



New Jersey Department of Education

Office of Educational and Informational Technology

Fall 2007

The State Board of Education passed the state's Technological Literacy standards in October of 2004. All school districts are required to integrate standards for 8.1 and 8.2 across all curricular areas. To help districts understand the two standards, this newsletter is being produced as a cooperative effort between the Office of Educational and Informational Technology and the Office of Educational Standards and Programs. The purpose of the document is to provide a clear description of both areas. Standard 8.1 Computer and Informational Literacy addresses strands and cumulative progress indicators that have typically fallen under Educational Technology. Standard 8.2, Technology Education, is new to many administrators, supervisors, and teachers. Technology Education addresses the design process and the impact and interconnectedness of new technologies on systems in society. <http://www.nj.gov/njded/aps/cccs/tech/>

EDUCATIONAL TECHNOLOGY

WHAT IS EDUCATIONAL TECHNOLOGY?

Educational technology is using technology in conjunction with specific teaching strategies within an instructional setting to support students and teachers in a learning process that leads to academic success for each student. It enables students to develop the knowledge and skills necessary to be productive, informed citizens, and self-directed lifelong learners. It supports higher-order thinking skills in a learner centered environment across all curriculum areas.

EXAMPLES

The Students Using Technology To Achieve Reading – Writing (STAR-W) grant program (2003-2006) is designed to increase student achievement in language arts literacy in grades three through five by providing classroom teachers ongoing professional development and in-class support that focuses on integrating technology into the curriculum and instruction. This is a three-year grant program, and the first grant “year” is 14-months. The program is designed to have a minimum of two (2) third-grade teachers, two (2) fourth-grade teachers, and two (2) fifth-grade teachers in the same school learn strategies to infuse technology into the curriculum. Third and fourth grade teachers were given intense follow-up and in-class support in **year one** of this grant program. Year two of the grant program added fifth grade teachers. These teachers are all supported on and assisted with developing language arts literacy programs where students use technology as a tool during their regular instructional time through the third year of the grant program.

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TECHNOLOGY EDUCATION

(also called Design, Engineering and Technology)

WHAT IS TECHNOLOGY EDUCATION?

Technology education is the study of technology and its effect on individuals, society, and the environment. It is much more than learning about various pieces of hardware and software. It is a study of a body of knowledge and the systematic application of resources to produce outcomes in response to human desires and needs.

EXAMPLES

The **Stuff That Works** program from City Technology, NY is a project that included workshops that were conducted for algebra, physical science, and technology education teachers and supervisors. See the website <http://citytechnology.cuny.cuny.edu/>. The site currently has PROJECT IDEAS in several areas of Design Technology. The NJ Department of Education has worked with Stevens Institute and the Boston Museum of Science to provide training on content related to Technology Education.

Stevens Institute of Technology's Center for Innovation in Engineering and Science Education (CIESE) has advanced New Jersey's capabilities to provide students with exemplary technology and pre-engineering educational experiences. Stevens has announced an initiative called **Engineering Our Future NJ (EOFNJ)** to work with schools to review, assess, and adapt pre-engineering curriculum materials to meet New Jersey's Core Curriculum Content Standards in technology, science, and mathematics. This partnership assists schools by providing cutting edge instruction for students in pre-engineering and technology education and to establish

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The Access~Collaboration~Equity Plus Instruction (ACE+) grant program (2003-2005) provided an extension of a district's educational program for students, their families, and the community, who do not have access to technology when school is not in session. Local projects funded through the ACE+ program developed and delivered programs to help close this "digital divide" between those who have access to technology and those who do not. The educational program included technology resources that supported participation in educational activities that specifically developed the student participants' language arts literacy skills.

The Kids Officially Online (KOOL) grant program (2004-2006) is designed to improve academic achievement through the use of technology in schools and to integrate technology with teacher training and curriculum development to establish successful research-based instructional models. These goals will be achieved by LEAs adopting an existing and successful virtual course, offering the course, and evaluating the results of the course. The KOOL grant program is a pilot project that includes ten online courses among ten lead agencies (LEAs) within the state. The online course may be targeted to one or more grades – six through twelve. The course, which is delivered via distance learning, must be offered within a **minimum** of two school districts, the lead agency LEA and a partner LEA.

The Math Achievement To Realize Individual eXcellence (MATRIX) grant program (2004-2007) is designed to increase student achievement in mathematics in grades six through eight by providing classroom teachers with ongoing professional development and in-class support that focuses on integrating technology into the curriculum and instruction. It is a three-year grant program. The program is designed to have a minimum of two (2) sixth-grade teachers, two (2) seventh-grade teachers, and two (2) eighth-grade teachers learn strategies to infuse technology into the curriculum. The school districts chose either grade six or grade eight teachers to be involved with the grade seven teachers in year one of this grant program. Grade seven and one other grade level were given intense follow-up and in-class support in year one of this grant program. Grade six or grade eight teachers were added in year two. All of these teachers are supported on and assisted with implementing a mathematics program that is based on relevant research proving success where students use technology as a tool during their regular instructional time.

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strong links to existing programs in mathematics and science. See Steven's website for more information: www.stevens.edu/ciese/eofnj.

The New Jersey Technology Education Association (NJTEA)

The mission of the New Jersey Technology Education Association is to foster the development of technological literacy through Technology Education programs in the state of New Jersey. Specifically, New Jersey Technology Education Association will:

- Provide curricular and instructional models through a program of professional development for its members.
- Recognize exemplary Technology Education teachers and school programs through an awards program.
- Advise its members as needed of changes in state law as well as national trends critical to the field of Technology Education.
- Promote technological literacy through partnerships with individuals and organizations within and outside of the field of Technology Education.

The New Jersey Technology Student Association (NJTSA)

The New Jersey Technology Student Association (NJTSA) has more than 2,000 middle and high school members and is the only student organization devoted exclusively to the needs of design and technology education students. NJTSA is supported by educators, parents, and business leaders who believe in the need for a technologically literate society.

Ties Magazine

Ties Magazine, supports design and technology educators, K-12. This magazine strives to help students and teachers increase their technological literacy and capabilities. Information from industry, business, government, arts and entertainment, and education provides *Ties'* readers with up-to-date resources for the development of hands-on, design-based technology education curricula.

Children Designing & Engineering (CD&E)

The Children Designing & Engineering (CD&E) Project is a collaboration of the College of New Jersey's Department of Technological Studies, the New Jersey Chamber of Commerce and the Institute of Electrical and Electronics Engineers (IEEE). The purpose of the CD&E Project is to develop instructional materials for the K-5 age group using a contextual Design and Technology approach.

The Implementing New Curricular Learning with Universally Designed Experiences (INCLUDE)

Phase I project (2007-2011) is designed to ensure all students in the general education classroom including those with mild to moderate disabilities, struggling students and English language learners are provided the necessary accommodations in the general mathematics classroom that will support their achievement of the Core Curriculum Content Standards. The basis for the INCLUDE grant is to improve academic achievement in mathematics by using educational technology effectively. The grant project focuses on the creation or expansion of an inclusive classroom where the grantees will learn the Universal Design for Learning (UDL) framework.

The New Jersey Association of Educational Technologist (NJ AET) - www.njaet.org

NJAET is a group of over 700 educators (teachers, computer coordinators, administrators, consultants, etc.) who are working to promote the use of technology in education. Purposes of the organization include:

- establish communication among educational technologists
- provide a forum for the discussion and resolution of common problems
- promote effective programs
- enhance training and educational opportunities throughout the state
- expand the view of the role of technology in education held by educators and the public
- encourage the application of information technology and current research for improving instruction.

The New Jersey Educational Computing Cooperative (NJECC)

NJECC's mission is to promote and support the integration of technology in education as it applies to student learning, professional development, and instructional planning. // <http://www.njecc.org>

NEW JERSEY'S EDUCATIONAL TECHNOLOGY GOALS AND BENCHMARKS

(Draft as of 10/2007)

Goal 1: All students will be prepared to excel in the community, work place and in our global society using 21st century skills.

GOAL 2: All educators, including administrators, will attain the 21st century skills and knowledge necessary to effectively integrate educational technology in order to enable students to achieve the goals of the core curriculum content standards and experience success in a global society.

INTERNATIONAL TECHNOLOGY EDUCATION ASSOCIATION TECHNOLOGY CONTENT STANDARDS

The Nature of Technology

- 1 Students will develop an understanding of the characteristics and scope of technology.
- 2 Students will develop an understanding of the core concepts of technology.
- 3 Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.

Technology and Society

- 4 Students will develop an understanding of the cultural, social, economic, and political effects of technology.
- 5 Students will develop an understanding of the effects of technology on the environment.
- 6 Students will develop an understanding of the role of society in the development and use of technology.
- 7 Students will develop an understanding of the influence of technology on history.
- 8 Students will develop an understanding of the attributes of design.
- 9 Students will develop an understanding of engineering design.
- 10 Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

Abilities for a Technological World

- 11 Students will develop the abilities to apply the design process.
- 12 Students will develop the abilities to use and maintain technological products and systems.
- 13 Students will develop the abilities to assess the impact of products and systems.

The Designed World

- 14 Students will develop an understanding of and be able to select and use medical technologies.
- 15 Students will develop an understanding of and be able to select and use agricultural and related biotechnologies.

GOAL 3: Educational technology will be accessible by students, teachers and administrators and utilized for instructional and administrative purposes in all learning environments, including classrooms, library media centers, and other educational settings such as community centers and libraries.

GOAL 4: New Jersey school districts will establish and maintain the technology infrastructure necessary for all students, administrators and staff to safely access digital information on demand and to communicate virtually.

NO CHILD LEFT BEHIND

(<http://www.ed.gov/offices/OESE/esea/edtechguidance.doc>)

On January 8, 2002, President Bush signed into law the No Child Left Behind Act of 2001 (P.L. 107-110). This legislation, which reauthorizes the Elementary and Secondary Education Act of 1965 (ESEA), establishes the Enhancing Education Through Technology (Ed Tech) Program, a single State formula grant program (ESEA Title II, Part D, Subpart 1). The primary goal of the Ed Tech program is to improve student academic achievement through the use of technology in schools. It is also designed to assist every student in crossing the digital divide by ensuring that every student is technologically literate by the end of eighth grade, and to encourage the effective integration of technology with teacher training and curriculum development to establish successful research-based instructional methods.

NJDOE Resources

NJDOE—Education Technology Unit:

<http://www.nj.gov/education/techno/>

Examples of Frameworks to be used for Educational Technology progress: <http://www.nj.gov/njded/aps/cccs/tech/frameworks/>

Other Resources

International Society for Technology in Education (ISTE):

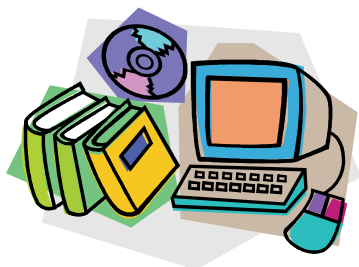
<http://www.iste.org/>

Educational Technology Training Centers (ETTCs):

<http://www.nj.gov/njded/techno/ettc/>

Edutopia (The George Lucas Educational Foundation):

<http://www.edutopia.org/>



- 16 Students will develop an understanding of and be able to select and use energy and power technologies.
- 17 Students will develop an understanding of and be able to select and use information and communication technologies.
- 18 Students will develop an understanding of and be able to select and use transportation technologies.
- 19 Students will develop an understanding of and be able to select and use manufacturing technologies.
- 20 Students will develop an understanding of and be able to select and use construction technologies.

NJDOE Resources

Examples of Technology Education lesson developed by teachers from the field—See Technology Solves Problems, Electronic Toys, Engineering Motion, Systems in the Designed World, [Transportation – Mass-Transit - MAGLEV](http://www.nj.gov/education/aps/cccs/tech/frameworks/ms/transit.doc), - <http://www.nj.gov/education/aps/cccs/tech/frameworks/ms/transit.doc>

Cast Away at the Edge of the World , and [Houston, We Have a Problem & Failure Is Not An Option](http://www.nj.gov/education/aps/cccs/tech/frameworks/hs/houston.doc)—. <http://www.nj.gov/education/aps/cccs/tech/frameworks/hs/houston.doc>

Other teaching ideas can be found under the website <http://www.ntuافت.com/njcccs/Webpage/Main%20CCCS%20Page.htm>. Click on Technological Literacy and 8.2 by grade level desired.

Other Resources

Science and Technology for Kids:

<http://www.nap.edu/catalog/nsrc/index.html>

Tech Tally: Approaches to Assessing Technological Literacy: <http://lab.nap.edu/nap-cgi/discover.cgi?term=tech%20tally&restric=NAP>

Technically Speaking: Why More Americans Need to Know

More About Technology: <http://lab.nap.edu/nap-cgi/discover.cgi?term=Technically+Speaking&restric=NAP&mw=&submit.x=10&submit.y=12>

ASEE Engineering Center: <http://www.engineeringk12.org/>

Pre-Engineering Competitions:

<http://www.engineeredu.com/competitions.html>

Intel International Science and Engineering Fair:

<http://www.intel.com/education/isef/index.htm>

