# CEO Forum School Technology and Readiness (STaR) Chart: Achievement in the 21st Century

## How to find your school's profile

The CEO Forum's STaR Chart is a guide, not a definitive measure, of a school's effectiveness in integrating technology into the teaching and learning process. Your school may fall within one category based on certain indicators and in another based on others. Such mixed readings are expected because every school is unique. The STaR Chart allows any school, district, or state, no matter what its budget, priorities, or current educational technology profile, to better understand where it is today and to better plan for its future goals.

1. Select one of the five categories located across the top: Educational Benefits, Hardware & Connectivity, Professional Development, Digital Content or Student Achievement and Assessment.
2. Under the selected category, find the box that best describes your school's efforts (it's possible that your school may fall between two boxes).
3. After finding where your school falls, compare your school's program components with the ones listed in the Target Tech box, which describes the ideal scenario.
4. Use your findings to start discussions with staff, administrators, technology directors, school board members, and community leaders about improving your school's education technology plan.

| Star Indicators | Educational Benefits | Hardware & Connectivity | | | | | Professional Development | | | Digital Content | | | | | Student Achievement and Assessment | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| | | Students per instructional computer connected to the Internet | Technical support | % of instructional rooms and administrative offices connected to the Internet | Quality of school's connection to the Internet | Use and availability of other forms of hardware technology | Delivery and format of professional development | % of technology budget allocated to professional development | Understanding and use of digital content by educators | Format | Educator: Role of educator and degree to which digital content is integrated into instruction | Students: Students employ digital content to enhance learning | Students: % of students using digital content and frequency of use | Content budget allocation to purchase digital content | Student achievement & 21st century skills | Alignment and continuous improvement | Assessment | Equity of access | Using research | Administrators | Parent & community involvement |
| **EARLY Tech** | **Master basic academic skills through linear drill and tutorial software** | More than 10 | Takes several days | More than 25% | Dial up access on some computers | VCRs, cable TV, projection devices, calculators | Trainer-led instruction | Less than 10% | • 100% at entry or adoption phase<br>• A few use for lesson planning | Receive information/ tools from prepackaged software | • Teacher centered<br>• Supplement instruction with digital content | Reinforce basic academic skills | • 50% or more<br>• Weekly | Use some supplemental instructional materials funds only | Demonstrate improved basic skills | 25% align standards, curriculum and assessment using technology | • 25% or more beginning to integrate digital strategies into assessment<br>• Limited to use of fixed answer format | • Some students have access to technology to reinforce basic skills | Schools inconsistently apply ad hoc research | • Communicate objectives w/ other administrators and teachers | • One-way access to school web page which communicates policies, standards and initiatives |
| **DEVELOPING Tech** | • **Improve 21st century higher-order critical thinking with access to multimedia content**<br>• **Greater resources available for research and learning from Internet and CD-ROM** | 10 or less | Takes place next day | 50% or more | Direct connectivity on campus and in some classrooms | VCRs, cable TV, telephones, voicemail, projection devices, digital cameras, calculators | • Trainer-led instruction<br>• Embedded help within applications | 11-15% | • 100% at adaptation phases<br>• Some begin to use with students | Receive information from CD-ROM and searchable, online content | • Teacher directed<br>• Beginning to integrate into instruction | Use for research, communications and presentations | • 75% or more<br>• 3-4 times a week<br>• 20% have online course units available to expand opportunities | Use significant instructional materials budget, but little to no textbook budget | Demonstrate some improved mastery of 21st century skills | • 50% align standards, curriculum and assessment and report results<br>• 25% monitor and measure results to inform new instructional decisions | • 50% or more integrate digital strategies into assessment<br>• Measure 25% of 21st century skills<br>• Experiment with additional formats including open ended and self-assessment tools | • Can access Internet at times other than school hours<br>• All teachers are appropriately trained to integrate technology | • 50% review external research and apply appropriately<br>• 50% conduct internal research on program effectiveness<br>• 50% of schools use IT for planning<br>• 25% of teachers use IT in classrooms for ad hoc action | • Use technology to collect data and communicate with constituents<br>• Initiate some data driven decision making | • Limited access to two-way communications via email, and privacy-protected web tools, e.g., to obtain individual attendance & assessment data |
| **ADVANCED Tech** | • **Improve 21st century skills especially higher-order thinking, research, collaborative and creative skills**<br>• **Most students/teachers able to communicate with parents, experts, other students and teachers outside school** | 5 or less | Takes place same day | 75% or more | • Direct connectivity in most classrooms<br>• Adequate bandwidth | Wide variety of VCRs, cable TV, telephones, voicemail, random access video, projection devices, digital cameras, scanners, portals, personal digital assistants, two way video conferencing, calculators | Online mentoring | 16-29% | 100% at appropriation phases | Manipulatable digital content and tools available commercially and on the Web | • Teacher facilitated in local or distant classrooms<br>• Fully integrate into instruction and use for research, planning, multimedia presentations and simulations, and to correspond and communicate | Use for research, to solve problems, to analyze data, to collaborate and to correspond with experts and to become content producers | • 100%<br>• Use digital content daily, but activities are isolated by grade, disciplines, classes<br>• 30% or more have online course units available to expand opportunities | Scrutinize entire budget as appropriate and shift funds from textbook budget to acquire digital content | Demonstrate mastery of 21st century skills | • 100% align standards, curriculum and assessment using technology and report results<br>• 50% monitor and measure results to inform new instructional decisions | • 75% or more integrate digital strategies into assessment<br>• Measure 50% of 21st century skills<br>• Use multiple formats including project based assessment, portfolios and simulations | • Can access digital content at times other than school hours<br>• 75% or more of students use technology to develop 21st century skills | • 100% use external research and apply appropriately<br>• 100% conduct internal research on program effectiveness<br>• 100% use IT in classrooms and administrative planning to collect and manage data to improve current operations | • Use technology to collect data and analyze results<br>• Use technology for data driven decision making | • Communicate two-way via email, and privacy protected web tools, e.g., to access some school information and resources from home |
| **TARGET Tech** | • **Improve student achievement**<br>• **Develop and support the full range of 21st century skills that students will need to thrive in today's educational environment and tomorrow's workplace**<br>• **Promote student-centered authentic project-based learning**<br>• **All students/teachers able to communicate with parents, experts, community members and teachers outside the school**<br>• **Learning at home and at school occurs seamlessly** | 1 student per instructional computer connected to the Internet | Tech support available 24/7 | 100% or more of all instructional rooms and administrative offices are connected to the Internet | Direct connectivity in all classrooms with adequate bandwidth to prevent delays | There is broad use of a wide variety of other technologies such as VCRs, cable TV, telephones, voicemail, random access video, personal digital assistants, two way video conferencing, projection devices, digital cameras, scanners, portals, calculators, thin clients, servers, etc. | Anytime, anywhere | 30% | 100% at appropriation or invention phases | Full range of digital content and tools structured to support production and collaboration | • Student-centered in local or distant classrooms; teacher as guide<br>• Digital content changes the teaching process, allowing for greater levels of inquiry, analysis, creativity and content production | Digital content changes the learning process, allowing for greater levels of collaboration, inquiry, analysis, and creativity | • Seamlessly integrated throughout all classes and subjects on a daily basis<br>• 100% have online course units available to supplement and expand school course offerings | 100% instructional materials budget is available to purchase "most appropriate" content | Demonstrate improved student achievement and mastery of the full range of 21st century skills | • 100% align standards, curriculum and assessment using technology<br>• 100% monitor and measure results to support teaching and learning and link to continuous improvement | • 100% integrate digital strategies in assessment<br>• Measure 100% of the entire range of 21st century skills<br>• Technology evaluates student mastery in multiple formats and sets ever more challenging experiences | • Equitable access technology to all students anytime, anywhere<br>• 100% of students use technology to develop 21st century skills<br>• All students have the opportunity to achieve and to receive remediation | • 100% of schools and districts systematically use external and conduct internal research<br>• 100% of teachers and administrators to collect and manage data to guide decisions and inform continuous improvement | • Use technology to set policies, procedures, analyze performance, report and communicate with constituencies<br>• Use technology to manage continuous improvement | • **Parents** Actively involved in defining educational objectives, setting individual student learning plans and able to view results via privacy protected web tools<br>• **Community** Involved in defining educational objectives and informed of results and district level interventions via privacy protected web tools |

**Access** The ability or right for all students to make use of education technology.

**Accountability** Holding people and institutions responsible for their, or their institutions, performance in meeting defined objectives

**Alignment** The clear lineation and linkage of instructional resources and tools, including technology, and assessment to support standards and educational objectives

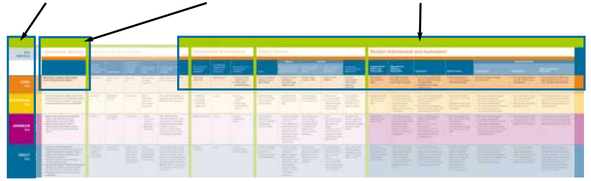
**Analysis** The research, development and study of education technology, specifically on the link between the effective use of education technology to achieve educational objectives and student achievement

**Assessment** The means of evaluating student performance, skills and knowledge. Assessment takes place in two forms. Formative assessment occurs on an ongoing basis as part of the instructional process and provides opportunities to revise or adjust instruction accordingly. Summative assessment occurs at the end of projects, courses or grade levels and can include educator, school or district designed evaluations and tests or state-mandated standardized short answer and multiple-choice tests

**The CEO Forum's School Technology and Readiness Chart (STaR Chart) identifies and defines four school profiles ranging from the school with "Early Technology" to the "Target Technology" school that fully integrates technology throughout the curriculum.**

**The STaR Chart also matches potential educational outcomes — the potential benefits — to the level of technology and integration in each profile category.**

**Based on technology presence, use, and integration throughout the curriculum, the STaR Chart provides a likely technology snapshot of a school in each of the profile categories.**



### The Stages of Professional Development

In defining professional development profiles, the Year 4 STaR Chart builds upon the five phases of professional development identified by Apple Classrooms of Tomorrow (ACOT) through a decade of research on the instructional changes that occur during the process of integrating technology to transform the learning environment:

- **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 (e.g., integration of drill and practice software into instruction).
- **Adaptation** Educators move from basic use to discovery of its potential for increased productivity (e.g., use of word processors for student writing, and research on the Internet)
- **Appropriation** Having achieved complete mastery over the technology, educators use it effortlessly as a tool to accomplish a variety of instructional and management goals.
- **Invention** Educators are prepared to develop entirely new learning environments that utilize technology as a flexible tool. Learning becomes more collaborative, interactive and customized.

## The CEO Forum on Education and Technology

### Members

**Dr. Terence W. Rogers,** *President and CEO*
Advanced Networks and Services, Inc.

**Dr. Therese Crane,** *Vice President for Education Products (Year 2 co-chair)*
America Online, Inc.

**Cheryl Vedoe,** *Vice President, Education Marketing and Solutions,*
Apple Computer, Inc.

**Fred Shaftman,** *President*
BellSouth Business

**Judith Hamilton,** *President and CEO*
Classroom Connect

**James A. Weynand,** *Vice President, Education and Government Markets,*
Compaq Computer Corporation

**William Rodrigues,**
*Vice President and General Manager, Education and Healthcare (Year 4 Project co-chair)*
Dell Computer Corporation

**John S. Hendricks,** *Founder, Chairman and CEO (Year 3 co-chair)*
Discovery Communications, Inc.

**Michael E. Marks,** *Chairman and CEO*
Flextronics International

**Laura Cory,** *General Manager of Education,*
Hewlett-Packard

**Sean C. Rush,** *General Manager, Global Education Industry*
IBM

**Julien J. Studley,** *Chairman and CEO*
Julien Studley, Inc.

**T. Michael Nevens,** *Director (Year 4 co-chair)*
McKinsey & Company

**John Wilson,** *Executive Director (NEA Year 1 co-chair)*
National Education Association

**Anne L. Bryant,** *Executive Director (Year 1 and Year 4 co-chair)*
National School Boards Association

**John Scott Redd,** *Chairman, CEO and President*
NetSchools Corporation

**Jeanne Hayes,** *President and CEO*
Quality Education Data

**Kim Jones,** *Vice President, Global Education and Research*
Sun Microsystems, Inc.

**Tom Tauke,** *Executive Vice President, External Affairs and Corporate Communications,*
Verizon

**Founded in 1996, the CEO Forum on Education & Technology is a unique five-year partnership between business and education leaders who are committed to assessing and monitoring progress toward integrating technology in America's schools. The CEO Forum hopes to ensure that the nation's students will achieve higher academic standards and will be equipped with the skills they need to be contributing citizens and productive workers in the 21st century.**

### Organizing Principles

- All students must graduate with the technology skills needed in today's world and tomorrow's workplace.
- All educators must be equipped to use technology as a tool to achieve high academic standards.
- All parents and community members must stay informed of key education technology decisions confronting policymakers, administrators and educators.
- All students must have equitable access to technology.
- The nation must invest in education technology research and development.

### The CEO Forum Four Year Agenda

**Year 1:** *The School Technology and Readiness Report: From Pillars to Progress* (October 1997) The first report issued by the CEO Forum focused on the importance of integrating all the elements of education 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:** *The Teacher Preparation STaR Chart: A Self-Assessment Tool for Colleges of Education* (January 2000) This self-assessment tool enabled colleges of education to determine their institution's level of readiness in preparing tomorrow's teachers to integrate educational technology into instruction.

*The Power of Digital Learning: Integrating Digital Content* (June 2000) This report offered a vision for digital learning and focuses on the actions that schools, teachers, students and parents must take to integrate digital content into the curriculum to create the learning environments that develop 21st century skills.

- Creating a Digital Content Strategy
- STaR Chart Update

**Year 4:** *Education Proposals Must Be Included in Comprehensive Education Legislation*(March 2001) This policy paper provided recommendations regarding education technology for the federal government.

*Key Building Blocks for Student Achievement in the 21st Century: Assessment, Alignment, Accountability, Access and Analysis* (June 2001) The final CEO Forum report focuses on the important educational objectives that can be achieved through the effective use of education technology. It also highlights the changes in alignment, assessment, measurement, continuous improvement and research needed to ensure technology produces positive results in education.

- STaR Chart Update

# The CEO Forum STaR Chart

## a Tool for Assessing School Technology and Readiness

**Year Four**

**The CEO Forum on Education and Technology**

**June 2001**

## About the STaR Chart

### A Tool for Assessing School Technology and Readiness

The STaR Chart can help any school or community answer some critical questions:

- **Is your school using technology effectively to ensure the best possible teaching and learning?**
- **What is your school's current education technology profile?**
- **What criteria should be used in judging your progress?**

First released in 1997, the STaR Chart was created by the CEO Forum to provide a clear framework for understanding how well schools are prepared to equip students with the knowledge and skills they need to thrive in today's information technology economy.

The STaR Chart is a tool that can help all schools create and implement a plan for improving education with the help of information technology. Over the past year, education leaders nationwide have used the STaR Chart as a road map to help understand and plan for the integration of education and technology. Here are some of the ways the STaR Chart has been put to use:

- **Setting benchmarks and goals** Schools, districts, and states have used the STaR Chart to identify current education technology profiles, establish goals, and measure their progress.
- **Applying for grants** The STaR Chart has helped schools and school districts identify their education technology profiles and objectives as they apply for technology-related grants.
- **Determining funding priorities** Education leaders have also used the STaR Chart to help determine where to allocate funds to fill gaps.
- **Creating assessment tools** Education policymakers have used the STaR Chart to help construct their own state technology assessments.

The new Year 4 STaR Chart provides a look at Student Achievement and Assessment, ranging from "Early Tech" to "Target Tech."

**Schools and districts should focus on the key building blocks for student achievement in the 21st century- assessment, alignment, accountability, access and analysis- to ensure technology boosts student learning and improves education.**