Teaching Effectively with Technology Requires...

a working understanding of Technological, Pedagogical, and Content Knowledge (TPACK). Drs. Punya Mishra and Matthew Koehler coined the term TPACK to describe the theoretical framework for examining the funds of knowledge which educators use in order to design and develop lessons infused with technology. Their work builds on the ideas of educational psychologist Lee Shulman around Pedagogical Content Knowledge, or (PCK). PCK is the representation of a subject (i.e. math or history) in a way that makes it comprehensible to others. Since there are no single most powerful forms of representation, faculty must have at hand a repository of alternative forms of representation, some of which derive from research whereas others originate in the wisdom of practice.

According to Shulman, PCK also includes an understanding of what makes the learning of specific topics easy or difficult: the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of those most frequently taught topics and lessons.

If those preconceptions are misconceptions, instructors need knowledge of the strategies most likely to be fruitful in reorganizing the understanding of learners, taking into consideration the prior knowledge and experience with which the learner comes to a course. TPACK attempts to capture some of the essential qualities of knowledge required by educators for technology integration in their teaching practice, while addressing the complex, multifaceted and situated nature of teacher knowledge. At the heart of the TPACK framework, is the complex interrrelationship that exists between the three primary forms of knowledge: Content (CK), Pedagogical (PK), and Technological (TK). Faculty need to know not just the subject matter they teach, but also the manner in which the subject matter can be changed by the application of technology. When thinking about how to integrate technology into a course, it helps to think about the cross-sections that are created in the examination of TPACK. Specifically Technological Pedagogical Knowledge or (TPK) is knowledge of the existence, components and capabilities of various technologies as they are used in teaching and learning settings, and conversely, knowing how teaching might change as the result of using particular technologies. Faculty need to know not just the subject matter they teach, but also the manner in which the subject matter can be changed by the application of technology.

Technological Content Knowledge or (TCK) is knowledge about the manner in which Technology Knowledge (TK) and content knowledge (CK) are reciprocally related to each other. Although technology constrains the kinds of representations possible, newer technologies often afford newer and more varied representations and greater flexibility in navigating across these representations. Faculty need to know not just the subject matter they teach, but also the manner in which the subject matter can be changed by the application of technology.

Sources:
http://www.leeshulman.net/domains-pedagogical-content-knowledge.html
http://www.tpack.org
A brief overview of a few technological tools and services available to Purdue Faculty:

Adobe Connect*: PowerPoint, video, audio, and screen can be shared with multiple people simultaneously through a web browser. Sessions can be recorded. http://www.itap.purdue.edu/learning/tools/gomedia/

Blackboard*: Learning management system (LMS) which allows faculty to managing content, engaging learners to assessing outcomes. http://www.itap.purdue.edu/learning/tools/blackboard/

BoilerCast*: Automatically record the audio (and, if you want, the screen from the computer) from a classroom to broadcast online. http://www.itap.purdue.edu/learning/tools/boilercast/

Confluence*: A content collaboration tool that allows teams to create pages, discuss files, and share, several types of media. http://www.techsmith.com/confluence.html

Course Email List*: Create a course e-mail list and send an email to one address to have it sent to all currently registered students. Updates automatically based on registrar data. http://www.itap.purdue.edu/learning/tools/emailists/

CourseEval*: CoursEval is a web-based software application that allows students to anonymously evaluate courses and instructors online, replacing the traditional paper bubble sheet end-of-semester evaluations. http://www.purdue.edu/cie/Website%20CoursEval/courseeval/

DoubleTake*: A mobile video sharing system designed specifically for students to use with their courses in order to capture, upload, and share video within minutes. http://www.purdue.edu/doubletake/Home/Splash/

Gradient*: Review is a web based writing and peer assessment tool that allows students the opportunity to develop the skills in writing scholarly material by providing them with structured writing prompts, calibrated essays for analysis, and automated and peer reviewed feedback. http://www.purdue.edu/review

Hotseat*: Engage students in and out of class. Instructors and students can post ideas, questions, vote, and reply in a microdiscussion with their laptops, smart phones, or cell phones. http://www.itap.purdue.edu/studio/hotseat/

iClicker*: A device which helps you pinpoint learner misconceptions through interactive quizzes while keeping the focus on the course content, not the technology. http://www.itap.purdue.edu/learning/tools/iclicker/

JetPack*: The Jetpack publishing platform enables users to create collections of interactive media called “packs.” The packs can be run on most popular devices, and because the content is stored on the users’ phones, it runs natively and doesn’t have delays caused by downloads. http://www.itap.purdue.edu/studio/jetpack

Mixable*: Create a course stream. Connects students in a course to share thoughts, images, videos, and other files in a Facebook-like environment accessible from mobile devices as well as computers. http://www.itap.purdue.edu/studio/mixable/


Qualtrics*: A Web-based survey software program. Surveys can be created and distributed by anyone with a career account. http://www.itap.purdue.edu/learning/tools/qualtrics/

Respondus*: Respondus is a tool for creating and managing exams that can be printed to paper or published directly to Purdue’s course management system, Blackboard. http://www.itap.purdue.edu/learning/tools/respondus/

Safe Assign*: SafeAssign assignment tool is a plagiarism identification and prevention service within the Blackboard course management system. http://www.itap.purdue.edu/learning/tools/blackboard/safeassign/

Software Remote*: Access many of Purdue’s licensed software packages remotely from your home or office computer. https://goremote.itap.purdue.edu/Citrix/XenApp/auth/login.aspx

Streaming Media Server*: With 2 GB of server space for each faculty member, the Streaming Media Server hosts instructional media (videos and audio) that can be linked to by other systems, such as Blackboard or course websites. http://www.itap.purdue.edu/learning/tools/streaming/

StudyMate*: Create mastery or game quiz options like flashcards, matching, crosswords that can be uploaded to Blackboard. http://www.itap.purdue.edu/learning/tools/studymate/