

PBS TeacherLine New York

TECH 160: Putting Technology to Use in the Classroom

New York State Learning Standards: Math, Science & Technology Standard 1 - Information Systems 2

Students will access, generate, process, and transfer information using appropriate technologies.

Key Idea 1

Information technology is used to retrieve, process, and communicate information and as a tool to enhance learning.

Performance Indicators

Elementary

Students use computer technology, traditional paper-based resources, and interpersonal discussions to learn, do, and share science in the classroom.

Students select appropriate hardware and software that aids in word processing, creating databases, telecommunications, graphing, data display, and other tasks.

Intermediate

Students use spreadsheets and database software to collect, process, display, and analyze information. Students access needed information from electronic databases and on-line telecommunication services.

Students systematically obtain accurate and relevant information pertaining to a particular topic from a range of sources, including local and national media, libraries, museums, governmental agencies, industries, and individuals.

Commencement

Students understand and use the more advanced features of word processing, spreadsheets, and data-base software.

Students access, select, collate, and analyze information obtained from a wide range of sources such as research data bases, foundations, organizations, national libraries, and electronic communication networks, including the Internet.

Key Idea 2

Knowledge of the impacts and limitations of information systems is essential to its effective and ethical use

Performance Indicators

Elementary

Students will describe the uses of information systems in homes, schools, and businesses.

Students will understand that computers are used to store personal information.

Students will demonstrate ability to evaluate information

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Intermediate

Students will understand the need to question the accuracy of information displayed on a computer because the results produced by a computer may be affected by incorrect data entry.

Students will identify advantages and limitations of data-handling programs and graphics programs.

Students will understand why electronically stored personal information has greater potential for misuse than records kept in conventional form

Commencement

Students explain the impact of the use and abuse of electronically generated information on individuals and families.

Students evaluate software packages relative to their suitability to a particular application and their ease of use.

Students discuss the ethical and social issues raised by the use and abuse of information systems.

Key Idea 3

Information technology can have positive and negative impacts on society, depending upon how it is used

Elementary

Students will describe the uses of information systems in homes and schools.

Students demonstrate ability to evaluate information critically.

Intermediate

Students use graphical, statistical, and presentation software to presents project to fellow classmates.

Students describe applications of information technology in mathematics, science, and other technologies that address needs and solve problems in the community.

Students explain the impact of the use and abuse of electronically generated information on individuals and families

Commencement

Students work with a virtual community to conduct a project or solve a problem using the network.

Students discuss how applications of information technology can address some major global problems and issues.

Students discuss the environmental, ethical, moral, and social issues raised by the use and abuse of information technology.

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TECH 160: Putting Technology to Use in the Classroom
New York State Learning Standards: Math, Science & Technology – Standard 3 – Mathematics

Mathematical Reasoning

Key Idea 5

Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.

Commencement

Students apply proportions to scale drawings, computer-assisted design blueprints, and direct variation in order to compute indirect measurements.

Key Idea 6

Students use ideas of uncertainty to illustrate that mathematics involves more than exactness when dealing with everyday situations.

Commencement

Students judge the reasonableness of a graph produced by a calculator or computer.

New York State Learning Standards: Math, Science & Technology – Standard 5 – Technology

Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.

Key Idea 3

Computers, as tools for design, modeling, information processing, communication, and system control, have greatly increased human productivity and knowledge.

Elementary

Students identify and describe the function of the major components of a computer system.

Students use the computer as a tool for generating and drawing ideas. control computerized devices and systems through programming.

Intermediate

Students assemble a computer system including keyboard, central processing unit and disc drives, mouse, modem, printer, and monitor.

Students use a computer system to connect to and access needed information from various Internet sites.

Students use computer hardware and software to draw and dimension prototypical designs.

Students use a computer as a modeling tool.

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Students use a computer system to monitor and control external events and/or systems.

Commencement

Students understand basic computer architecture and describe the function of computer subsystems and peripheral devices.

Students select a computer system that meets personal needs.

Students attach a modem to a computer system and telephone line, set up and use communications software, connect to various on-line networks, including the Internet, and access needed information using e-mail, telnet, gopher, ftp, and web searches.

Students use computer-aided drawing and design (CADD) software to model realistic solutions to design problems.

Students develop an understanding of computer programming and attain some facility in writing computer programs.

New York State Learning Standards: Math, Science & Technology – Standard 7 – Interdisciplinary Problem Solving

Connections

Key Idea 1

The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.

Elementary

Students observe phenomena and evaluate them scientifically and mathematically by conducting a fair test of the effect of variables and using mathematical knowledge and technological tools to collect, analyze, and present data and conclusions.

Intermediate

Students describe and explain phenomena by designing and conducting investigations involving systematic observations, accurate measurements, and the identification and control of variables; by inquiring into relevant mathematical ideas; and by using mathematical and technological tools and procedures to assist in the investigation.

Commencement

Students explain and evaluate phenomena mathematically and scientifically by formulating a testable hypothesis, demonstrating the logical connections between the scientific concepts guiding the hypothesis and the design of an experiment, applying and inquiring into the mathematical ideas relating to investigation of phenomena, and using (and if needed, designing) technological tools and procedures to assist in the investigation and in the communication of results.

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TECH 160: Putting Technology to Use in the Classroom
New York State Learning Standards: Standard 1—Creating, Performing, and Participating in the Arts

Visual Arts

Key Idea 1

Students will make works of art that explore different kinds of subject matter, topics, themes, and metaphors. Students will understand and use sensory elements, organizational principles, and expressive images to communicate their own ideas in works of art. Students will use a variety of art materials, processes, mediums, and techniques, and use appropriate technologies for creating and exhibiting visual art works.

Elementary

Students experiment and create art works, in a variety of mediums (drawing, painting, sculpture, ceramics, printmaking, video, and computer graphics), based on a range of individual and collective experiences

Intermediate

Students produce a collection of art works, in a variety of mediums, based on a range of individual and collective experiences

Students during the creative process, reflect on the effectiveness of selected mediums or techniques to convey intended meanings

Commencement

Students create a collection of art work, in a variety of mediums, based on instructional assignments and individual and collective experiences to explore perceptions, ideas, and viewpoints

Students create art works in which they use and evaluate different kinds of mediums, subjects, themes, symbols, metaphors, and images

Students reflect on their developing work to determine the effectiveness of selected mediums and techniques for conveying meaning and adjust their decisions accordingly

New York State Learning Standards: Standard 2—Knowing and Using Arts Materials and Resources

Dance

Key Idea 2

Students will perform set dance forms in formal and informal contexts and will improvise, create, and perform dances based on their own movement ideas. They will demonstrate an understanding of choreographic principles, processes, and structures and of the roles of various participants in dance productions.

Elementary

Students demonstrate knowledge of dance resources in video, photography, print, and live performance

Intermediate

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Students demonstrate knowledge of sources for understanding dance technologies: live, print, video, computer, etc.

Commencement

Students use dance technologies without significant supervision

Music

Key Idea 2

Students will use traditional instruments, electronic instruments, and a variety of nontraditional sound sources to create and perform music. They will use various resources to expand their knowledge of listening experiences, performance opportunities, and/or information about music. Students will identify opportunities to contribute to their communities' music institutions, including those embedded in other institutions (church choirs, industrial music ensembles, etc.). Students will know the vocations and avocations available to them in music

Elementary

Students use current technology to manipulate sound

Intermediate

Students use traditional or nontraditional sound sources, including electronic ones, in composing and performing simple pieces

Students use current technology to create, produce and record/playback music

Commencement

Students use traditional, electronic, and nontraditional media for composing, arranging, and performing music (a)

Students use print and electronic media, including recordings, in school and community libraries to gather and report information on music and musicians

Visual Arts

Key Idea 2

Students will know and use a variety of visual arts materials, techniques, and processes. Students will know about resources and opportunities for participation in visual arts in the community (exhibitions, libraries, museums, galleries) and use appropriate materials (art reproductions, slides, print materials, electronic media). Students will be aware of vocational options available in the visual arts.

Elementary

Students understand the characteristics of various mediums (two-dimensional, three-dimensional, electronic images) in order to select those that are appropriate for their purposes and intent

Students develop skills with electronic media as a means of expressing visual ideas

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Intermediate

Students develop skills with a variety of art materials and competence in at least one medium

Students use the computer and other electronic media as designing tools and to communicate visual ideas

Commencement

Students select and use mediums and processes that communicate intended meaning in their art works, and exhibit competence in at least two mediums

Students use the computer and electronic media to express their visual ideas and demonstrate a variety of approaches to artistic creation

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TECH 160: Putting Technology to Use in the Classroom
New York State Learning Standards: English Language Arts - Standard 1—
Language for Information and Understanding

Students will listen, speak, read, and write for information and understanding. As listeners and readers, students will collect data, facts, and ideas; discover relationships, concepts, and generalizations; and use knowledge generated from oral, written, and electronically produced texts. As speakers and writers, they will use oral and written language that follows the accepted conventions of the English language to acquire, interpret, apply, and transmit information.

Listening and Reading

Key Idea 1

Listening and reading to acquire information and understanding involves collecting data, facts, and ideas; discovering relationships, concepts, and generalizations; and using knowledge from oral, written, and electronic sources.

Elementary

Students gather and interpret information from children’s reference books, magazines, textbooks, electronic bulletin boards, audio and media presentations, oral interviews, and from such forms as charts, graphs, maps, and diagrams

Intermediate

Students interpret and analyze information from textbooks and nonfiction books for young adults, as well as reference materials, audio and media presentations, oral interviews, graphs, charts, diagrams, and electronic data bases intended for a general audience

Commencement

Students interpret and analyze complex informational texts and presentations, including technical manuals, professional journals, newspaper and broadcast editorials, electronic networks, political speeches and debates, and primary source material in their subject area courses

Speaking and Writing

Key Idea 2

Speaking and writing to acquire and transmit information requires asking probing and clarifying questions, interpreting information in one’s own words, applying information from one context to another, and presenting the information and interpretation clearly, concisely, and comprehensibly.

Elementary

Students present information clearly in a variety of oral and written forms such as summaries, paraphrases, brief reports, stories, posters, and charts

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New York State Learning Standards: English Language Arts - Standard 2:
Language for literary response and expression.

Students will read and listen to oral, written, and electronically produced texts and performances from American and world literature; relate texts and performances to their own lives; and develop an understanding of the diverse social, historical, and cultural dimensions the texts and performances represent. As speakers and writers, students will use oral and written language that follows the accepted conventions of the English language for self-expression and artistic creation

Listening and Reading

Key Idea 1

Listening and reading to acquire information and understanding involves collecting data, facts, and ideas; discovering relationships, concepts, and generalizations; and using knowledge from oral, written, and electronic sources.

Elementary

Students read a variety of literature of different genres: picture books; poems; articles and stories from children’s magazines; fables, myths and legends; songs, plays and media productions; and works of fiction and nonfiction intended for young readers

Intermediate

Students read and view texts and performances from a wide range of authors, subjects, and genres

Commencement

Students read and view independently and fluently across many genres of literature from many cultures and historical periods

Speaking and Writing

Key Idea 2

Speaking and writing for literary response involves presenting interpretations, analyses, and reactions to the content and language of a text. Speaking and writing for literary expression involves producing imaginative texts that use language and text structures that are inventive and often multilayered

Elementary

Students observe the conventions of grammar and usage, spelling, and punctuation

Intermediate

Students use standard English effectively

Commencement

Students use standard English skillfully and with an individual style.

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TECH 160: Putting Technology to Use in the Classroom
New York State Learning Standards: English Language Arts – Standard 3–
Language for critical analysis and evaluation.

Students will listen, speak, read, and write for critical analysis and evaluation. As listeners and readers, students will analyze experiences, ideas, information, and issues presented by others using a variety of established criteria. As speakers and writers, they will use oral and written language that follows the accepted conventions of the English language to present, from a variety of perspectives, their opinions and judgments on experiences, ideas, information and issues

Speaking and Writing

Key Idea 2

Speaking and writing for critical analysis and evaluation requires presenting opinions and judgments on experiences, ideas, information, and issues clearly, logically, and persuasively with reference to specific criteria on which the opinion or judgment is based

Elementary

Students use effective vocabulary and follow the rules of grammar, usage, spelling, and punctuation in persuasive writing.

Intermediate

Students use standard English, precise vocabulary, and presentational strategies effectively to influence an audience

Commencement

Students use standard English, a broad and precise vocabulary, and the conventions of formal oratory and debate.

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TECH 160: Putting Technology to Use in the Classroom
Health, Physical Education, and Home Economics

New York State Learning Standards: Health, Physical Education, and Home Economics- Standard 3 – Resource Management

Students will understand and be able to manage their personal and community resources

Key Idea 1

Students will understand the influence of culture, media, and technology in making decisions about personal and community health issues. They will know about and use valid health information, products, and services. Students will advocate for healthy families and communities.

Physical Education

Intermediate

Students analyze how media and technology influence the selection of health information, products and services

Commencement

Students use technology and the media to promote positive health messages