Chapter 5 - Differentiated Learning

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Learning objectives

By the end of this chapter the learner will be able to:

1. Explain key vocabulary terms, theories, and resources relating to differentiated instruction using digital tools.
2. Design a differentiated learning experience for students or faculty.
3. Summarize course content and student contributions for the week.

Introduction

In the previous chapter, we explored some of the ways technology is changing teaching and learning in today's classrooms. These different approaches to teaching can be effectively used to differentiate learning for learners. Carol Ann Tomlinson is one of the leading voices on the topic of differentiation. She writes that there are three primary ways

you can differentiate - by modifying the content, the process, and/or the product (Tomlinson, 2016). Differentiated instruction isn't as hard as some teachers think it is. Differentiation doesn't mean creating a separate lesson for every learner. It's really about getting to know your learners and how they work best and making decisions during instruction to best meet those needs. Larry Ferlazzo is an ELL teacher and a blogger for Education Week. He has a really great video that provides our foundation for this chapter on differentiation with technology.

That was a quick refresher on differentiation, but this is a book about technology integration.

How can technology assist in differentiating instruction?

Technology can play a key role in helping teachers to differentiate instruction to meet the needs of every learner. Just as every learner grows and develops at different rates, they learn in different ways and at different speeds. Technology can make it possible to pace lessons appropriately and can be used to promote learning in multiple intelligences.

Differentiation by process

Learners process information differently. Depending on the task at hand, learners might have different learning preferences. For example, when getting directions to a new destination I prefer to see a map, my son likes to hear the directions read as he is driving, and my wife prefers seeing the directions in writing. Matching teaching strategies to learning preferences is one way to differentiate by process. Let's look at the different learning preferences and then a short list of websites and apps that focus on those preferences. The three learning preferences we will explore are visual, auditory, and kinesthetic.

Visual Preference

"NASA Visualization Explorer Now Available For All iOS Devices" by NASA Goddard Photo and Video is licensed under CC BY 2.0.

You will recognize learners who prefer visual simuli when they say that they learn by seeing. Show them and they are more likely to remember. Here are a few apps to address the particular need of learners who prefer to see things in certain learning situations.

- Lucid is for learners that can acquire knowledge more easily by seeing. A lot of visually stimulating study materials are included in this app. With visuals at the core of the product, the app provides engaging material to students. Learners who want to do courses in the field of psychology, technology, health, history, finance, and even leadership can benefit from this educational support.
- Mindly is a brainstorming and collaboration tool that is great for learners who need to store and process information in the format they relate to best by creating pictures, flowcharts, and diagrams.
- Picmonic is an app that focuses on the visual needs of K-12 learners. The name is a combination of pictures and mnemonics. It's a good app for test prep.
- BrainPop and BrainPop Jr. are websites that include animated, curricular content that engages learners, supports educators, and bolsters achievement. Most videos include lesson plans for teachers and connections to standards.
- Visuwords is a unique concept built for teaching words in a way that makes sense visually. It includes a visual dictionary, thesaurus, and interactive lexicon.
- TedEd offers the convenience of accessing video lessons by choosing the subject as well as age. It is a storehouse of information and walks the users through interactive sessions that ensure that learning is much more elaborate and sustainable.
- Pixton is a popular comic/graphic novel maker and storyboard creator for teachers and learners. They can share their ideas, opinions, and stories publishing them instantly to a worldwide web audience without having to draw. Look for those students who tend to read graphic novels in their spare time.
- MindMesiter is great for learners who want to be able to visualize what they're learning. MindMeister allows users to create, share and manage mind maps online and offline.
- TeacherTube works like YouTube but is dedicated to hosting instructional videos. This free site hosts videos on nearly every topic imaginable. You also won't find any ads that are not age-appropriate.
- Scooch offers free slide show software that is perfect for learners who want to transform text into easier-to-recall slides.
- Picture History displays 200 years of history in photographs. Great for learners who want to see more about American history.
- Pics4Learning is a curated image library that is safe and free for education. Teachers and students can use copyright-friendly photos and illustrations for classroom projects, websites, videos, portfolios, or any other projects in an educational setting.

Auditory Preference

"Auditory Learner" by JoanDragonfly
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Some learners thrive best when they are involved with a lot of speaking and listening. How will you recognize auditory learners? I am fairly confident you already know who these learners are.

- Audible is one of the most powerful listening apps on the market today. It has been around for a long time, and currently features more than 470,000 titles in its library.
- LibriVox audiobooks are free for anyone to listen to, on their computers, iPods, or other mobile devices, or to burn onto a CD.
- Audacity is easy-to-use audio editing software that lets you record and edit audio. It is free to use and works across multiple platforms (Mac OS X, Windows, and GNU/LINUX.)
- Midomi is a unique search engine is powered by sound, not text. You can find the music you're looking for by singing, humming, or whistling ten seconds of the tune.
- PodOmatic is a free site that enables learners can create, find and share podcasts through. PodOmatic hosts the world's largest selection of commercial-free podcasts.
- PodcastDirectory is a great place to search for free podcasts by subject. Users can also search by country, region, city, language, and popularity level.

Kinesthetic Preferences

Some students learn best when they are involved with hands-on activities - think interactive science labs or art/music classes. Not all learners love lectures.

- Sketchup allows learners to make anything they can imagine, without downloading a thing. It allows kinesthetic users to create, modify and share 3D models.
- Flashcard Exchange is the world's largest flashcard library. Learners can improve their retention ability by making and manipulating flashcards on this website.
- Quizlet is specifically designed to help learners get involved in the learning process. Quizlet users can create their own flashcards and quizzes or study materials that have been made by other students.
- ClassMarker allows learners to create free online quizzes (with time limits) to test their knowledge of any subject.
- Quia users can create their own educational surveys, quizzes, games, and activities to engage in an interactive learning experience. There is a subscription fee, but all users are eligible for a free 30-day trial.
- SparkNotes allows learners to get involved in assigned reading projects when they visit SparkNotes online. The site offers free study guides, quizzes, and other interactive aids for readers.
- Little Digits for younger learners encourages one-to-one recognition through fun numeric characters which are displayed by detecting how many fingers are placed on the screen.
- GoNoodle helps teachers and parents get kids moving with short interactive activities. Desk-side movement helps kids achieve more by keeping them engaged and motivated throughout the day.
- Interactives provides activities, strategies, and other concepts that enhance learning skills. Interactives is aimed at grades 6 thru 12 but makes a good tool for hands-on learners of all ages.
- The National Library of Virtual Manipulatives is a digital library containing Java applets and activities for K-12 mathematics. The site was created and hosted by Utah State University. It was one of the first sites of its kind and is still one of the best.
- Education Place is designed for K-12 learners who want to explore various subjects through games and activities.

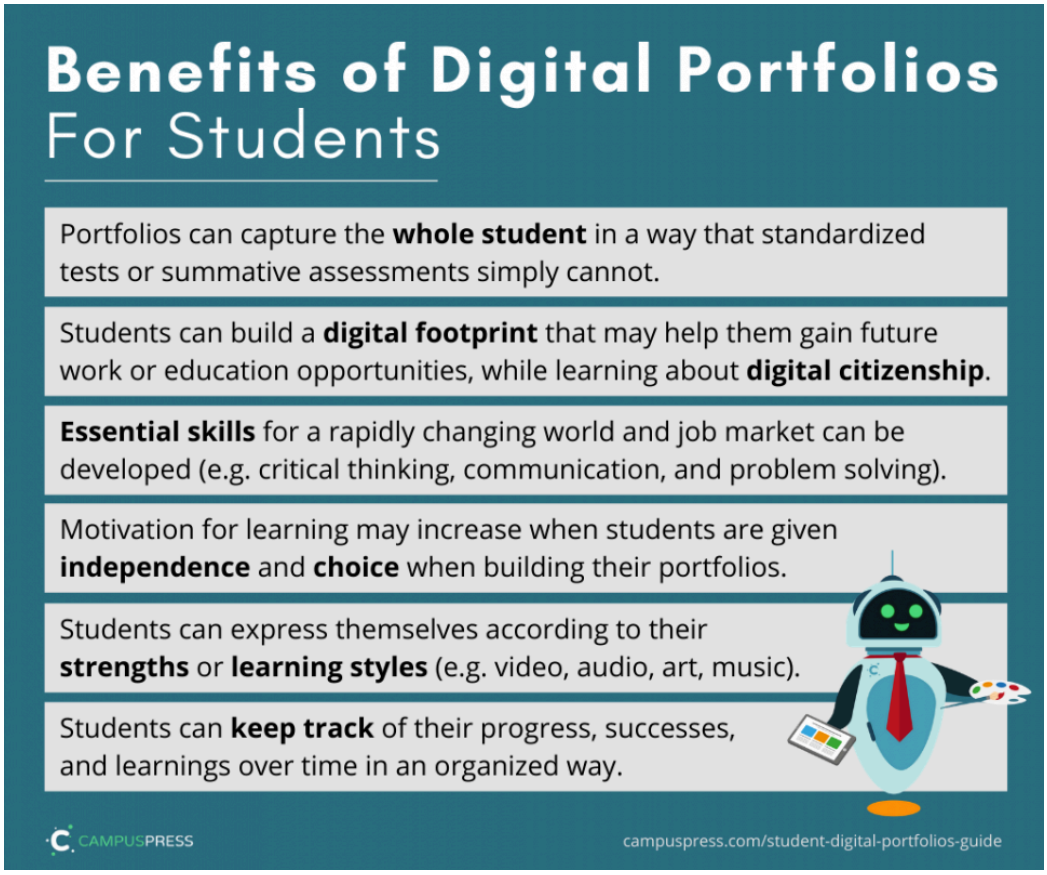
Differentiation by Product

Tomlinson (2014) explains that products are “vehicles through which students demonstrate and extend what they have learned” (p. 18). Here are just a few ways learners can express their understanding of the content with the help of technology.

Digital Portfolios

Educators know that individual learners have unique strengths and weaknesses but in a system often driven by pre-set curriculum and assessments, it can be difficult to enable learners to celebrate their uniqueness. An online learning portfolio that empowers learners to show what they are learning within the classroom. Each learner in a class can have their own, personalized digital portfolio that provides a private place to keep their assignments and projects, and these activities can also be shared with the teacher, parents, and the broader community. Learners have so many options to demonstrate their learning. Seesaw is one example of a platform that fosters independence and choice, as learners select how they will document their learning with built-in creative tools. Here is a video of Seesaw digital portfolios in use at James Madison Primary School, in Edison NJ.

The advantages of digital portfolios for learners are shown in this chart from *The Complete Guide to Student Digital Portfolios* (Morris & Burt, 2020).



If you want to dig deeper into digital portfolios, check out the guide.

Video and Audio Production

Learners can express their understanding in ways other than a standard book report or research paper. Learners who are primarily visual learners often excel in expressing their understanding by creating multimedia presentations in lieu of the standard report. For many learners, making videos is something they do on their own at home. How can you capture the interest and knowledge they have and translate that into classroom learning? Imagine Learning gives educators some great ideas with their website 10 Fun Ways to Use Video Creation in the Classroom. There are ideas for all grade levels here. Do you, the teacher, have to be a video creation expert? No! You need to provide the educational context and then set the learners free.

Laura Ascione correlated a list of 16 Multimedia Learning Tools for the Classroom for eSchool News. You will find quite a few apps you are already familiar with like iMovie and Nearpod and a few you might be less familiar with like Glogster and VoiceThread.

Garageband is an easy-to-use yet very powerful audio creation app that gives learners access to Sound Library so they can browse and download from a massive collection of free sounds, loops, and samples created by some of the biggest producers in the world. Young creators can also play real-sounding instruments and create their own music. Garageband is also a good tool to create podcasts.

Speaking of podcasts, Spotify-owned podcast maker app Anchor is a popular choice amongst folks looking to test the water with podcasting. Anchor is a free app but is best for shorter podcasts.

There is a nice explanation of podcasts and why to use them in the classroom from EdPuzzle entitled How to Use Podcasts in the Classroom.

Differentiation for Gifted Learners

There are a number of great web tools to address differentiation for gifted learners. The Institute for Educational Advancement (IEA Staff, 2017) collated a list of Ten Websites for Gifted Kids. These are great resources for gifted learners but are also worth looking at for all learners.

There are enough ideas presented in this chapter to keep you and your learners actively engaged for quite a while. In the next chapter, we are going to delve into digital safety and digital citizenship. We group these two topics together in Chapter 6 - Ethical Digital Presence.

Application:

OPTION 1: Design a day of professional development in your building or for your district that reflects a differentiated approach. While you do not need to plan in-depth details of specific sessions, describe what technology-centered/infused topics/sessions might be available for the staff, how you would appeal to learners (staff) of different interests and abilities, how long you might spend on each portion of the PD, who you might ask to present, how you may sort the staff into the various sessions, what resources you might include, etc.

OPTION 2: Take an existing assignment or project and turn it into a learning menu of at least 9 options (you do not need to provide rubrics for each option--just basic descriptions of each of the tasks). Each of the 9 options must have a digital component--please either hyperlink to the digital tool (or include a working QR code) and at least 3 of the options need to be at the "transformational" levels (modification and redefinition) of the SAMR Model--please use some way to indicate which few you are considering transformative. Additionally, you may use the template from the G Suite reading or create your own.