4 Steps to Standards Integration

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By Vanessa Domine

It is too easy for teachers and library media specialists to entangle themselves in the multiple strands of standards: State core curriculum content standards, NETS•S, NETS•T, and the Information Literacy Standards (ALA). To prevent teachers from drowning professionally in this vast sea of accountability, I found that the following exercise untangles the standards and helps teachers to align their teaching style with immediately accessible instructional technologies. I outline a curriculum design process that allows educators to visually assemble curriculum where standards are at the forefront of their teaching and where instructional technologies play a supporting role.

Take Inventory

The first step in this design exercise requires teachers to create a comprehensive inventory of educational media and technology at their school site. The inventory should include more than just a list of computers and software. Equally valuable instructional technologies include manipulatives, books, TVs, VCRs, overhead projectors, microphones, cameras, and audio recorders—in addition to personal digital assistants, electronic whiteboards, and tablet PCs. Consulting a district or school technology plan or even library plan (if such documents exist) is an excellent way to find out what equipment the school has as well as get familiar with the school’s vision, mission, and goals.

Once the inventory is as comprehensive as possible, I encourage teachers to ask their technology coordinator or designated tech expert to assist them in categorizing the inventory list according to media format (i.e., object, print, audio-visual, multimedia). It is useful as well to classify software applications according to their general type—for example, simulation, authoring, database, drill-and-skill. It is also worthwhile for teachers to review their inventory list and ask the questions, “Which of these technologies do my students already use? And to what degree do they use them?” Interestingly, young students might use mostly cell phones, video games, and instant messaging outside the classroom and encounter completely different technologies in the classroom. This type of digital divide is an important one for teachers to notice and ultimately bridge. However, in a more immediate sense, creating a technology inventory allows teachers to:

• Locate technologies that are currently accessible at their school site and thus are real options for their teaching;
• Identify technology professional development needs; and
• Create a tangible document that will allow teachers to temporarily set aside the technology and focus on core curriculum content.

Aligning curriculum with technology standards can be a challenge.
Establish a Curriculum Goal

The second step is to create a simple curriculum goal statement. Ideally, the goal statement should be grounded in a specific content area, and align with district or school goals. These are often represented through a yearly theme or mission, such as “Caring Communities” or “Reach for the Stars,” or even an immediate pressing need such as raising math test scores. At the same time, the curriculum goal should be broadly crafted (e.g., enhance students’ understanding of physics).

A teacher can also derive a goal statement from specific grade-level strands of standards, such as increasing first grade students’ understanding of weather. The ways of defining a goal are numerous, depending upon the degree to which teachers collaborate across disciplines and the specific needs of the school.

Once the curriculum goal is widely cast, it is essential to define it through national, state, and local curriculum standards. This is, in many ways, an interpretive exercise. One teacher chose “to increase fourth grade students’ proficiency in U.S. geography,” and defined it through the social studies and language arts standards, which include understanding the locations of major geographical, physical, and human characteristics of the United States and reading a variety of materials and texts, using visual information, and writing in clear language. I then ask teachers to make a list of their selected core content standards that define their overarching curriculum goal.

Identify Teaching Strategies

Most teachers already know how they like to teach and how they want students to learn. For the third step I ask teachers to create a list of teaching strategies that might include lecture, demonstration, large/small group discussion, collaboration, team-teaching, tutoring, hands-on practice, individual study, listening, brainstorming, question-and-answer, research, or media production. I then ask them to categorize this list according to those strategies that are predominantly teacher-centered and those that are primarily student-centered. Creating a list of teaching strategies allows teachers to reflect and, if necessary, revise their teaching style to accommodate specific standards and students with special needs. This is an important step, as it emphasizes the significance of how learning occurs, not just what or how content is taught. This exercise leads to important conversations about how the methods and media of instruction ultimately shape the curriculum that is enacted in the classroom environment.

Because the information literacy standards comprise a perspective or lens for core curriculum content, they serve as a bridge between specific technologies and methods of teaching. In other words, information literacy is a means to a particular curricular end, rather than itself a content goal. For example, ALA Standard 1 refers to accessing information efficiently and effectively. Students in History grades 7–8 should know different types of primary and secondary sources and the motives, interests, and bias expressed in them (e.g., eyewitness accounts, letters, diaries, artifacts, photos, magazine articles, newspaper accounts, hearsay). Similarly, the NETS-S for grades 3–5 require students to determine when technology is useful and to select the appropriate tool(s) and resources to address a variety of tasks and problems. These technical standards and skills are more appropriate to discuss after choosing a curriculum goal, as they often imply methods and specific technology resources for achieving the content goal.
## Technology Integration Matrix

### Standards

#### Access

- **Social Studies:** Civics; Diversity; Cultural exchange and conflict; Summarize information in various forms; Problem solving and research skills
- **Technology Literacy Standard:** Responsible use of online library resources.
- **Information Literacy Standard 1:** Access information efficiently and effectively
- **NETS/S Standard 5:** Technology research tools; all

#### Analyze

- **Social Studies:** Analyze events over time; Analyze prejudice; Compare and contrast
- **Technology Literacy Standard 8:** Use a graphic organizer
- **Information Literacy Standard 3:** Applies info
- **NETS/S Standard 5:** Technology research tools; Use tech to evaluate info from a variety of sources

#### Evaluate

- **Social Studies:** Examine current issues; Relate current events to past events; Differentiate between power & authority
- **Technology Literacy Standard 8:** Evaluates information; Appropriate use of e-mail
- **Information Literacy Standard 2:** Evaluates critically and competently
- **NETS/S Standard 6:** Technology problem-solving and decision-making tools; Real-world problem solving

#### Produce

- **Social Studies:** Organize events in a time line
- **Technology Literacy Standard 8.1:** Solve problems collaboratively; Design and produce
- **Product a multimedia project
- **Information Literacy Standard 3:** Use information accurately and creatively; Standard 8: tools; ethical behavior
- **NETS/S Standard 2:** Responsible use 4: technology communications, social, ethical, and human issues; Use telecommunications to collaborate

#### Communicate

- **Social Studies:** Explain American symbols; Values that continue democracy; Heritage among diversity.
- **Technology Literacy Standard 8.1:** Communicate results in project or presentation.
- **Information Literacy Standard 9:** Contribute positively to the learning community to pursue and generate information
- **NETS/S Standard 4:** Technology/communication tools; Variety of forms to communicate

### Strategies

- Read aloud
- Problem posing
- Large group discussion
- Information gathering
- Notetaking
- Small group work
- Video presentation
- Q&A
- Large group discussion
- Debate
- Brainstorming
- Concept mapping
- Individual writing
- Peer critique
- Developing hypertext
- Collaborative writing
- Nonlinear design
- Storyboarding
- Multimedia production
- Peer editing
- Oral/Visual presentation
- Listening
- Q & A
- Peer critique
- Discussion

### Technologies

- Internet access
- Printer
- Database/Encyclopedia
- Notepad software
- Internet access
- Streaming video
- Electronic whiteboard
- Concept-mapping software
- Internet access
- Word processing
- E-mail
- Printer
- Scanner
- Image editing
- Hyperstudio
- Video editing
- E-mail/IM
- Internet access
- LCD projector
- Microphone
- Intranet

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in the first column and also direct the selection of additional strategies and activities to guide students toward the assessments in the second column. The process of filling in the matrix is a recursive one, and it involves critical questions about how standards are achieved and what teaching strategies and (formalized) assessments support curriculum standards.

Finally, teachers choose from their technology inventory those items that will support each teaching strategy or a set of strategies. For example, Internet access will support a teacher demonstration as well as student research. This step clearly requires not only knowledge about how the technologies work, but also knowledge about what each technology enables and disables pedagogically. For example, the teacher’s use of a presentation will visually supplement a lecture or explanation; however, the technology will not facilitate a class discussion (teachers and students do). Similarly, a student's assembly of a presentation does not display his/her research skills or ability to analyze information. It can, however, display technological proficiency and display interpretation and understanding of ideas or events. This important step of connecting the dots with technology is an important one, as it sheds light on the benefits and constraints of technologies that may dominate education—yet be of little pedagogical use.

The key to this exercise is to readily identify any gaps or misalignment of elements within each column, and then adjust accordingly. It can be thought of as creating a set of equations. Technologies in the far right column used to support each teaching strategy or method in the middle column will ultimately achieve the standards in the left column. It is during this process of alignment that teachers and media specialists often realize that the technologies and even the assessments used are misaligned with the teaching strategies and standards. In addition, they may also find that their assessments are not accurately identifying or supporting the levels of technological and information literacies indicated in the NETS and ALA standards.

This exercise is a useful anchor for inservice teachers and media specialists to experiment using new media technologies to support existing curriculum or, conversely, use traditional media technologies to support new or unfamiliar curriculum standards. Once a matrix is established for a particular goal, it provides both breadth and depth to curriculum as it holds pedagogy paramount and subordinates technology. Best of all, it positions information literacy standards and the NETS•S as turnkey tools for smarter technology integration.

Call for Curriculum Submissions

Have you or a colleague taught a lesson or unit integrating technology that went particularly well?

Do you have:
- Tips, tricks, or tidbits?
- Stories or quotes that demonstrate student learning?
- A great tech tool or resource?
- Quick ideas easily adapted to other settings or content areas?

If you answered yes to any one of these, please call or write the editor with your ideas:

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