Using Technology to Differentiate Instruction

Some teachers who purposefully integrate technology into their classroom do so to differentiate instruction—often using specific strategies that help students become lifelong learners. Differentiated instruction is the process by which teachers use a variety of teaching strategies to meet the needs of a diverse group of students. As a result, students are provided with "different avenues to acquiring content, to processing or making sense of ideas, and to developing products so that each student can learn effectively" (Tomlinson, 2001, p. 2).

To that end, technology can also help teachers transform their classrooms, enabling them to customize the curriculum to the needs of each student. Technology also provides opportunities to differentiate homework and motivate students to learn and to grow.

What Does Differentiation Look Like?

Although this lesson is intended to focus on the types of technologies that support differentiation, let's first take a closer look at what differentiation looks like in the classroom:

- A wide variety of assessments is used to determine students' learning styles, strengths, weaknesses, likes, and dislikes. Ongoing assessments guide instruction.

- Teachers incorporate a variety of strategies to reach the diverse needs of their students, understanding that not all students learn in the same way or at the same rate.

- The teacher provides opportunities for whole-class, small-group, and individual instruction.

- The classroom is student-centered rather than teacher-centered. Often the teachers learn alongside their students.

- Content is relevant and meaningful for students and allows them to apply their learning to real-world problems.

- The classroom climate is a culture of tolerance, safety, mutual respect, and the understanding that every student learns differently and at a different pace. Student voice is appreciated and encouraged.

- The instructor uses pre-, ongoing, and post-assessments through both traditional and nontraditional evaluation methods.

- The instructor makes instructional decisions based on student readiness, interests, and learning profiles (Smith & Throne, 2007).

Motivation, engagement, and student responsibility increases when students feel comfortable in taking chances and having a choice and voice in their own learning. Below are types of technology that support differentiation, suggested by the authors of *Using Technology with Classroom Instruction that Works* (Pitler, Hubbell, Kuhn, & Malenoski, 2007).

Data Collecting Tools for Formative Assessments

These tools allow teachers to survey students' understanding, so teachers can incorporate the data for instructional purposes.

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Technology Tool	Description
Survey Monkey: www.surveymonkey.com	This survey site enables anyone to create professional online surveys quickly and easily. It has a free basic service that provides most of the features a teacher would need to survey students.
Pollcat: www.pollcat.com	The free version of Pollcat, called Pollcat Lite, provides an easy-to-learn interface to allow you to get your survey on the web quickly. You can view and download survey summary reports, receive automatic e-mail notifications with your survey summary reports, and review or download each of the individual survey responses.
Web Surveyor: www.websurveyor.com/free-survey-tools.asp	Here, you'll find a link to RSVME, a free application that integrates with Microsoft Outlook and other e-mail packages and allows you to quickly and easily put together a questionnaire on any subject and obtain feedback from people.
Profiler Pro: www.profilerpro.com	This comprehensive survey tool was developed to help K–16 educators measure both the effect of integrating new technology into learning environments and the effect of comprehensive staff development programs.

Communication Software

Some communication software allows teachers to provide meaningful feedback to students in the form of Wikis, e-mails, instant messaging, and video conferencing. Below are examples of the ways each type of software provides opportunities to differentiate.

Blogs

Classroom blogs are inexpensive and easy to maintain and manage without the need for web development skills. For examples of teacher blogs, check out:

- **Ms. C's Geoblog:** http://sculbreth1.edublogs.org: Student comments are encouraged in this high school geometry blog, which is used to keep students informed about class topics and assignments. Some assignments require students to post their answers to the blog itself.

- **Mr. Mackey's Science Blog:** http://mrmackeyscience.blogspot.com. This science class blog is linked to a comprehensive website with information on all aspects of teaching 8th grade science. The blog is used to post current events, news, commentary, and useful links.

Wikis

Wikis are more versatile than blogs in that users collaborate to create information. Because a Wiki allows all users to add and edit content, it is especially suited for collaborative writing and project-based learning. The constant feedback mechanism of a Wiki is what makes it a uniquely powerful learning tool. And because a Wiki is web-based, contributors do not need to be in the same geographical area, nor do they need to be working synchronously. To set up your own Wiki, go to www.wikispaces.com.

E-mail and Video Conferencing

E-mail is a tool most educators are familiar with using. However, even e-mail has been transformed to support great information storage and collaboration. For example, Google mail, or Gmail, gives users endless storage opportunities to collaborate on documents, using Google Docs, instant messaging, and video conferencing. Other video conferencing websites include Skype and Oovoo.

Differentiating Homework with Technology

Homework can also be differentiated to support and engage students. The following websites are great for independent practice and self-paced learning. Remember,

when assigning homework using technology, teachers must ensure that students have proper access to these tools.

Website	Description
BC Skillswise: www.bbc.co.uk/skillswise	This resource from the BBC includes a numbers section and a words section. Within these sections are concept areas containing skill-sharpening worksheets, games, and quizzes appropriate for grades 3–8. Among the concepts covered are punctuation, fractions, suffixes, and multiplication.
National Library of Virtual Manipulatives: http://nlvm.usu.edu/en/nav/vlibrary.html	This resource from Utah State University contains many virtual manipulatives to help students in grades preK–12 better understand mathematical concepts. Some of the tools include base blocks, geoboards, algebra tiles, algebra balance scales, and various puzzles.
The Khan Academy: www.khanacademy.org	Through this site, students can make use of the extensive video library, practice exercises, and assessments. The resource contains 1. A complete custom, self-paced learning tool 2. A dynamic system for getting help 3. A custom profile, points, and badges to measure progress Coaches, parents, and teachers have unprecedented visibility into what their students are learning and doing on the Khan Academy: 4. Ability to see any student's work in detail 5. A real-time class report for all students 6. Better intelligence for doing targeted interventions
BrainPOP: http://www.brainpop.com	BrainPOP contains hundreds of short, Flash-based movies on nearly every curricular area: English, social studies, mathematics, science, health, and technology. Each movie is followed by a 10-question quiz that can be printed out or e-mailed to a teacher. This is a subscription-based site, but many movies are available for free.

This chart provides just an overview of a few ways teachers can incorporate technology to differentiate instruction. Because these tools are dynamic in nature and are constantly being improved, teachers should stay abreast of the changes.