

Florida's Technology Integration Matrix

To create its technology guidelines, Florida focused on the intersection of meaningful learning environments and levels of technology integration.

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Many teachers and principals have received software or device-specific training, and many are adept with a variety of technology tools. There is, however, frequently a need for additional training and modeling for teachers in how to best use these technology tools in meaningful ways during daily instruction and for principals in how to best evaluate this type of instruction and recommend professional development.

The Technology Integration Matrix (TIM) was created to be a comprehensive framework for evaluating technology integration in instructional settings. It includes resources that model best practices, present a context for planning, and assist with choosing educator professional development. It was originally created in 2006 by the Florida Department of Education and the Florida Center for Instructional Technology (FCIT), which is based at the University of South Florida's College of Education.

The new TIM, formally launched in February 2011, has been expanded to provide more details regarding the focus of the teacher, the focus of the students, and components of the learning environment. The TIM website includes hundreds of additional free resources for schools as well as tools for classroom observation and evaluation. Although it was created to serve the needs of educators in Florida, TIM and related tools are useful for guiding technology integration regardless of a school's location.

The Matrix

TIM illustrates how teachers can use technology to enhance learning for K–12 students. The tool describes five interdependent characteristics of



meaningful learning environments—active, constructive, goal directed, authentic, and collaborative (adapted from Jonassen, Howland, Moore, & Marra, 2003)—and associates each characteristic with five levels of technology integration: entry, adoption, adaptation, infusion, and transformation. Together, the five levels of technology integration and the five characteristics of meaningful learning environments create a matrix of 25 cells. (The interactive matrix is available at <http://fcit.usf.edu/matrix/matrix.php>.) This matrix gives schools a foundation for organizing technology-related professional development and a common vocabulary regarding technology integration.

Describing levels of technology integration across characteristics of good teaching is a foundation for professional development, but TIM offers more than that. Within each cell, the matrix links to four classroom

videos—one each in math, science, language arts, and social studies. These videos, recorded in classrooms across Florida, show concrete examples of technology integration and demonstrate many different teaching profiles. A teacher who is struggling with the how and why of technology integration can see examples of lessons in which students use technology and hear explanations directly from his or her peers. Each video is also accompanied by a lesson plan.

Evaluating the use of technology within a given lesson is a complex task. TIM defines descriptors for student activity, teacher activity, and the setting for each level of technology integration. It breaks down the complexity so that educators can apply a practical understanding of the attributes of effective teaching to technology integration. For example, the following descriptors are given for the *entry* level of technology integration in an active learning environment:

- Students receive information from the teacher or from other sources. Students may be watching an instructional video on a website or using a computer program for “drill and practice” activities.
- The teacher may be the only one actively using technology. This may include using presentation software to support delivery of a lecture. The teacher may also have the students complete “drill and practice” activities on computers to practice basic skills, such as typing.
- The setting is arranged

for direct instruction and individual seatwork. The students may have very limited and regulated access to the technology resources.

Contrast those entry-level descriptors with the *transformation* level of technology integration in an active learning environment:

- Students have options on how and why to use different technology tools, and often extend the use of tools in unconventional ways. Students are focused on what they are able to do with the technology. The technology tools become an invisible part of the learning.
- The teacher serves as a guide, mentor, and model in the use of technology. The teacher encourages and supports the active engagement of students with technology resources. The teacher facilitates lessons in which students are engaged in higher-order learning activities that may not have been possible without the use of technology tools. The teacher helps students locate appropriate resources to support student choices.
- The arrangement of the setting is flexible and varied, allowing different kinds of self-directed learning activities supported by various technologies, including robust access to online resources for all students simultaneously.

The TIM website also includes presentation materials and printable handouts to support schools and districts that base professional development on TIM. In addition, FCIT personnel are available to conduct workshops with teachers, train administrators to use the TIM classroom observation tool, evaluate technology integration, and help with professional development.

Two TIM Tools

Two additional tools that are scheduled for release in spring 2012 will help educators apply TIM resources to their schools. The TIM Observation Instrument (TIM-O) is an evaluation tool for classroom use. On a laptop or a handheld device, or on a printed copy of the same observation form, an observer can quickly and easily answer yes/no questions about what he or she sees in the classroom. On the basis of those answers, the instrument will determine where the lesson falls within each characteristic on the matrix, allowing the school or district team to determine the most effective professional development options for the teacher being observed.

The second tool currently under development is the Technology Comfort Measure (TCM), which gauges a teacher’s level of comfort with technology integration. The teacher views a series of photograph pairs showing classroom settings. In each pair, the teacher sees two different approaches to the same scenario and is asked to choose the one with which he or she is most comfortable. The activity takes just a few minutes to complete and gives the teacher an estimate of his or her comfort level with technology integration.

The matrix, with its 100 video examples and detailed profile descrip-

tions, is available online, free of charge, for educators everywhere. The evaluation tools are also free for an unlimited number of single observations.

Fee-based versions of the tools will include back-end reporting progress monitoring, which will enable schools to enter multiple observations for teachers and track them over time using various reporting options.

TIM, TIM-O, and the TCM were developed by a large team of professional educators from across the state. The team conducted focus groups and interviews with teachers, technology specialists, principals, district personnel, and university researchers and also observed classrooms. Descriptions of technology integration went

through a public comment period before adoption.

Beyond TIM

TIM is just one example of the tools and resources that have been developed as a part of the Florida Digital Educators program to support professional development in the state. Many Florida teachers have also used the Action Research for Technology Integration tool. Teacher action research, also known as teacher inquiry, is a strategy for helping educators through a systematic study of their own professional practice. Florida's Lesson Planner tool is a structured format for teachers to develop and share lesson plans and allows for two-way communication between the teacher

and a mentor or researcher. The Florida Digital Depot provides teachers with easy access to digital content to improve their teaching. Florida also provides face-to-face professional development through Teaching & Learning Institutes. Working together, Florida's tools and resources provide excellent support for professional development for teachers and principals. **PL**

Author's note: Florida's TIM and the accompanying tools are available at <http://mytechmatrix.org>.

REFERENCES

- Jonassen, D., Howland J., Moore, J., & Marra, R. (2003). *Learning to solve problems with technology: A constructivist perspective* (2nd ed.). Upper Saddle River, NJ: Merrill Prentice Hall.