

PSU Competencies Aligned with PDE Standards

Knowing the Content

Standard 1. Identification, selection, installation, and maintenance of technology infrastructure, and hardware and software applications for school administration and instruction including:

- A. Assessment of educational and administrative technological needs,

Competency:

[1.18] Network Design Issues. Demonstrate an understanding of network design issues and rules for network design, by designing an effective Local Area Network to meet the needs of a selected school.

[1.19] WAN Concepts. In order to identify, select, and work with vendors in WAN implementation, understand Wide Area Networking concepts (dial-up service, firewalls, router and bridge options, ISDN, and the state-of-the-art in wireless networking).

[1.21] Technology Assessment and Planning. Conduct a needs assessment to determine the technology needs of teachers, administrators, and other professional staff in at least one building and propose a system of software, hardware, support and maintenance sufficient to meet those needs.

- B. Design and production of media including projected and non-projected visual aids, audio, and video production in both analog and digital forms, and photography using film-based and digital formats,

Competency:

[1.01] Graphic Design Software. Use a graphic design program (like Photoshop or Claris Works) to produce a diagram (such as an organization chart, a project timeline, or a cycle diagram)

[1.02] Digital Camera. Use a digital camera to create an image and transfer it to a computer.

[1.03] Scanner. Use a scanner to create a digital image from a photograph and a line drawing.

[1.04] GIF & JPEG Formats. Describe when to store images in "gif" and "jpg" formats.

[1.05] Image Formats. Convert images from bitmap formats ("pict" or "tiff" files) to "gif" and "jpg".

[1.06] Digital Sound. Create a digitized sound

[1.07] Video Camera. Use a video camera to produce an instructional video consisting of at least two segments combined using simple in-camera editing

[1.08] Digital Video. Create a digital video of between five and twenty seconds in length.

[1.10] Presentation Software. Use presentation software (like PowerPoint) to create a computer-based presentation of at least five displays that includes transitions, builds, clip art, and at least one digital images.

- C. Implementation and maintenance of interactive information systems, the Internet, distance learning technologies, and networks,

Competency:

[1.14] **Install Software.** Identify, download, and install "plugins" and other software available via the Internet.

[1.16] **Network Concepts.** Understand and describe important networking concepts, including network topologies, data packaging, bandwidth, protocol, standards and wiring options (i.e. twisted pair, coax, fiber).

[1.17] **Ethernet Operation.** Describe the operation of an Ethernet Network, including the function of servers, switches, hubs, routers, bridges, and gateways.

[1.20] **Internet Concepts.** Understand Internet operation, including browser and server software (cache memory, helper applications, plugins, setting preferences, etc.), the Internet addressing and domain naming system (DNS), and the TCP/IP and PPP protocols.

D. Assistive technology resources for students with special needs,

Competency:

[5.06] **Assistive Technology.** Define assistive technology and discuss its relationship to the *Education for All Handicapped Children Act* and the current assistive technology mandate.

E. Evaluation of the performance of hardware and software components of computer systems,

Competency:

[1.22] **Evaluate Technological Solutions.** Work with other educators to: identify a need, identify measurable outcomes that the solution is to achieve, develop a technology-based solution, gather data based on the identified outcomes, and determine the effectiveness of the solution.

F. Application of basic troubleshooting strategies.

Competency:

[1.23] **The Process of Troubleshooting.** Describe, in your own words, an effective process for getting to the bottom of technology problems.

[1.24] **Troubleshoot Technology Problems.** describe at least three perplexing technology problems and the process you used to solve them.

Standard 2. Integrating technology into the curricular planning and instructional design including:

A. Research on and evaluation of existing and emerging technologies,

Competency:

[5.01] **Gender Differences.** Describe common differences in the way male and female students approach and react to computer-based technologies.

[5.02] Cultural Differences. Describe cultural differences important to a Technology Specialist.

[5.03] Age Issues. Discuss issues of age and technology use.

[5.04] Technophobia. List at least three ways to overcome what might be called "computer anxiety" or "technophobia" (especially among educators).

B. Use of instructional theories and teaching models,

Competency:

[3.02] Learning Experience. Develop at least one effective technology-based learning experience (CAI lesson or website designed to accomplish educational objectives.)

3.03] Assist Integration. Assist at least three teachers of different subjects and grade levels in the integration of computer-based technologies into their teaching.

[5.05] Media Selection Process. Discuss how to make the media selection process sensitive to issues of gender and multiculturalism.

C. Learner characteristics, developmental levels, and individual differences as related to instructional technology resources and modifications,

Competency:

[6.02] Influence of Effectiveness on Use. Discuss how the findings on basic skills and knowledge writing problem solving research other categories you feel are important should influence the use of technologies in a school or district

D. Access and use telecommunications for information sharing, remote information access and retrieval, and multi-media/hypermedia publishing,

Competency:

[1.08] Digital Video. Create a digital video of between five and twenty seconds in length.

[1.11] Multimedia Production Software. Use multimedia production software (like HyperStudio, Digital Chisel, Toolbook, Authorware, Director, or Oracle Media Objects) to create a multimedia project containing at least one digital image, sound and movie.

[1.12] Browsing & Searching. Browse and Search the World Wide Web.

[1.15] FTP. Transfer text and binary files to and from Internet servers using "FTP" (file transfer protocol) software (such as "Fetch" or "WS_FTP").

[8.01] Copyright Laws. Describe current copyright laws, including:

- video (rented videos as well as recorded broadcasts)
- audio
- software
- resources downloaded from the Internet

- E. Electronic mail and Internet resources for communications and instructional support.

Competency:

[8.02] Censorship on the Internet. Discuss the issue of censorship on the Internet and World Wide Web, and describe how your district and/or teachers can deal with this issue.

[8.03] Internet Usage Policy. Develop an effective district-level Internet Usage Policy.

Standard 3. Management and administration of technology programs at the building, district and regional levels including:

- A. Planning and utilization of facilities including: budgeting, accounting, and program reporting, grantsmanship, personnel administration, and staff development,

Competency:

[2.01] Design Inservice Program. Design at least one effective technology-related inservice program.

[2.02] Implement Inservice Program. Implement at least one effective technology-related inservice program.

[2.03] Evaluate Inservice Program. Gather and present evidence of the effectiveness of at least one technology-related inservice program.

[3.01] Development Process. Describe the curriculum development process.

[4.01] Define Leadership. Define leadership.

[4.02] Effective Leadership. Describe effective leadership.

[4.03] Technology Specialists' Role. Discuss the leadership expected of Technology Specialists.

[4.04] CBAM. Describe the Concerns-based Adoption Model (CBAM).

[4.05] Shared Goal. Lead a group consisting of educators and others to the attainment of a shared goal.

[7.03] Grant Application. Develop a well-written grant application, in response to a call for proposals for a statewide, national, or international competition.

[7.04] Professional Development Plan. Develop a professional development plan for a school district.

[7.05] Making Decisions. Describe how decisions related to technology are made in Pennsylvania school districts.

[8.06] Funding for Public Schools. Describe how funding for public schools is generated in Pennsylvania, and discuss the implications of this for technology initiatives.

- B. Preparing presentations for parents, administrations, school boards, and the public,

Competency:

[7.06] Strategy for Approval. Describe a strategy you would use to increase the probability that a technology proposal your district needs will be approved.

[8.05] School Board Policies. Discuss how local school board policies are created, and list and understand technology-related policies in your school district.

C. Monitoring and evaluating technology plans.

Competency:

[7.01] Effective Technology Plan. Develop an effective technology plan for an entire school district, including:

- mission
- vision
- a five-year plan for the purchase and installation of equipment and software
- personnel projections
- maintenance and upgrades
- a comprehensive budget

[7.02] Reporting Process. Describe an appropriate process for reporting progress against the technology plan to the community.

Standard 4. Research, problem solving and product development of technological applications including:

A. Basic principles of instructional design associated with the development of instructional technology materials,

Competency:

[6.01] Effectiveness of Computer Technologies. Summarize the research on the effectiveness of computer technologies in improving:

- basic skills and knowledge
- writing
- problem solving
- research
- other categories you feel are important

[6.03] Research Study. Describe a simple research study designed to test the effectiveness of a particular use of computer-based technologies in a school

[8.04] Academic Standards. Discuss the emerging academic standards under development by the Pennsylvania Department of Education, including where to find current copies and how these standards might influence technology use in a Pennsylvania school district.

B. Emerging programming, authoring, and problem solving environments including team and collaborative projects such as on-line workgroups,

Note: All students are required to complete the core course, INSYS 462. Students will engage in rich and varied experiences that address this standard while working to successfully complete INSYS 462.

- C. Designing and publishing on-line documents that present information and include links to critical resources.

Competency:

[1.13] HTML & HTML Software. Use HTML or an HTML Editor to create a set of Web pages including:

- Text of different sizes and colors
- Bold and italic text
- At least one image (can be an image that you copy from another LEGAL site)
- At least one link to another page you created, with a link back
- At least one link to another page on the WWW that you did not create
- At least one image that functions as a link
- A "mailto" link that will send mail to you
- A small table
- A list (numbered or unnumbered)
- A colored background
- A "tiled" image background
- At least one page displaying frames
- At least one "image map"