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**NEW YORK STATE TEACHER  
CERTIFICATION EXAMINATIONS™**

**FIELD 71: EDUCATIONAL TECHNOLOGY SPECIALIST  
TEST FRAMEWORK**

**June 2003**

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June 2003**

<b>Subarea</b>	<b>Selected-Response</b>	<b>Range of Objectives</b>
I.	Foundations of Educational Computing and Technology	0001–0004
II.	Professional Applications of Technology	0005–0008
III.	Integrating Technology Into Education	0009–0012
IV.	Technology Leadership and Resource Management	0013–0016
<b>Constructed-Response</b>		
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Foundations of Educational Computing and Technology  
Professional Applications of Technology  
Integrating Technology Into Education  
Technology Leadership and Resource Management: Constructed-Response Assignment

The New York State Educational Technology Specialist has the knowledge and skills necessary to teach effectively in New York State public schools. The Educational Technology Specialist has a basic understanding of computer operations and concepts and is familiar with equity, ethics, and legal issues associated with the use of technology in education. The Educational Technology Specialist is knowledgeable about the professional applications of technology and is able to plan, implement, and assess concepts and skills relevant to educational computing and technology literacy for all students across the curriculum. The Educational Technology Specialist is able to apply technology-related research findings to the creation and maintenance of effective learning environments and knows how to develop and implement educational technology professional development programs to assist other educators in furthering his or her understanding of teaching and learning with technology. Finally, the Educational Technology Specialist understands issues related to facilities and resource management, and managing the change process in the educational environment.

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**SUBAREA I—FOUNDATIONS OF EDUCATIONAL COMPUTING AND TECHNOLOGY**

**0001 Understand basic computer operations, concepts, and care.**

For example:

- demonstrating knowledge of various kinds of hardware, peripheral devices, and software found in the educational environment
- demonstrating knowledge of major operations systems associated with computing platforms found in the educational environment
- demonstrating knowledge of terminology related to computers and technology
- demonstrating knowledge of basic computing procedures (e.g., startup and shutdown sequences, network login procedures, routine system operating configurations)
- demonstrating knowledge of how to clean and maintain hardware, peripheral devices, and removable media
- demonstrating knowledge about virus scanning, opening and closing files, multitasking, saving files in multiple formats, and using shared files
- demonstrating knowledge of the installation of peripheral devices and related software

**0002 Understand basic troubleshooting techniques for computer systems and related peripheral devices.**

For example:

- recognizing appropriate methods for isolating problems and checking connections
- demonstrating knowledge of common problems with peripheral devices, Internet connections, and network use
- identifying strategies for troubleshooting various hardware and/or software configurations
- demonstrating knowledge of strategies for troubleshooting basic computer operating systems
- demonstrating knowledge of support resources and information for resolving technical problems

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**0003 Understand equity, ethics, and etiquette issues associated with the use of technology in education.**

For example:

- demonstrating familiarity with equity, ethics, and etiquette issues
- demonstrating familiarity with issues of equity regarding computer use (e.g., students with special needs, students with limited English proficiency, students with different economic and social backgrounds)
- demonstrating knowledge of equity and ethics issues related to technology purchasing and policy decisions
- analyzing the historical development and important trends affecting the evolution of technology

**0004 Understand legal, privacy, security, and safety issues associated with the use of technology in education.**

For example:

- demonstrating knowledge of legal, privacy, security, and safety issues related to technology purchasing and policy decisions
- demonstrating knowledge of acceptable use policies for school-owned technology resources (e.g., publishing the names and photographs of minors, appropriate use of chat rooms and computer-mediated conversations)
- demonstrating knowledge of methods for protecting students from inappropriate information and interactions associated with the use of technology
- demonstrating an understanding of liability issues related to piracy, plagiarism, unauthorized access, and/or vandalism of software
- demonstrating knowledge of copyright laws related to the use of computers, software, and technology
- demonstrating knowledge of how to appropriately cite electronic sources
- demonstrating knowledge of health issues related to the use of computers (e.g., eyestrain, repetitive stress injuries)

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**SUBAREA II—PROFESSIONAL APPLICATIONS OF TECHNOLOGY**

**0005 Understand the advanced features of technology-based productivity tools.**

For example:

- demonstrating familiarity with the advanced features of word-processing, desktop publishing, graphics programs, and utilities to develop products
- demonstrating knowledge of how to use spreadsheets for analyzing, organizing, and displaying numerical data
- demonstrating knowledge of how to design and manipulate databases and generate customized reports
- demonstrating knowledge of multimedia, hypermedia, and Web-based publishing
- demonstrating familiarity with teacher utility and classroom management tools
- demonstrating knowledge of how to identify, select, integrate, present, and publish video and digital images
- demonstrating familiarity with specific-purpose electronic devices (e.g., graphing calculators, language translators, scientific probeware)

**0006 Understand the features and uses of telecommunication, information access, and delivery systems.**

For example:

- demonstrating knowledge of how to use telecommunication tools for information access, retrieval, and sharing
- demonstrating familiarity with the use of electronic mail and Web browser applications
- demonstrating knowledge of advanced online search techniques for identifying and indexing information resources
- demonstrating knowledge of a variety of distance learning delivery systems (e.g., computer, audio, and video conferencing)

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**0007 Understand the use of computers and other technologies in research, problem-solving, and product development.**

For example:

- demonstrating knowledge of principles of instructional design associated with the development of multimedia and hypermedia learning materials
- demonstrating knowledge of age- and grade-level appropriate computer-based technology tools for communicating concepts, conducting research, and solving problems for an intended audience and purpose
- demonstrating familiarity with strategies for creating and/or incorporating collaborative online workgroups into instruction to construct and share knowledge
- demonstrating knowledge of how to develop instructional units supported by technology that involve compiling, organizing, analyzing, and synthesizing information

**0008 Understand methods and strategies for planning, delivering, and assessing concepts and skills relevant to educational computing and technology literacy across curricula.**

For example:

- demonstrating knowledge of methods and strategies for teaching concepts and skills related to computers and associated technologies
- demonstrating knowledge of methods and strategies for teaching concepts and skills for applying productivity, information access, and delivery tools
- demonstrating knowledge of methods and strategies for teaching problem-solving skills using technology resources
- demonstrating knowledge of methods and strategies for evaluating the effectiveness of instructional units that integrate computers and technology

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**SUBAREA III—INTEGRATING TECHNOLOGY INTO EDUCATION**

**0009 Understand educational and technology-related research.**

For example:

- applying principles and practices of educational research in educational technology
- demonstrating familiarity with major research findings and trends related to the use of technology in education to support the integration of technology in the educational environment
- demonstrating knowledge of learning and teaching theories and instructional design, and their relationship to the use of technology in the educational environment
- demonstrating knowledge of the social and historical foundations of the use of technology in education
- identifying research related to equity issues concerning access and use of computers and related technologies in education

**0010 Understand principles of instructional design and product development.**

For example:

- demonstrating knowledge of how to incorporate technology into curriculum development in alignment with state and national content standards
- demonstrating an understanding of criteria for evaluating instructional materials (e.g., alignment with content standards, student needs, ease of use, presentation features, authoring capability, ease of navigation, media integration, search strategies, instructional support)
- demonstrating knowledge of design principles for developing instructional materials (e.g., the design of screens, text, graphics, audio, and video)
- demonstrating familiarity with methods for the assessment and evaluation of instructional products
- demonstrating knowledge of how to apply instructional design principles for the development of substantive interactive multimedia computer-based instructional products

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**0011 Understand factors involved in creating and maintaining effective learning environments using technology.**

For example:

- demonstrating knowledge of how to plan learning activities to include appropriate technology resources for students of diverse backgrounds and needs (e.g., prior knowledge, cultural and linguistic backgrounds)
- demonstrating an understanding of how to design, implement, and assess student learning activities that integrate computers and technology
- demonstrating knowledge of how to adapt or modify computer-based presentations for diverse student populations
- demonstrating familiarity with adaptive techniques and assistive devices for students
- demonstrating familiarity with methods for developing and adapting lessons to fit the classroom and the available technology (e.g., one versus multiple computers, networked versus stand-alone computers)
- demonstrating knowledge of how to manage computer technology activities along with other classroom activities

**0012 Understand issues relating to software and hardware selection, installation, and maintenance in the educational environment.**

For example:

- demonstrating an understanding of how to select effective technological resources appropriate to New York State Learning Standards, instructional objectives, and grade level
- identifying software used in classroom and administrative settings (e.g., productivity tools, information access and telecommunication tools, multimedia and hypermedia tools, school management tools, evaluation and portfolio tools, computer-based instruction)
- demonstrating knowledge of procedures for acquiring administrative and instructional software for various educational purposes
- demonstrating knowledge of evaluation criteria for software (e.g., support of content standards and instructional design, clarity of objectives, scope and scale, quantity of useful information, logical development and organization, appropriate reading and vocabulary levels, identification of bias or distortion of information), and identifying reliable sources of software evaluations

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**SUBAREA IV—TECHNOLOGY LEADERSHIP AND RESOURCE MANAGEMENT**

**0013 Understand methods and strategies for the use of computers and other technologies in developing and implementing instructional programs.**

For example:

- demonstrating knowledge of strategic planning to facilitate curriculum development for teaching with computers and related technologies
- identifying national and state guidelines for integrating technology in the educational environment (e.g., National Education Technology Standards)
- evaluating the use of technology in the classroom and demonstrating knowledge of strategies for revising instruction when necessary
- demonstrating the ability to assume a leadership role in incorporating technology in the educational environment
- demonstrating familiarity with methods for promoting the awareness of emerging technologies

**0014 Understand methods and strategies for designing, implementing, and evaluating educational technology professional development programs.**

For example:

- demonstrating knowledge of professional organizations, groups, resources, and activities to support regular professional growth related to technology
- demonstrating knowledge of important factors to consider when designing educational technology professional development programs
- demonstrating knowledge of the steps necessary to design, implement, and evaluate educational technology professional development programs
- recognizing the importance of creating individualized professional development plans
- demonstrating knowledge of models for formal and informal educational technology professional development (e.g., providing in-classroom support, just-in-time training, job-embedded activities, peer-to-peer coaching, workshops)

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**0015 Understand issues related to facilities and resource management.**

For example:

- demonstrating knowledge of budget planning and management procedures (e.g., prioritizing needs) related to educational computing and technology facilities and resources
- identifying funding sources available at local, state, and national levels and methods for developing grant proposals
- demonstrating knowledge of procedures (including ethical and legal issues) for resource acquisition and management of technology-based systems including hardware and software
- demonstrating knowledge of procedures for staffing, scheduling, and maintaining security with regard to the use of computers and technology in a variety of educational environments

**0016 Understand issues relating to and strategies for managing the change process in the educational environment.**

For example:

- demonstrating knowledge of change process issues in the educational environment
- demonstrating knowledge of procedures for evaluating school and district technology plans
- applying evaluation findings to recommend modifications in technology implementations
- demonstrating knowledge of issues relating to building collaborations, alliances, and partnerships involving educational technology initiatives
- demonstrating knowledge of effective group process and interpersonal skills

**SUBAREA V—INTEGRATING TECHNOLOGY INTO EDUCATION: CONSTRUCTED-RESPONSE ASSIGNMENT**

The content to be addressed by the constructed-response assignment is described in Subarea III, Objectives 9–12.