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# **NEW YORK STATE TEACHER CERTIFICATION EXAMINATIONS™**

## **FIELD 071: EDUCATIONAL TECHNOLOGY SPECIALIST TEST DESIGN AND FRAMEWORK**

**May 2018**

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This test design and framework document is designed to provide information about the content and format of a test for the New York State Teacher Certification Examinations™ (NYSTCE®) program. Education faculty and administrators at teacher preparation institutions may also find the information in this framework useful as they discuss the test with candidates. All test components may differ from those presented here. Furthermore, review of this framework, in whole or in part, does not guarantee an increased likelihood of success on any of the New York State Teacher Certification Examinations. The NYSTCE program is subject to change at the sole discretion of the New York State Education Department, and any changes will fully supersede the information presented in this document. As a reminder, candidates are responsible for contacting their certification officer(s) regarding any changes to the New York State Teacher Certification Examinations.

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TEST DESIGN**

This test consists of selected-response items and one extended constructed-response item measuring pedagogical content knowledge. The constructed-response item is scenario-based and requires candidates to describe an instructional strategy to help students achieve a specific learning goal or an instructional intervention to address a specific learning difficulty, and to provide a rationale for employing that instructional strategy or intervention.

The selected-response items count for 80% of the total test score and the constructed-response item counts for 20% of the total test score, as indicated in the table that follows. Each selected-response item counts the same toward the total test score. The percentage of the total test score derived from the constructed-response item is also indicated in the table that follows.

The total testing time is 195 minutes. Candidates are free to set their own pace during the test administration. The following estimates were used to determine the total test time:

- The constructed-response item is designed with the expectation of a response up to 60 minutes.
- The selected-response items are designed with the expectation of response time up to 135 minutes.

Further information regarding the content of each competency can be found in the test framework.

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TEST DESIGN**

<b>Competency</b>	<b>Selected-Response</b>		<b>Constructed-Response</b>	
	Approximate Number of Items	Approximate Percentage of Test Score	Number of Items	Approximate Percentage of Test Score
0001 Technology Concepts and Operations	15	13%	--	--
0002 Digital-Age Work and Learning	15	13%	--	--
0003 Digital Citizenry and Responsibility	15	13%	--	--
0004 Digital-Age Learning Environments and Experiences	15	13%	--	--
0005 Facilitating and Assessing Student Learning	15	14%	--	--
0006 Technology Leadership and Resource Management	15	14%	--	--
0007 Pedagogical Content Knowledge	--	--	1	20%
<b>Total</b>	<b>90</b>	<b>80%</b>	<b>1</b>	<b>20%</b>

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Technology Concepts and Operations  
Digital-Age Work and Learning  
Digital Citizenry and Responsibility  
Digital-Age Learning Environments and Experiences  
Facilitating and Assessing Student Learning  
Technology Leadership and Resource Management  
Pedagogical Content Knowledge

The New York State Educational Technology Specialist has the knowledge and skills necessary to teach educational technology in New York State classrooms, to skillfully train and coach fellow educators in the use of technology, and to lead and facilitate the integration of technology to support active learning in New York State schools and districts. The Educational Technology Specialist fully understands technology concepts and applications and the effective use of technology to support student learning of content knowledge and application skills and of the social, ethical, legal, and human issues related to technology use. The Educational Technology Specialist also understands how to create effective learning environments and experiences related to technology leadership and resource management. The Educational Technology Specialist demonstrates sound practices related to the integration of technology into the New York State P–12 Learning Standards (NYSLS) and Core Curriculum: identifying the educational benefit of technology applications, selecting appropriate technology applications, planning for the integration and implementation of technology applications, and using technology to assess student learning.

As used in this document, the term "research-based" refers to those practices that have been shown to be effective in improving learner outcomes through systematic observation or experiment, rigorous data analysis, ability to replicate results, and publication in a peer-reviewed journal. "Evidence-based" refers to strategies empirically shown to improve learner outcomes, though not necessarily based on systematic experiments or published in a peer-reviewed journal.

**COMPETENCY 0001—TECHNOLOGY CONCEPTS AND OPERATIONS**

Performance Expectations

The New York State Educational Technology Specialist understands the characteristics and functions of a broad range of technology resources, including hardware, software, electronic devices, and computer networks. The Educational Technology Specialist applies knowledge of these technology resources to identify and troubleshoot common technology-related problems encountered in educational settings.

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TEST FRAMEWORK**

Performance Indicators

- a. demonstrates knowledge of technology systems and services that meet specific learning needs
- b. analyzes characteristics, capabilities, and limitations of current and emerging technology resources
- c. applies characteristics of operating systems and utility applications associated with computing platforms in the educational environment
- d. applies knowledge of technology resources that align with content standards, technology standards, and technology learning plans
- e. demonstrates knowledge of concepts related to computer technology, file management, storage devices, and storage media
- f. demonstrates knowledge of terminology and concepts related to networks and telecommunications
- g. applies knowledge of procedures for installing, configuring, maintaining, and operating hardware, software, peripherals, and electronic devices
- h. applies knowledge of techniques for troubleshooting problems with hardware, software, electronic devices, and computer networks

**COMPETENCY 0002—DIGITAL-AGE WORK AND LEARNING**

Performance Expectations

The New York State Educational Technology Specialist demonstrates knowledge of existing and emerging technology resources that are used to support student learning, personal learning, and professional development. The Educational Technology Specialist understands the uses of digital tools and resources and applies features of these tools to facilitate communication, collaboration, research, and problem solving in a digital society.

Performance Indicators

- a. demonstrates knowledge of uses and advanced features of word processing, publishing, graphic design, and video editing to develop professional products that support learning
- b. applies knowledge of uses and features of spreadsheets and databases to organize, analyze, report, and display data to support research and learning
- c. applies knowledge of tools and design principles to create multimedia products to support learning and professional development
- d. demonstrates knowledge of techniques for using digital tools and resources to communicate and collaborate with students, parents/guardians, peers, field experts, and community members to support student success and innovation
- e. applies knowledge of tools and information literacy skills for conducting research and solving problems

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- f. applies knowledge of characteristics of programming, authoring, and Web-development environments (e.g., integrated development environments, WYSIWYG editors)
- g. demonstrates knowledge of technology systems and devices, including preferences, defaults, and selectable features of operating systems, and productivity applications
- h. demonstrates knowledge of digital tools and resources for information sharing and access, including the development and management of Web sites
- i. compares and contrasts characteristics, features, capabilities, and limitations of a variety of distance-learning and online conferencing systems

### COMPETENCY 0003—DIGITAL CITIZENRY AND RESPONSIBILITY

#### Performance Expectations

The New York State Educational Technology Specialist understands digital citizenry; the legal, ethical, responsible, and appropriate use of technology resources and digital information; social and human issues related to technology; and the use of technology to facilitate learning for all students.

#### Performance Indicators

- a. demonstrates knowledge of the legal, ethical, and responsible use of technology tools and resources
- b. applies methods to promote digital etiquette and responsible social interaction among individuals using technology and information resources
- c. applies knowledge of the legal, ethical, and responsible use of digital information, including intellectual property rights, copyright issues, and source documentation
- d. identifies strategies to provide equitable access to digital tools and resources for all students
- e. demonstrates knowledge of equity, ethical, privacy, safety, and security issues related to technology purchasing and policy decisions
- f. demonstrates knowledge of health and safety issues related to technology use
- g. applies learner-centered strategies and technology resources to empower students with diverse needs and abilities and to facilitate learning for all students
- h. demonstrates knowledge of tools and techniques for fostering global awareness through communication and collaboration with students of other cultures

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**COMPETENCY 0004—DIGITAL-AGE LEARNING ENVIRONMENTS AND  
EXPERIENCES**

Performance Expectations

The New York State Educational Technology Specialist designs, creates, and maintains effective technology-enhanced learning environments and experiences that maximize content learning in context. The Educational Technology Specialist meets the needs of all learners by aligning learning environments and experiences with standards outlined in the NYSLS, the New York State Core Curriculum, and the National Educational Technology Standards for Students (NETS-S).

Performance Indicators

- a. applies knowledge of current research and evidence-based best practices related to developing technology-rich learning environments that enable students to participate in managing their own learning and assessment
- b. applies knowledge of methods and strategies for facilitating and managing student learning in a technology-enhanced environment
- c. applies knowledge of methods for addressing students' diverse learning styles, modalities, abilities, and needs using digital tools
- d. identifies relevant, engaging, learner-centered experiences that incorporate digital tools and resources to promote student learning, collaboration, and creativity
- e. applies knowledge of strategies for identifying and evaluating developmentally appropriate technology resources that align with content and technology standards and that support and enhance the NYSLS and the New York State Core Curriculum
- f. applies knowledge of instructional design principles for technology-based learning activities
- g. applies knowledge of methods and strategies for configuring technology resources in a variety of instructional arrangements (e.g., laboratory, classroom cluster) and managing technology resources in the context of learning activities
- h. demonstrates knowledge of software used in classroom and administrative settings (e.g., computer-based instruction, evaluation/portfolio, classroom management)

**COMPETENCY 0005—FACILITATING AND ASSESSING STUDENT LEARNING**

Performance Expectations

The New York State Educational Technology Specialist uses effective methods and strategies for teaching digital-age concepts and skills that address content and technology standards and that foster student learning, creativity, communication, collaboration, and critical thinking. The Educational Technology Specialist uses student performance data to inform instruction and promote learning.

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Performance Indicators

- a. applies knowledge of research related to the use of technology in education and curricular methods and strategies that align with content and technology standards
- b. applies methods and strategies for engaging students in exploring real-world issues and solving authentic problems using productivity and authoring tools
- c. demonstrates knowledge of methods and strategies for engaging students in exploring real-world issues and solving authentic problems using research, communication, and media-based tools (e.g., television, print/electronic media, graphics)
- d. applies methods, strategies, and technology tools that promote creativity, communication, collaboration, critical thinking, planning skills, and problem-solving skills
- e. applies knowledge of characteristics and uses of adaptive/assistive technology resources that reflect Universal Design for Learning (UDL) protocols
- f. demonstrates knowledge of methods and strategies for collaborative knowledge construction in face-to-face and virtual environments and that support the use of distance learning systems
- g. demonstrates knowledge of baseline, formative, and summative assessment strategies that are aligned with content and technology standards
- h. demonstrates knowledge of methods and strategies for using assessment data to inform instruction and promote learning
- i. demonstrates knowledge of the effective use of technology tools and resources to systematically collect and analyze student achievement data, interpret results, and communicate findings to maximize student learning

**COMPETENCY 0006—TECHNOLOGY LEADERSHIP AND RESOURCE  
MANAGEMENT**

Performance Expectations

The New York State Educational Technology Specialist promotes the development and implementation of technology infrastructure, procedures, plans, budgets, and professional development programs that promote excellence. The Educational Technology Specialist supports the change process throughout the instructional environment.

Performance Indicators

- a. demonstrates knowledge of current research and trends related to technology use in schools
- b. identifies effective group processes and applies group process skills to enhance school partnerships in technology integration initiatives



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- c. applies knowledge of national, state, and district standards for technology integration and of strategies and criteria for evaluating and creating the school technology environment and technology-infused strategic plans
- d. applies instructional software and applications (apps) that support the school curriculum with technology-enhanced activities that address content and technology standards
- e. applies knowledge of issues related to designing, implementing, and sustaining technology initiatives; the development of technology plans; purchasing decisions; budget planning and management; and managing the change process in schools and classrooms
- f. applies knowledge of policies and procedures for troubleshooting technology infrastructure and staging, scheduling, and maintaining technology resources in a variety of settings
- g. applies knowledge of issues related to the structure of school-based networks and the hierarchy of network support services
- h. demonstrates knowledge of issues related to developing effective professional development programs and evaluating their effect on instructional practice and student learning

**COMPETENCY 0007—PEDAGOGICAL CONTENT KNOWLEDGE**

Performance Expectations

The New York State Educational Technology Specialist applies knowledge of how to support teachers in integrating technology into the curriculum to enhance the effectiveness of instructional units. The Educational Technology Specialist applies skills for differentiating learning in a technology-enhanced environment that maximizes learning for all students.

Performance Indicators

- a. identifies developmentally appropriate technology resources and activities that integrate technology in a variety of settings
- b. describes effective instructional strategies for integrating resources and activities into instruction
- c. discusses with sound reasoning why an instructional strategy would be effective, using knowledge of research, trends, the NYSLS, and evidence-based best practices in educational technology instruction
- d. demonstrates knowledge of methods and strategies for integrating technology resources, including adaptive/assistive devices that reflect Universal Design for Learning (UDL) protocols, that support the learning needs of diverse learners
- e. discusses effective evaluation strategies for assessing student understanding and for improving student learning, communication, and productivity