ISTE National Educational Technology Standards for Teachers (NETS-T)
Elon University - Ideas for Appropriate Products

1. TECHNOLOGY OPERATIONS AND CONCEPTS

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

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

Products should demonstrate a candidate’s basic technology skills. Examples would include:
- word processed documents - preferably showing use of some advanced/sophisticated techniques such as formatting, tables, columns, clipart, etc.
- presentations (*PowerPoint*)
- web pages created/authored/published by the candidate
- spreadsheets – preferably showing sophisticated use of formulas and perhaps graphs of data
- graphic organizers (*Inspiration or Kidspiration*)
- drawing document (classroom layout/floor plan for example)

Rubric requires products from at least *three* different applications/programs from the nonexhaustive list above. No candidate should leave Computers and Teaching without having adequate products for Standard 1A; however, the rubric requires evidence of growth and continued use (1B) as demonstrated by at least one product developed during the past year. Again, this should not be difficult. *There is no requirement that these documents be educationally relevant, but ones that are can likely be reused for other standards that follow.*

2. PLANNING AND DESIGNING LEARNING ENVIRONMENTS AND EXPERIENCES

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

A. design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners.
B. apply current research on teaching and learning with technology when planning learning environments and experiences.
C. identify and locate technology resources and evaluate them for accuracy and suitability.
D. plan for the management of technology resources within the context of learning activities.
E. plan strategies to manage student learning in a technology-enhanced environment.

A product that most candidates should have for Indicator 2C is a collection of educationally relevant websites begun in Computers and Teaching. Depending on when they took the course, this might be an annotated bibliography typed in *Word* or it might be a set of online bookmarks with descriptions and organized into folders. *Ideally additions to this list will be made during subsequent courses when locating resources/websites specific to the course.* This indicator may also be addressed by candidates’ locating appropriate technology resources for specific lessons they design.

Indicators 2A, B, D, and E are probably best demonstrated by lesson and unit plans that utilize technology. These should not be lessons that teach technology for the sake of teaching technology, but instead lessons that address knowledge and skills from content areas and enhance that instruction through the use of technology.
- For indicator 2A, the plan should make use of technology through universal design principles and differentiated instruction to meet the diverse needs of learners.
- For 2D and 2E, it is assumed that technology is being used in instruction, and the plan should address for 2D the *management* of the technology resources (obtaining and setting up equipment, scheduling a lab, reserving a tech cart/mobile lab) and for 2E, the *management* of student learning while using technology.
- If the lessons/units have *students using technology*, the SCOS objectives for the lessons should include ones from the computer skills curriculum of the SCOS in addition to the objectives from content areas. *When this occurs, the same lessons are perfect for inclusion under standard 3A that follows.*
3. TEACHING, LEARNING, AND THE CURRICULUM
Teachers implement curriculum plans that include methods and strategies for applying technology to maximize student learning. Teachers:
A. facilitate technology-enhanced experiences that address content standards and student technology standards.
B. use technology to support learner-centered strategies that address the diverse needs of students.
C. apply technology to develop students' higher order skills and creativity.
D. manage student learning activities in a technology-enhanced environment.

This standard requires that students, not just teacher candidates use technology, so as for Standard 2, lesson and unit plans that have students/learners using technology are ideal ways to demonstrate mastery of Standard 3. Provided there is an assessment plan in place as part of the lesson/unit that assesses student mastery of technology skills, the same products may appropriately address 4C below.

- Indicator 3A requires that the lesson/unit address both content and technology standards, both of which are part of the NCSCOS. Integration is key here. Candidates learn ABOUT the computer skills SCOS in Computers and Teaching, but they do not have the knowledge and skills needed at that point to plan and design lessons. Once candidates develop those skills, they should integrate computer skills SCOS objectives into lessons designed to teach other content areas.
- Indicator 3B is similar to 2A, and 3D is similar to 2 D&E, so the same types of lesson plans that satisfy those standards should work here.
- Indicator 3C is self explanatory, and hopefully by the time candidates enter their student teaching experience, their lessons are aimed at developing these types of skills in their students. Having students/learners work with spreadsheets or databases can promote critical thinking skills and can easily be integrated into many content areas. Having students evaluate websites also promotes critical thinking and can be integrated into any content area. Having students generate word processed documents, multimedia presentations, webpages, or drawing documents to communicate their learning of content can develop creativity and communication skills. All of these types of skills are part of the NC K-12 SCOS for computer skills (and thus also address 3A).

4. ASSESSMENT AND EVALUATION
Teachers apply technology to facilitate a variety of effective assessment and evaluation strategies. Teachers:
A. apply technology in assessing student learning of subject matter using a variety of assessment techniques.
B. use technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning.
C. apply multiple methods of evaluation to determine students’ appropriate use of technology resources for learning, communication, and productivity.

While the three indicators under #4 all deal with technology and assessment, they differ from one another.
- Indicator 4A asks candidates to assess student learning of subject matter, but to make use of technology when doing it. Any lesson or unit, including those already used for standards 2 and 3, should incorporate an assessment plan – a means of determining whether the instruction resulted in student learning of the intended content/subject matter. Use of online assessments would be appropriate here (see www.4teachers.org for tools to create quizzes, rubrics, checklists and more). Use of a spreadsheet as a tool to analyze pre and post test results (even if test was paper and pencil) would also be appropriate.
- Indicator 4C on the other hand asks candidates to assess students’ appropriate use of technology resources, so instead of assessing student learning of subject matter, candidates should use multiple methods (with or without technology) to assess student mastery of technology objectives. Any lesson or unit that was used for Standard 3 should have incorporated grade-appropriate technology objectives from the SCOS, and therefore the unit should include some way of assessing whether students met the technology objectives. These could be rubrics for assessing student-created documents or presentations; candidates could also attach to their units, products generated by students (after removing identifying information to protect privacy).
- Indicator 4B is self explanatory. Candidates will have generated a spreadsheet for fictitious students in Computers and Teaching that could be an appropriate product for 4B; however, ideally, they will apply their spreadsheet and graphing skills to collect and analyze authentic data from real students and will interpret the results and communicate the findings to themselves, cooperating teachers, students, and parents and will use the information to reflect on how they can modify their instruction to maximize student learning.
5. PRODUCTIVITY AND PROFESSIONAL PRACTICE

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

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

While lesson and unit plans were appropriate for standards 2 and 3, this standard focuses less on instruction and more on teacher productivity and the teacher’s role as a professional.

- As a start for 5A, in Computers and Teaching, candidates will have included in their list of websites (see 2C above) a list of websites of professional organizations. Hopefully in subsequent courses, they become further acquainted with these organizations and the resources they offer to professionals.
- Lessons and units can show up as appropriate products for 5B if they include a reflection on the lesson that addresses use of technology.
- Use of technology tools by the candidate to make his/her life easier (increase productivity) would satisfy indicator 5C, and many of the products used under other standards would be appropriate for inclusion here. Examples be online bookmarking tools (2C), use of technology tools to generate assessments (4A), spreadsheets to analyze assessment data (4B), and word processed documents, presentations, candidate designed webpages, and graphic organizers. Many of these could be same ones used for Standard 1 provided those were educationally relevant, but ideally, as candidates enter methods courses and move towards becoming professionals, they will use the tools learned in Computers and Teaching and apply them to make themselves more productive in the real, not hypothetical world of teaching.
- As was true for 5C, many products previously used for other standards can work for 5D. Again, things created in Computers and Teaching may be appropriate, but things used in actual classroom settings are preferred. These might include teacher/classroom websites, letters, presentations to communicate information or graphs to communicate assessment data; parents or other teachers and professionals would be the audience in each case.

6. 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:*

A. model and teach legal and ethical practice related to technology use.
B. apply technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.
C. identify and use technology resources that affirm diversity
D. promote safe and healthy use of technology resources.
E. facilitate equitable access to technology resources for all students.

Much of this content is thoroughly addressed in Computers and Teaching. Students write papers, create presentations, and include websites in their collected resources (2C) about relevant topics including online safety, Acceptable Use Policies (AUPs) and privacy (6A & D); copyright, Fair Use Guidelines, and obtaining appropriate permission to use resources (6A); and the digital divide and ways to promote equal access to technology for all students (6B, C, and E). All of these products could be included under Standard 6 as evidence that candidates understand the issues. Ideally application of this knowledge will be reflected in products they generate in subsequent courses. For example:

- Any lesson that has students using technology, especially the Internet, should include reference to issues of safety and privacy and reference to the school system’s AUP (6D). Candidates should confirm, prior to having students use the Internet, that an AUP has been signed by each student and parent, and reference to this should be included in the lesson plan (this would also address 2D & 2E). Inclusion of relevant student objectives from computer skills SCOS would also address 3A.
- Any products generated by the candidate should model adherence to copyright laws and Fair Use Guidelines, and any lesson where students use the work of others should teach or reinforce previous learning about such practices (6A). Lessons that include an assessment of whether or not student work adhered to ethical and legal guidelines or samples of student work could also serve as evidence of 4C.
- Lessons or reflections on them should address how the candidate worked to facilitate equitable access to technology for all students (6E) and how the candidate made choices and decisions about resources that addressed 6B and 6C.