ILLINOIS LICENSURE TESTING SYSTEM

FIELD 178: TECHNOLOGY SPECIALIST

TEST FRAMEWORK

November 2003

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TEST FRAMEWORK

Foundations of Technology in Education
Infrastructure
Integration of Technology into Instruction
Management, Planning, and Professional Development

SUBAREA I—FOUNDATIONS OF TECHNOLOGY IN EDUCATION

0001   Understand concepts and skills relevant to learning technologies, tools, and resources.

For example:

- Demonstrate knowledge of concepts and skills (e.g., ease of use, accessibility, age-appropriateness, Web-based interoperability) related to learning technologies, including keyboarding and information access and delivery in classroom, lab, and administrative settings.

- Demonstrate knowledge of concepts and skills related to using classroom and administrative productivity tools.

- Demonstrate knowledge of problem-solving principles and skills (e.g., identifying the problem, using strategies) and how to use technology resources to solve problems.

0002   Understand social, ethical, legal, and security issues related to the use of technology in education.

For example:

- Analyze the social, ethical, and legal issues surrounding the responsible use of technology.

- Demonstrate familiarity with issues of equity regarding the use of computers and other learning technologies.

- Demonstrate knowledge of procedures for maintaining users' privacy, security, and safety when using computers and other learning technologies.

0003   Understand educational and technology-related research, the psychology of learning, and instructional design principles that guide use of computers and technology in education.

For example:

- Recognize principles and practices of educational research in educational technology.

- Recognize major research findings and trends that relate to the integration of technology in an elementary and/or secondary environment.

- Demonstrate knowledge of the relationships of theories of learning, teaching, and instructional design to the use of technology to support learning.

- Relate the use of technology in schools to social and historical foundations of education, including educational reform efforts.

- Demonstrate familiarity with research related to human and equity issues concerning the use of computers and related technologies in education.

- Demonstrate an understanding of how to evaluate the use of a specific technology in a K–12 environment.

SUBAREA II—INFRASTRUCTURE

0004   Understand how to select, install, manage, and maintain the infrastructure of technology in the classroom setting.

For example:

- Demonstrate an understanding of how to plan and configure computer/technology systems and related peripherals in laboratory, classroom cluster, and other appropriate instructional arrangements.

- Demonstrate knowledge of the development of school/laboratory policies, procedures, and practices related to the use of computers and other learning technologies.

- Demonstrate knowledge of how to research, evaluate, and develop recommendations for purchasing instructional software and learning technology systems to support and enhance the school curriculum.

- Analyze procedures for the organization, management, and security of hardware and software.

- Demonstrate an understanding of how to configure a computer system, configure software packages, and troubleshoot and maintain various hardware/software configurations.

0005   Understand how to install, customize, and configure the operating systems of computers and computer networks in school settings.

For example:

- Identify characteristics of the major operating systems associated with computing platforms found in schools and demonstrate an understanding of how to manipulate preferences, defaults, and other selectable features.

- Demonstrate knowledge of how to evaluate, install, troubleshoot, and maintain computer operating systems for classrooms and laboratories.

- Identify characteristics of network software packages used to operate a computer network.

- Demonstrate knowledge of the use of networking software to manage the operation of a local area network (LAN).

- Analyze issues related to selecting, installing, and maintaining wide area networks (WAN) for school districts.

0006   Understand types, uses, and selection of software in both classroom and administrative environments.

For example:

- Identify characteristics and uses of software used in classroom and administrative settings, including productivity tools, information access/telecommunication tools, multimedia/hypermedia tools, school management tools, evaluation/portfolio tools, and computer-based instruction.

- Demonstrate an understanding of purchasing strategies and procedures for acquiring administrative and instructional software for educational settings.

- Demonstrate knowledge of evaluation criteria for software and identify reliable sources of software evaluations.

- Recognize methods of installation, inventory, and management of software libraries and ethical and legal procedures for maintaining them.

- Identify types, characteristics, and uses of assistive technology for students and teachers with special needs and recognize resources to assist in their procurement and implementation.

0007   Understand the use of information access and delivery resources to support the curriculum.

For example:

- Recognize how to use information access and telecommunication tools to support research and instruction throughout the curriculum.

- Demonstrate an understanding of the characteristics and uses of distance learning delivery systems, including computer, audio, and video conferencing.

- Demonstrate knowledge of how to create multimedia presentations using advanced features of a presentation tool and how to deliver them using computer projection systems.

- Demonstrate knowledge of how to install, configure, and use local mass storage devices and media to store and retrieve information and resources.

SUBAREA III—INTEGRATION OF TECHNOLOGY INTO INSTRUCTION

0008   Understand how to plan, deliver, and assess instruction related to learning technologies.

For example:

- Demonstrate an understanding of strategies for heterogeneous grouping and collaboration using learning technologies.

- Recognize considerations and practices related to using learning technologies with diverse populations, including at-risk students and students with disabilities.

- Demonstrate knowledge of integrated technology classroom activities that involve teamwork or small-group collaboration, including their design and implementation.

- Demonstrate knowledge of evaluation strategies and methods for assessing the effectiveness of instructional units that integrate computers and other learning technologies.

0009 **Understand concepts and skills related to implementing, promoting, and supporting technology literacy across the curriculum.**

For example:

- Demonstrate knowledge of issues and strategies related to the implementation and revision of the computer/technology literacy curriculum to reflect ongoing changes in technology.

- Demonstrate knowledge of the uses of media and online tools, such as those related to the World Wide Web (Internet), television, audio technology, print media, and graphics.

- Demonstrate knowledge of methods for promoting the ethical and legal use of technology.

- Demonstrate knowledge of student guidance resources, career awareness resources, and student support activities related to computing and technology as a career option for students.

0010 **Understand concepts and skills related to instructional design and product development.**

For example:

- Identify the characteristics and uses of current authoring environments* and evaluate their appropriateness for classroom applications.

- Demonstrate an understanding of concepts and skills related to the use of modern authoring tools.*

- Apply instructional design principles to the design of screens, text, graphics, audio, and video when developing instructional products.

- Demonstrate an understanding of how to test and evaluate instructional products once they have been created.

- Identify and apply instructional design principles to develop substantive, interactive, multimedia, and computer-based instructional products.

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*authoring environments/tools
software that allows the user to easily create computer-enhanced products of all types, including multimedia, interactive, and Web-based teaching aids

0011   Understand the development of curricular plans and instructional programs that are based on standards and guidelines and that integrate computers and other learning technologies.

For example:

- Identify and demonstrate an understanding of standards and guidelines for developing curricular plans and instructional programs that integrate technology into the curriculum.

- Demonstrate knowledge of accepted principles of strategic planning that facilitate the design of instructional programs for teaching with computers and related technologies.

SUBAREA IV—MANAGEMENT, PLANNING, AND PROFESSIONAL DEVELOPMENT

0012   Understand issues related to facilities and resource management.

For example:

- Demonstrate an understanding of budget planning and management procedures related to educational computing and technology facilities and resources (e.g., Illinois infrastructure to support educational technology).

- Identify resources, including funding and infrastructure, available at the local, state, and/or national level.

- Demonstrate knowledge of effective methods for developing grant proposals.

- Demonstrate knowledge of how to plan, implement, and evaluate strategies and procedures for resource acquisition and for managing technology-based systems, including hardware and software.

- Identify and analyze procedures for basic troubleshooting, preventive maintenance, and procurement of system-wide technological maintenance services.

- Demonstrate knowledge of methods for developing policies and procedures concerning staffing, scheduling, and security for managing computers and technology in a variety of instructional and administrative settings.

0013   Understand strategies for and issues related to managing the change process within educational reform efforts.

For example:

- Recognize how to evaluate school and district technology plans and recommend improvements.

- Demonstrate an understanding of effective group-process skills and issues related to building collaborations, alliances, and partnerships involving educational technology initiatives.

- Analyze educational reform efforts and recommend building-level changes and professional development strategies (e.g., block scheduling, cross-subject units of instruction) that facilitate the integration of technology into all content areas.

- Analyze evaluation findings to recommend modifications in technology implementations.

0014   Understand staff development activities to support professional growth in learning technologies.

For example:

- Demonstrate an understanding of how to design and customize staff development programs that support professional growth in learning technologies for different audiences.

- Identify professional organizations, groups, and resources that support the field of educational computing and technology.

- Identify resources for staff development in learning technologies.