rubrics, benchmarks, local school information, community information, etc.

Content Configurations

- Content configuration refers to the way in which it is organized for teacher and student use.

- Content configuration determines the possible levels of student and teacher interaction with information.
- There are four basic categories of content configuration:

Presentation. Included in this type of configuration are linear books, linear multi-media, etc. The learner is limited to being a recipient of content configured for presentation.

Mediated Presentation. Included in this type of configuration are study guides, drill and practice tools, DRTA, interrupted film, case studies, etc. The learner is still largely a recipient of content configured for mediated presentation, though sometimes a user.

Insert matrix or diagram depicting categories and configurations of content and resultant educational activities

Discovery. Included in this type of configuration are research, random access databases, resource/reference exploration, simulation tools, etc. The learner is largely a user of content configured for discovery, though sometimes still a recipient.

Production. Included in this type of configuration are problem-solving tools, productivity software, etc. The learner is empowered to be a creator of information with content configured for production.

The Added Educational Value of Digital Content

- Non-digitized material tends to lend itself primarily to presentation or mediated presentation.
- With digitization, more content is configured for discovery and production than ever before.
- In addition, digitization enables collaborative and productive tools to be effectively applied to all types of content. Consequently, content that would otherwise never be used for production can be used for production.
- Because digital content allows more material to be used for discovery and production, students and teachers have greater opportunity to interact with information throughout the learning process.
- By infusing learning process with teacher and student choice and personalization, digital content provides broader options for creativity and facilitates the development of skills in high demand today: critical thinking, problem-solving, collaborative abilities and communication.

APPENDIX B

Statistics Update – The Four Pillars

APPENDIX C

Call for Equity

- 1999 Equity statistics for hardware, connectivity and professional development.
- Equity related content issues, such as:
- Should all schools use content the same way? If not, why and when should they vary?
 - Case study of low-income school using digital content well.

SUPPLEMENTARY TOOLS

Getting to Target Tech:

Key Questions to Guide the Integration of Digital Content

Successful education today requires the identification and use of quality content that is broadly accessible, curriculum-centered, age appropriate, and focused on meeting specific student needs and endorsed education objectives. Achieving this essential objective requires more than hardware, software, and connectivity. It requires that schools and districts link digital content to the curriculum, facilitate the use of digital content through organizational structures, provide ongoing support and regularly evaluate progress and adjust plans to match. It also requires a new level of partnership between educators, parents, students and the community.

The following checklist is designed to inspire new thinking about the relationship between technology, information, and learning. It emphasizes the importance of the organizational structure of education institutions and the decision-making processes that govern them. It suggests a compelling profile of a school using digital content to its fullest potential.

Link Digital Content to the Curriculum

1. Does your school have a clear set of learning objectives for the school and for individual students?
2. How are students in your school expected to derive information (e.g., textbooks, Internet, software, others)?
3. Are students expected to communicate and collaborate with teachers and peers at school and after school?
4. What tools are they expected to use (e.g., e-mail, chat rooms, application sharing programs, scheduling and calendar systems, other)?
5. Are students expected to be producers as well as consumers of digital content?
6. What tools are they expected to use (e.g., word processing, spread sheets, databases, presentation programs, web design tools, image manipulation applications, other)?

Facilitate the Use of Digital Content Through School Organizational Structures

7. Does your district have a technology plan that goes beyond hardware, software and connections to include professional development and the integration of digital content?
8. Does your district or school have a policy to determine what school-based information is appropriate to share with parents, students and the community?
9. Is there a process in place for communicating that information?
10. Is your district implementing a plan to ensure that students are information literate?
11. Does your district have a position on the issues of commercialization and advertising as they relate to digital content?
12. Does your school or district have clear policies in place concerning intellectual property, copyright and fair use in a digital environment?
13. Is your school library organized in such a way as to make effective use of digital content including having a trained staff available?
14. Does your school have a set of guidelines for aligning curriculum to state and local standards including?
15. Have those guidelines been extended specifically to digital content?
16. Are there complementary standards for aligning content to assessments and educational objectives?

17. Do teachers in your school have the authority and time to experiment and implement new teaching tools and practices?
18. Are class times long enough to foster in-depth exploration and collaborative projects?
19. Do teachers have regular opportunity to communicate, collaborate and exchange ideas with students, peers and experts inside and outside the school?
20. Does your school have content related partnerships with businesses and other representatives of the broader community?

Provide Ongoing Support for Acquisition and Effective Use of Digital Content

21. Is there a system in your school to help teachers find, evaluate and test digital content?
22. Does your school have a process for evaluating progress in integrating digital content into teaching, learning and administration?
23. Does your school have mechanisms in place to adjust plans and budgets according to internal progress and external developments?
24. Is teacher professional development with technology an ongoing priority that receives adequate funding and incentives for teacher participation?
25. Does your school have a central repository for digital content created and collected by students and teachers?
26. Are teachers empowered to tailor their teaching tools through participation in decision-making committees or allocation of discretionary budgets?
27. Has your school outlined a set of technical and practical parameters that will ensure that selected digital content is interoperable with school technology and that it can be cost-effectively maintained?

Regularly Evaluate Progress and Adjust Plans

28. In addition to traditional academic standards, are students evaluated on skills such as critical thinking, communication and collaborative abilities?
29. Does your district and school have a plan to measure performance and progress against universally accepted and communicated benchmarks?
30. Are student and teacher support systems regularly evaluated and adjusted to keep pace with evolving demand?

CEO Forum STaR Chart – Year 3

Focus on Content

[Separate document]

¹ Cite QED Data.

² Cite QED Data.

³ Teaching Learning and Computing: 1998 National Survey, Center for Research on Information Technology and Organizations, the University of California, Irvine and the University of Minnesota, June 1999.

⁴ National Forum on Information Literacy, A Progress Report on Information Literacy: An Update on the American Library Association Presidential Committee on Information Literacy, Final Report. March 1998. www.infolit.org/documents/progress.html.