

Project 4: Research

What is NETS?

http://cnets.iste.org/teachers/t_overview.html

The primary goal of the ISTE NETS Project is to enable stakeholders in PreK-12 education to develop national standards for educational uses of technology that facilitate school improvement in the United States. The NETS Project will work to define standards for students, integrating curriculum technology, technology support, and standards for student assessment and evaluation of technology use.

Major functions of the project are to:

1. develop a comprehensive set of performance-based technology foundation standards for all teachers reflecting fundamental concepts and skills for using technology to support teaching and learning;
2. define essential conditions for teacher preparation and school learning environments necessary for effective use of technology to support teaching, learning, and instructional management;
3. develop standards-based performance assessment tools for measuring the achievement of the technology foundation standards and as a basis for certification, licensing, and accreditation; and
4. identify and disseminate models of teacher preparation where candidates receive experiences preparing them to effectively apply technology to support student learning; and
5. establish a National Center for Preparing Tomorrow's Teachers to Use Technology (NCPT3) which will provide coordination, leadership, and support for the PT3 initiative and dissemination of program results.

Performance Indicators

http://cnets.iste.org/teachers/t_stands.html

The following elements are necessary to be in place at the university, the college or school of education, and the school site:

TECHNOLOGY OPERATIONS AND CONCEPTS.

Teachers demonstrate a sound understanding of technology operations and concepts. Teachers:

- demonstrate introductory knowledge, skills, and understanding of concepts related to technology (as described in the ISTE National Education Technology Standards for Students)
- demonstrate continual growth in technology knowledge and skills to stay abreast of current and emerging technologies.

PLANNING AND DESIGNING LEARNING ENVIRONMENTS AND EXPERIENCES.

Teachers plan and design effective learning environments and experiences supported by technology.

Teachers:

- design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners.

- apply current research on teaching and learning with technology when planning learning environments and experiences.
- identify and locate technology resources and evaluate them for accuracy and suitability.
- plan for the management of technology resources within the context of learning activities.
- plan strategies to manage student learning in a technology-enhanced environment.

TEACHING, LEARNING, AND THE CURRICULUM.

Teachers implement curriculum plans, that include methods and strategies for applying technology to maximize student learning. Teachers:

- facilitate technology-enhanced experiences that address content standards and student technology standards.
- use technology to support learner-centered strategies that address the diverse needs of students.
- apply technology to develop students' higher order skills and creativity.
- manage student learning activities in a technology-enhanced environment.

ASSESSMENT AND EVALUATION.

Teachers apply technology to facilitate a variety of effective assessment and evaluation strategies. Teachers:

- apply technology in assessing student learning of subject matter using a variety of assessment techniques.
- use technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning.
- apply multiple methods of evaluation to determine students' appropriate use of technology resources for learning, communication, and productivity.

PRODUCTIVITY AND PROFESSIONAL PRACTICE.

Teachers use technology to enhance their productivity and professional practice. Teachers:

- use technology resources to engage in ongoing professional development and lifelong learning.
- continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning.
- apply technology to increase productivity.
- use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning.

SOCIAL, ETHICAL, LEGAL, AND HUMAN ISSUES.

Teachers understand the social, ethical, legal, and human issues surrounding the use of technology in PK-12 schools and apply those principles in practice. Teachers:

- model and teach legal and ethical practice related to technology use.

- apply technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.
- identify and use technology resources that affirm diversity
- promote safe and healthy use of technology resources.
- facilitate equitable access to technology resources for all students.

Teacher Profiles

http://cnets.iste.org/teachers/t_profile-gen.html

Numbers in parentheses following each performance indicator refer to the standards category to which the performance is linked. The categories are:

1. Technology operations and concepts
2. Planning and Designing Learning Environments and Experiences
3. Teaching, Learning, and the curriculum
4. Assessment and Evaluation
5. Productivity and Professional Practice
6. Social, Ethical, Legal, and Human Issues

General Preparation

Upon completion of the general preparation component of their program, prospective teachers:

1. demonstrate a sound understanding of the nature and operation of technology systems. (I)*
2. demonstrate proficiency in the use of common input and output devices; solve routine hardware and software problems; and make informed choices about technology systems, resources, and services. (I)*
3. use technology tools and information resources to increase productivity, promote creativity, and facilitate academic learning. (I, III, IV, V)
4. use content-specific tools (e.g., software, simulation, environmental probes, graphing calculators, exploratory environments, Web tools) to support learning and research. (I, III, V)*
5. use technology resources to facilitate higher order and complex thinking skills, including problem solving, critical thinking, informed decision making, knowledge construction, and creativity. (I, III, V)*
6. collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works using productivity tools. (I, V)*
7. use technology to locate, evaluate, and collect information from a variety of sources. (I, IV, V)*
8. use technology tools to process data and report results. (I, III, IV, V)*
9. use technology in the development of strategies for solving problems in the real world. (I, III, V)*
10. observe and experience the use of technology in their major field of study. (III, V)

11. use technology tools and resources for managing and communicating information (e.g., finances, schedules, addresses, purchases, correspondence). (I, V)
12. evaluate and select new information resources and technological innovations based on their appropriateness to specific tasks. (I, III, IV, V)*
13. use a variety of media and formats, including telecommunications, to collaborate, publish, and interact with peers, experts, and other audiences. (I, V)*
14. demonstrate an understanding of the legal, ethical, cultural, and societal issues related to technology. (VI)*
15. exhibit positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity. (V, VI)*
16. discuss diversity issues related to electronic media. (I, VI)
17. discuss the health and safety issues related to technology use. (VI)

* Adapted from the ISTE National Educational Technology Standards for Students.

Post Internship

http://cnets.iste.org/teachers/t_profile-pro.html

Prior to the culminating student teaching or internship experience, prospective teachers:

1. identify the benefits of technology to maximize student learning and facilitate higher order thinking skills. (I, III)
2. differentiate between appropriate and inappropriate uses of technology for teaching and learning while using electronic resources to design and implement learning activities. (II, III, V, VI)
3. identify technology resources available in schools and analyze how accessibility to those resources affects planning for instruction. (I, II)
4. identify, select, and use hardware and software technology resources specially designed for use by PK-12 students to meet specific teaching and learning objectives. (I, II)
5. plan for the management of electronic instructional resources within a lesson design by identifying potential problems and planning for solutions. (II)
6. identify specific technology applications and resources that maximize student learning, address learner needs, and affirm diversity. (III, VI)
7. design and teach technology-enriched learning activities that connect content standards with student technology standards and meet the diverse needs of students. (II, III, IV, VI)
8. design and peer teach a lesson that meets content area standards and reflects the current best practices in teaching and learning with technology. (II, III)
9. plan and teach student-centered learning activities and lessons in which students apply technology tools and resources. (II, III)
10. research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information resources to be used by students. (II, IV, V, VI)
11. discuss technology-based assessment and evaluation strategies. (IV)

12. examine multiple strategies for evaluating technology-based student products and the processes used to create those products. (IV)
13. examine technology tools used to collect, analyze, interpret, represent, and communicate student performance data.(I, IV)
14. integrate technology-based assessment strategies and tools into plans for evaluating specific learning activities. (IV)
15. develop a portfolio of technology-based products from coursework, including the related assessment tools. (IV, V)
16. identify and engage in technology-based opportunities for professional education and lifelong learning, including the use of distance education. (V)
17. apply online and other technology resources to support problem solving and related decision making for maximizing student learning. (III, V)
18. participate in online professional collaborations with peers and experts. (III, V)
19. use technology productivity tools to complete required professional tasks. (V)
20. identify technology-related legal and ethical issues, including copyright, privacy, and security of technology systems, data, and information. (VI)
21. examine acceptable use policies for the use of technology in schools, including strategies for addressing threats to security of technology systems, data, and information. (VI)
22. identify issues related to equitable access to technology in school, community, and home environments. (VI)
23. identify safety and health issues related to technology use in schools. (VI)
24. identify and use assistive technologies to meet the special physical needs of students. (VI)

Profiles for Technology-Literate Teachers

STUDENT TEACHING / INTERNSHIP PERFORMANCE PROFILE

Upon completion of the culminating student teaching or internship experience, and at the point of initial licensure, teachers:

1. apply troubleshooting strategies for solving routine hardware and software problems that occur in the classroom. (I)
2. identify, evaluate, and select specific technology resources available at the school site and district level to support a coherent lesson sequence. (II, III)
3. design, manage, and facilitate learning experiences using technology that affirm diversity and provide equitable access to resources. (II, VI)
4. create and implement a well-organized plan to manage available technology resources, provide equitable access for all students, and enhance learning outcomes. (II, III)
5. design and facilitate learning experiences that use assistive technologies to meet the special physical needs of students. (II, III)

6. design and teach a coherent sequence of learning activities that integrates appropriate use of technology resources to enhance student academic achievement and technology proficiency by connecting district, state, and national curriculum standards with student technology standards (as defined in the ISTE National Educational Technology Standards for Students). (II, III)
7. design, implement, and assess learner-centered lessons that are based on the current best practices on teaching and learning with technology and that engage, motivate, and encourage self-directed student learning. (II, III, IV, V)
8. guide collaborative learning activities in which students use technology resources to solve authentic problems in the subject area(s). (III)
9. develop and use criteria for ongoing assessment of technology-based student products and the processes used to create those products. (IV)
10. design an evaluation plan that applies multiple measures and flexible assessment strategies to determine students' technology proficiency and content area learning. (IV)
11. use multiple measures to analyze instructional practices that employ technology to improve planning, instruction, and management. (II, III, IV)
12. apply technology productivity tools and resources to collect, analyze, and interpret data and to report results to parents and students. (III, IV)
13. select and apply suitable productivity tools to complete educational and professional tasks. (II, III, V)
14. model safe and responsible use of technology and develop classroom procedures to implement school and district technology acceptable use policies and data security plans. (V, VI)
15. participate in online professional collaboration with peers and experts as part of a personally designed plan, based on self-assessment, for professional growth in technology. (V)

TOOLS AND EXPERIENCES FOR THE GENERAL PREPARATION PERFORMANCE PROFILE

1. Operating system—Can save and move files, format disks, and perform other maintenance tasks; understands what a network is compared with a stand-alone system; knows what an operating system is and its purpose; can install and use application programs (such as a CAI program that teaches Spanish)
2. Trouble-shooting—Can solve routine hardware and software problems (e.g., installing software, selecting the correct printer, hooking up the projector)
3. Computer purchases—Understands basic criteria for purchasing hardware, software, and services
4. Word processing—Understands word processing capabilities as well as basic desktop publishing, page design, and layout principles
5. Spreadsheets—Has sufficient knowledge to create a gradebook and make charts
6. Multimedia—Can use draw and paint programs, digital video, and digital cameras; can import graphics; can use images in presentations and publications
7. Database management—Can use an existing database (search, sort, and enter data into a template); can organize and develop own database
8. Presentation software—Will use appropriate design principles in classroom presentations prepared with software

ASSESSMENT RUBRIC

(see Assessment Rubric.doc)

REFLECTIONS

Reflecting on one's work in a written form has become a staple in teacher preparation. Often teacher preparation programs include in their mission statement the idea of developing reflective practitioners. The act of reflecting on work completed brings the cycle of planning, implementation, and assessment full circle by linking the assessment to self-assessment of teaching and critical planning for instructional improvement.

Burke (1997) writes, "Without written commentaries, explanations and reflections, the portfolio is no more than a notebook of artifacts or a scrapbook of teaching mementos." The attachment of a reflection to each entry in the portfolio provides the context for assessing the artifact as evidence in meeting the standards. The reflection is a glimpse into the thinking of the candidate, providing the faculty member with more information as to the candidate's understanding of the criteria and how the criteria have been addressed.

The format for reflections can vary. The seemingly simplistic question of "How does this entry address the standard?", supplemented with additional space for the meaning and value of the entry in addressing the criteria, provides a forum for candidates to address the criteria in a written form. Candidates can complete the reflection as a cover sheet to each entry in the portfolio. Initially, the reflection should be completed immediately as the entry is placed in the portfolio. This ensures that the initial thinking about the entry has been recorded. As the portfolio is being assembled, reflections can be altered to fit the purpose of the portfolio and the criteria being addressed. The strength of the portfolio as an assessment tool lies in the quality of the reflections included.

ADVANCED DEGREE OR CERTIFICATION PORTFOLIO

Advanced Degrees

Many masters and doctoral programs also require the use of a portfolio to document accomplishment of knowledge, skills, and dispositions. Candidates add to and select from their ever-increasing collection of items to fit the purpose of the advanced degree portfolio.