Appendix 1: NCATE/ISTE standards

(http://www.iste.org)

The National Council for Accreditation of Teacher Education (NCATE) is the official body for accrediting teacher preparation programs in the US. The International Society for Technology in Education (ISTE) is the professional education organization responsible for recommending guidelines for accreditation to NCATE for programs in educational computing and technology teacher preparation.

Several sets of standards have been developed by ISTE / NCATE, the most significant for this document being the set Recommended Foundations in Technology for All Teachers and Standards for Basic Endorsement in Educational Computing and Technology Literacy.

Recommended foundations in technology for all teachers

Foundations. The ISTE Foundation Standards reflect professional studies in education that provide fundamental concepts and skills for applying information technology in educational settings. All candidates seeking initial certification or endorsements in teacher preparation programs should have opportunities to meet the educational technology foundation standards.

Basic computer/technology operations and concepts

Candidates will use computer systems and run software to access, generate and manipulate data and to publish results, evaluate performance of hardware and software components of computer systems and apply basic troubleshooting strategies as needed.

- operate a multimedia computer system with related peripheral devices to successfully install and use a variety of software packages.
- use terminology related to computers and technology appropriately in written and oral communications.
- describe and implement basic troubleshooting techniques for multimedia computer systems with related peripheral devices.
- use imaging devices such as scanners, digital cameras, and/or video cameras with computer systems and software.
- demonstrate knowledge of uses of computers and technology in business, industry, and society.

Personal and professional use of technology

Candidates will apply tools for enhancing their own professional growth and productivity. They will use technology in communicating, collaborating, conducting research, and solving problems. In addition, they will plan and participate in activities that encourage lifelong learning and will promote equitable, ethical, and legal use of computer/technology resources.

- use productivity tools for word processing, database management, and spreadsheet applications.
- apply productivity tools for creating multimedia presentations.
- use computer-based technologies including telecommunications to access information and enhance personal and professional productivity.
- use computers to support problem solving, data collection, information management, communications, presentations, and decision making.
- demonstrate awareness of resources for adaptive assistive devices for student with special needs.
- demonstrate knowledge of equity, ethics, legal, and human issues concerning use of computers and technology.
- identify computer and related technology resources for facilitating lifelong learning and emerging roles of the learner and the educator.
- observe demonstrations or uses of broadcast instruction, audio/video conferencing, and other distant learning applications.

Application of technology in instruction

Candidates will apply computers and related technologies to support instruction in their grade level and subject areas. They must plan and deliver instruc-
tional units that integrate a variety of software, applications, and learning tools. Lessons developed must reflect effective grouping and assessment strategies for diverse populations.

• explore, evaluate, and use computer/technology resources including applications, tools, educational software and associated documentation.
• describe current instructional principles, research, and appropriate assessment practices as related to the use of computers and technology resources in the curriculum.
• design, deliver, and assess student learning activities that integrate computers/technology for a variety of student group strategies and for diverse student populations.
• design student learning activities that foster equitable, ethical, and legal use of technology by students.
• practise responsible, ethical and legal use of technology, information, and software resources.

Standards for basic endorsement in educational computing and technology literacy.

Professional studies culminating in the educational computing and technology literacy endorsement prepare candidates to use computers and related technologies in educational settings. All candidates seeking initial certification or endorsements in teacher preparation programs should have opportunities to meet the educational technology foundation standards.

Prerequisite Preparation - Foundations (as above)

Specialty content preparation in educational computing and technology literacy

Professional studies in educational computing and technology provide concepts and skills that prepare teachers to teach computer/technology applications and use technology to support other content areas.

Social, ethical, and human issues

Candidates will apply concepts and skills in making decisions concerning social, ethical, and human issues related to computing and technology.
• describe the historical development and important trends affecting the evolution of technology and its probable future roles in society.
• describe strategies for facilitating consideration of ethical, legal, and human issues involving school management tools to design solutions for a specific purpose.
• identify, select, and integrate video and digital images in varying formats for use in presentations, publications and/or other products.
• apply specific-purpose electronic devices (such as, a graphing calculator, language translator, scientific probeware, or electronic thesaurus) in appropriate content areas.
• use features of applications that integrate word processing, database, spreadsheet, communication, and other tools.

Telecommunications and information access

Candidates will use telecommunications and information access resources to support instruction.
• access and use telecommunications and resources for information sharing, remote information access and retrieval, and multimedia/hypermedia publishing.
• use electronic mail and web browser applications for communications and for research to support instruction.
• use automated on-line search tools and intelligent agents to identify and index desired information resources.

“Candidates use a variety of media, presentation, and authoring packages; plan and participate in team and collaborative projects that require critical analysis”

Research, problem solving and product development

Candidates will use computers and other technologies in research, problem solving, and product development. Candidates use a variety of media, presentation, and authoring packages; plan and participate in team and collaborative projects that require critical analysis and evaluation; and present products developed.
• identify basic principles of instructional design associated with the development of multimedia and hypermedia learning materials.
• develop simple hypermedia and multimedia products that apply basic instructional design principles. Select appropriate tools for communicating concepts, conducting research, and solving problems for an intended audience and purpose.
• participate in collaborative projects and team activities.
• identify examples of emerging programming, authoring, or problem solving environments.
• collaborate in on-line workgroups to build bodies of knowledge around specific topics.
• use a computer projection device to support and deliver oral presentations.
• design and publish simple on-line documents that present information and include links to critical resources.
• develop instructional units that involve compiling, organizing, analyzing, and synthesizing of information and use technology to support these processes.
• conduct research and evaluate on-line sources of information that support and enhance the curriculum.

Professional preparation
Professional preparation in educational computing and technology literacy prepares candidates to integrate teaching methodologies with knowledge about use of technology to support teaching and learning.

Teaching methodology
Candidates will effectively plan, deliver, and assess concepts and skills relevant to educational computing and technology literacy across the curriculum.
• design and practise methods and strategies for teaching concepts and skills related to computers and related technologies including keyboarding.
• design and practise methods and strategies for teaching concepts and skills for applying productivity tools.
• design and practise methods and strategies for teaching concepts and skills for applying information access and delivery tools.
• design and practise methods and strategies for teaching problem solving principles and skills using technology resources.

Hardware/software selection, installation and maintenance
Candidates will demonstrate knowledge of selection, installation, management, and maintenance of the infrastructure in a classroom setting.
• develop plans to configure computer/technology systems and related peripherals in laboratory, classroom cluster, and other appropriate instructional arrangements.
• identify and describe strategies to support development of school/laboratory policies, procedures, and practices related to use of computers/technology.
• research, evaluate, and develop recommendations for purchasing instructional software to support and enhance the school curriculum.
• research, evaluate, and develop recommendations for purchasing technology systems.
• design and recommend procedures for the organization, management, and security of hardware and software.
• identify strategies for troubleshooting and maintaining various hardware/software configurations.
• identify and describe network software packages used to operate a computer network system.
• configure a computer system and one or more software packages.