Differentiating Literacy Instruction—There's an App for That!

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ABSTRACT
Given the increased diversity of students within the regular, general education classroom, this article explores the importance of differentiated instruction to meet the needs of all learners in this age of Common Core State Standards. Using digital literacies that engage students, the authors showcase apps and web tools they have used in developing learners' literacy. Most of the recommended apps are free and suggestions are included as to how teachers might use these tools with students of the classroom.

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The increasing ethnic, language, cultural and socioeconomic diversity of students in general education classrooms has been well documented (Schmitz, Nourse & Ross, 2012). Today's classrooms have more students with significant disabilities (Bae & Clark, 2005) and immigrants who are learning English as a second or third language than ever before (Lee, 2012; Purcy, Matin-Beltran & Daniel, 2013). Many of today's students are struggling with issues associated with poverty as well (McGlynn, 2014). Furthermore, many cultures, languages and learning styles are represented in today's students (Lee, 2005). Concomitantly, the educational gap (Griner & Steward, 2013; McKown, 2013) has been documented between students of means and a lack thereof (i.e., those without and with economic challenges), as well as between white students and those from historically underrepresented groups (Aikens & Barbarin, 2008; Delpit, 1995; Dupere, Leventhal, Crosnot & Dion, 2010; Ladson-Billings, 1995; Rowley & Wright, 2011; Whaley & Noel, 2012), most specifically African Americans and Hispanics. All children

have literacy experiences at home and in their communities, but for some their experiences are more closely aligned with school expectations and teachers' learning routines (Aldridge, 2009; Bacca & Lent, 2010).

All teachers should expect great variability in their students' life experiences and literacy backgrounds. While such diversity enriches our classroom communities and prepares students for interacting purposefully with a variety of persons, it also challenges teachers in meeting their students' learning needs. Simply stated, we cannot teach everyone the same content in exactly the same way due to student differences—'*one size fits all*' is an outdated model of instruction (Fountas & Pinnell, 2012; Knowles, 2009; Watts-Taffe et al., 2012).

The Common Core State Standards (CCSS) (2010) have specified clear literacy expectations, among others, with a goal of closing educational achievement gaps among students. However, meeting these goals in literacy will likely require accommodations based on learners' needs (Levy, 2008). The question becomes: How does a teacher meet the grade level expectations for CCSS while also meeting the requisite needs of students? Uneasy tensions exist between the pressure to reach grade level expectations and specific students' current abilities. When the CCSS are examined in depth, the Anchor Standards in Writing certainly allude to composing in a digital environment; similarly, the Anchor Standards in Reading Literature as well as Reading Informational Text note reading online and use of electronic resources. Traditional literacies of reading and writing are clearly woven within the CCSS; however, the digital literacies, which we define as the ability to understand and communicate within an online world, are not explicitly stated and Hagood (2012) argues that this omission is a shortcoming of the CCSS.

We contend that differentiated instruction provides an opportunity to maximize individual student growth and accomplish the CCSS. Succinctly defined, differentiated instruction requires teachers to think about the interrelationships between specific student abilities and background knowledge, curricular goals and objectives as well the ultimate demonstration of understanding. Differentiated instruction necessitates that teachers consider individual learners' academic strengths and needs as well as the concept density of materials/topics in light of teaching objectives to develop tasks with tools that address learner specific needs. Watts-Taffe et al. (2012) describe differentiation as an approach to instruction that is responsive to individual needs. Simply stated, not everyone in the classroom will be working on the same level or activity, though the content will be related. At first glance this somewhat disparate work may seem at odds with the CCSS, but we agree with Allington (2006) that individual students must interact with books and materials at their appropriate literacy levels. While challenging, rigorous text reading with close exploration (generally seen as careful re-reading) is certainly a plausible expectation (Fisher, Frey & Lapp, 2012; Frey & Fisher, 2013), pupils cannot read at such difficult levels for an inordinately long time (Hinchman & Moore, 2013). Similarly, Dobberton (2012) notes the necessity of alignment of clear objectives with differentiated activities and materials to ensure students learn.

Tomlinson is a leading authority on differentiated instruction at both the elementary (2000a) and secondary levels (Tomlinson & Strickland, 2005). Her initial interest stemmed from her own secondary classroom where she found many of her pupils unprepared for the academic demands of her content area (Wu, 2013). While much of her research focused on gifted learners (Tomlinson, 2003), her more recent work has

implications for all learners. Specifically, she discusses the importance of teachers having instructional clarity so they know exactly what students should be learning and can guide them appropriately through differentiation (1999, 2000b, 2001). Recently Tomlinson and Imbeau (2010, 2012) offer many sensible suggestions to address the heterogeneity within classrooms.

Grouping students by ability, need or interest is a vital component of differentiating instruction (Santamaria, 2009; Tomlinson & Imbeau, 2010, 2012). Differentiation is more than giving extra time to complete an assignment or providing learner choice, though these are certainly effective strategies (Zemelman, Daniels & Hyde, 2012). Teachers need to think in terms of differentiation based on student needs in content (what they need to learn), process (how they going to learn), product (their ultimate demonstration of knowledge) and environment where students learn (Tomlinson, 1999). In terms of curricular content, some students may have learning gaps and need targeted instruction. Students may differ in how they learn, with some preferring visual or auditory input, for example. Moreover, teachers may need to release responsibility more gradually with some students (Zemelman, Daniels & Hyde, 2013) after extensive modeling.

The manner in which students demonstrate their knowledge can vary greatly. Center for Applied Technology in Learning (CAST) (http://www.cast.org), an organization devoted to differentiated instruction and 'leveling the playing field' so that students demonstrate what they know, suggests multiple strategies to ensure learner understanding. Specifically CAST suggests that material should be presented in a variety of different ways (i.e., multiple means of representation); students should have the opportunity to show what they know in many ways (i.e., multiple means of action and expression); students should be interested and motivated to learn content (multiple means of engagement). Besides preplanning multiple ways for presenting and assessing student understanding, Parsons, Dodman and Burrowbridge (2013) contend that it is also important for teachers to differentiate in the midst of instruction when students' performances or responses show a lack of understanding or gaps in knowledge. Such teachers are described as *thoughtfully* adaptive, a term that resonates with us, because they observe carefully, reflect during teaching and adjust instruction accordingly.

Guided reading of leveled books with flexible groups is popular in elementary schools (Fountas & Pinnell, 1996; Knowles, 2009), and this literacy approach is a highly effect way to differentiate instruction (Allington, 2013). With a focus on how learners process text, Fountas and Pinnell have had a tremendous influence on teachers' literacy instruction; specifically, they suggest teaching small groups of children to read leveled text and encourage educators to intercede when meaning is lost. Fountas and Pinnell and others (e.g., Glasswell & Ford 2010) stress noting where students where are instructionally, which will be well below grade level for some youngsters, and moving them forward in sensible, organized ways. The importance of a *just right* book in terms of interest and readability cannot be underestimated (Allington, 2012, 2006, 2002; Fountas & Pinnell, 2012; Robb, 2008). Additionally, choice in reading material has been found to be a significant factor in student learning in conjunction with differentiated instruction (Anderson, 2007; Zemelman, Daniels & Hyde, 2012).

Digital literacies refer to the many ways that meaning is composed, viewed and shared with others through electronic environments (McKenna, Conradi, Lawrence, Jang

& Meyer, 2012). Students develop expertise with the digital literacies through rigorous reading, composing and viewing of online materials and other digital texts. In this article we argue that the digital literacies provide great promise in addressing the individual needs of learners when used to differentiate instruction (Cobb, 2010). Further, we suggest specific online apps and web tools that provide the opportunity for differentiation (Cahill & McGill-Franzen, 2013). We have used all of the recommended apps and tools with learners who struggle with literacy in after school literacy programs, and we have shared these apps with our graduate students, most of whom work in public schools K-12. Overall, these apps have been well received by learners who more readily engage in reading and writing when technology is used (Hutchinson, Beschorner & Schmidt-Crawford, 2012). As members 21st Century cohort, students need to become active consumers and users of communication technology, like these recommended tools and apps (Handsfield, Dean & Cielocha, 2009).

Much success has been noted when teachers differentiate their instruction (Morgan, 2014). Differentiation of instruction has been very successful in low performing schools with high poverty rates and large numbers of English language learners. Cusumano and Mueller (2007) describe the improvement in their students' academic growth as part of a total school restructuring around differentiated principles, including increased small group instructional time that is based on student need, grade level and curricular content. Others (e.g., Lawrence-Brown, 2004) have found it successful in mixed ability classrooms (Huebner, 2010; Tomlinson, 2006). Watts-Taffe et al. (2012) have reviewed the educational successes relative to literacy growth when instruction is tailored to student needs via differentiated instruction.

Recommended Apps and Tools for Differentiated Instruction

In this section, we have recommended apps and web tools to develop fluency, slide presentations, multimedia composing, online book creations, digital storytelling, collections of read-along books, online whiteboards, digital bulletin boards, and collaboration tools. We have included apps and tools that we have first-hand knowledge of their success with a variety of learners, many who are at-risk learners in state-identified high need school districts. Thus we feel confident in recommending them for teachers' consideration. Most of these apps can be used a various grade levels [primary, 1-3; intermediate/middle, 4-8; secondary 9-12] depending on students' familiarity with online tools and associated skills (e.g., keyboarding). Where specific apps are targeted to particular chronological ages, we have noted the target group. Otherwise, the choice of whether or not to use a particular app or tool with a group is, we believe, best determined by the teacher's knowledge of learners' digital experiences as well as the educational purpose.

We do not recommend that all learners use the same app in a lock-step fashion. Several tools may be showcased and then learners encouraged to select one that appeals to them or is appropriate for their knowledge level. Apps and tools with fewer 'bells and whistles' are most appropriate for learners who are beginning to learn in digital skills in an area. Our vision is that many different tools and apps would be used within the same classroom such that the class is then transformed into a community of learners. Differentiation most often comes in how learners complete tasks and the complexity of their choices. This is not to suggest that learners who struggle with reading and writing

will be doing simpler task, rather that there will be much choice in learners demonstrating their knowledge. Our experience has been that learners who struggle with traditional literacy are often freed when other forms of communication are included (e.g., images, voice) (Gormley & McDermott, in press).

Word Recognition and Fluency: Getting students to read fluently means that they can read accurately with prosody (Fountas & Pinnell, 2012; Rasinski, 2012, 2009; Swain, Leader-Janssen & Conley, 2013). Certainly, word automaticity is a major stumbling block for learners with limited sight vocabulary development or those lacking strong English vocabularies (Marcell, 2011). In this section, we recommend several apps for developing word recognition as well as promoting fluency with oral reading. The tool selected should be based on learner need. Allow us to reiterate—rarely will all students in the same class use the same app on the same material or in exactly the same way

Audioboo (https://itunes.apple.com/us/app/audioboo/id304204540?mt=8 or www.audioboo.com) is one of our favorite free digital recording devices (works on computers, tables, smart phones without a download). We know that unless students have experienced success and authentic purposes for multiple reads, they are often resistant to reading a passage several times. Nevertheless, one the best way to develop fluency is reading a piece again and again (Heisey & Kucan, 2010; Staudt, 2009).). Repeated reading develops both immediate word recognition and also encourages smooth reading with appropriate phrasing. Audioboo, an online audio recording tool, allows students (or teachers) to record up to five minutes and then share this podcast via email or by the web address (i.e., URL, which is abbreviated from Universal Resource Locator). The teacher will have to show learners how to use Audioboo (basically open up from a bookmark, click on red button to start, talk or read orally, hit the red button to stop, export, then send the URL via email to teacher's account).

There are a number of ways that teachers might use Audioboo to differentiate instruction:

1. *Running Record Recording Center:* A teacher might set up a recording center wherein learners record their name, title of reading material, page, date and then set a time to read for 1 minutes. Afterwards, they could briefly retell what they had read. Later the teacher can use these boos (Audioboo recordings are called 'boos') to conduct running records, gather learner specific data and make instructional decisions. For younger students a frame might assist children to include all the required information (e.g., My name is _____; I am reading _____ on page ____). Obviously, the differentiation in this suggestion comes from the book level that is chose to be read orally as well as other factors (e.g., genre).
2. *Communication Center:* Each day a different student could be assigned the job of summarizing the day's work and recording a boo to email to parents. Much like watering the plants or tidying the book area, this daily job allows all students the opportunity to communicate with the class members' families by send out a short boo. This suggestion values each learner and provides authentic opportunities for students to practice oral communication skills. The teacher may plan to differentiate by providing more or less support for individual learners based on their competencies with summarizing and oral reading.

3. *Book Talks:* We know that many students resist formal book reports and rarely do these encourage students to read books their peers are enjoying. A boo summarizing why a student liked a particular book and leaving the listener with a 'hook' (e.g., "*If you like suspense and story twists, this is the book for you!*") may encourage classmates to read the recommended book. We see this as reflecting differentiation based on learner interests as well as reading level. Students can be encouraged to recognize others who like similar books, such as mysteries or biographies, or book formats, such as graphic novels, and appreciate commonalities of interests in their peers. Hopefully, learners will appreciate their peers' evaluations and seek out books that sound interesting to them.

Slide Presentations: Often teachers want students, as individuals or groups, to create slide presentations. These presentations can summarize learning, such as identifying the story structure in a narrative piece. We find that teachers over-utilize PPts and often without teaching students to use limited text and color—we typically recommend a few words or phrases that the presenter can talk about as well as no more than three colors that are clearly different. (See Atkinson, 2007 for more in depth suggestions for improving PPts.) We have found some ways to make slide presentations more attractive and engaging for learners and viewers. Differentiation in the development of slide presentations can done in two ways: (1) Tool selection—some tools have more options and are more complicated; (2) Learner choices for what to include on the various slides (e.g., image only, image and text).

Knovio (http://www.knovio.com/) is a very easy web tool to use and it's also free. Essentially, the student (or teacher) uploads a PPt and then narrates each slide—their image and voice appears along side each individual slide, though the video feature can be blocked. If the creator is unhappy with a particular slide, it can be re-recorded, so the final product is satisfactory from the developer's point of view. Differentiation with Knovio occurs in slide content; some learners may use images or clip art only, while others may select animations and text.

Here are a few suggestions on how a teacher might incorporate Knovio presentations in their classrooms:

1. *Summaries*: Knovio presentations for review of units of study seem to us to be a good use of this tool. For example, if the class is studying the Civil War, groups of students might review the advantages of the North versus the South, among other topics. Listening to other groups' Knovios provides a wonderful review opportunity for students, especially those for whom reading is challenging. Differentiation within this suggestion could be based on topic complexity or grouping of students to create a joint presentation considering learners' strengths and needs.
2. *Informational Writing*: Younger students might develop nonfiction pieces about their hobbies (e.g., soccer), including protective gear, positions, rules, associated images and so forth. Differentiation here comes in the form of learner interest (Zemelman, Daniels & Hyde, 2012) and, thus, valued individuals.

We have some words of advice on using images. Teach students about copyrighting and attribution. In particular guide them to resources that are copyright free with

attribution. Our suggestion is that you directly teach students about Creative Commons (http://creativecommons.org/) and how to attribute, perhaps by submitting images of their own. At a very minimum, we think that students, even the very young, need to capture images and their associated URLs.

Haiku Deck (https://itunes.apple.com/us/app/haiku-deck/id536328724?mt=8&ign-mpt=uo%3D8) is a free app for the iPad that has the potential to create engaging presentations (and great charts). There are two features of Haiku Deck that we really appreciate. First, the app directs the user to Creative Common images, so image copy righting violations do not occur—if a word, like 'symphony' is typed, Haiku Deck automatically locates images associated with that word. Second, Haiku Deck limits the amount of text that can be on each slide. This limitation on words is improves the quality of final presentations because students cannot write long sentences, which are very ineffective in presentations (and deadly, if read verbatim). Many of our suggestions for Knovio will work well with Haiku Deck as well.

Differentiation in presentation development can come from the tool selected; our advice is to select the tool that is aligned with learner needs. For example, if a learner's parents do not want his or her image online, then using Knovio with the video turned off might be the right choice.

Multimedia Composing: Writing with pen and pencil still has it's place in today's classroom, but composing is now a 21st Century skill that involves combinations of words, images, audio and/or video. It is much broader than writing, and for that reason we like the word 'composing.' Digital media production, another term for multimedia composing, offers exciting opportunities for supporting students' learning (e.g., Considine, Horton, & Moorman, 2009; O'Brien & Voss, 2011; Turner, 2011). There are several free tools that allow students to produce multimedia, and we will describe a few that we find most helpful. Differentiation with multimedia tools comes again from the options within tools as well as the individual topic a specific learner chooses to explore. Some tools are more complicated to learn and better serve students who are more experienced or more readily assume challenges.

Animoto (http://animoto.com) is a very easy tool that allows teachers and students to create 30-second videos that combine text, royalty free music and images to create very professional videos (works on computers, iPhones and androids). We find it a great starting tool, though we have seen it used very effectively by experienced producers of multimeda. Basically, once the use has signed up for a free account, images are uploaded and arranged in a logical order. Next, the style of presentation (more than 50 templates are available) and music are select from many choices (slow to fast paced beat). Afterward, the creation is previewed and published. The finished Animoto can be shared via URL or embeded in a learning management system (LMS). Here some ways we suggest starting with Animoto.

1. *Reviews for Units of Study*: Use Animoto to summarize a unit of learning with younger students. You might have students draw images and scan into jpegs (easily done with a scanner), so that they are not violating copyrighting. These jpegs are uploaded into Animoto, and with the input of class members these images are organized to provide a review of content. Select a presentation style, and don't be surprised if students want to try several choices before deciding on a

final style. Add summary text and pick music; again children often want to hear several pieces before they select a final piece of music to accompany their production. Preview and, if children are satisfied, then you have your finished Animoto. We think this tool can help foster the importance of not presenting someone else's work as their own and teaching youngsters from their first multimedia production not to plagiarize. Zemelman, Daniels & Hyde (2012) emphasize again and again the importance of teacher modeling and shared construction of knowledge. Older students with significant learning or language challenges could then develop shared multimedia pieces as a strategy for differentiation.

2. *Individual Reviews of Unit Sections*: Older students might be assigned to summarize parts of a unit for review. For example, if your students have just completed a study of the Iroquois Confederacy, they might divide the content into appropriate sections. One group might summarize their governance, another their homes and food and so on. Here is where the teacher must expect and require appropriate attribution; the educator might also need to directly teach students how to capture images with their URLs. (An easy way strategy is to capture the image and insert into a word document; then capture the URL or web address and insert under the image in the same word document; finally capture the image and URL together and upload this jpeg into Animoto. We know this adds a few steps, but it teaches learners ***not*** to grab from the Internet and thereby violate copyrighting.) Note: Capturing an image can de done through the Snipping Tool, which comes installed on PCs or the Preview Tool that is installed on Macs; both allow the user to select a portion of a screen and save as a jpeg, among other options.
3. *Public Service Announcements*: Students might develop public service announcements using Animoto. Following steps described above, the importance of this kind of activity is that students think carefully about their message (e.g., importance of exercise). In this case you might have students take actual images, though you need to protect learners' anonymity, and use them as part of their PSAs. Differentiation in this PSA activity will come from the topics that students choose—complexity will likely reflect their current understandings and interests. An English language learner can present their message without having oral language issues, such as the natural tendency to drop word endings, which interfere with the message.

We think the possibilities for Animoto are quite endless (e.g., we have see graduate students develop Animotos to put on their personal website to use in the job searches). Our experience has been that once students learn how to make Animot videos, they often go home and produce many more. So you might want to think about an Animoto or Technology Share Time within your class.

Animoto, like other 'free' web tools, is hoping that as a result of working with the free version, users will upgrade to paid versions that have more features. Animoto Pro Education (http://animoto.com/pro/education), which costs $249 for school per year, provides many more capabilities and might be something your school wants to consider. Kay has the Animoto Pro version (http://animoto.com/pro) at $60 per year that allows her to produce 3-minute videos, which she finds fits her purposes adequately.

Jing (http://www.techsmith.com/jing.html): This free screencapturing tool can be used to make videos of your desktop and record your voice for 5-minute multimedia productions. The final video can be saved to computers or stored at the associated cloud location (http://www.screencast.com) without cost. Creating a multimedia project with Jing is really simple, but Jing must first downloaded to the computer desktop. TechSmith, a very reputable technology company, developed Jing specifically for students and, thus, it is a very safe and intuitive web tool. Basically, the program enables the user to record whatever is selected from the desktop and then record voice, provided the computer has a built-in microphone. (If there is no built in microphone, an inexpensive one with a USB connection will work just fine.) Here are some ways to use Jing to create a multimedia projects:

1. *Video Presentations*: Student developed presentations are a sensible way to start. For example, suppose your students are studying habitats in science. They could develop presentations (see earlier section on Slide Presentation) that include images with attributions and summary text. After rehearsal of what they want to say—and students should be cautioned AVOID reading slides— the user then clicks on Jing and records their presentation. Students could view other peers' multimedia productions for a review of habitats, such as desert. [PPts are easy to develop, and Google Drive (http://www.google.com/drive/apps.html?usp=ad_search&gclid=CJKowYWP9LsCFTEV7Aod-wcAqQ) makes it fairly simple with their free presentation tool, if Microsoft Office powerpoint is not installed on a computer.) Video presentations will by their very nature be differentiated by complexity of topic and learners' approaches to presenting their understanding. Differentiation on this suggested idea is related to the amount of support a learner might need to produce a video. A teacher might differentiate through various pre-production strategy instruction (e.g., creating story boards using sketches, words or a combination thereof).
2. *Developing 'How-To" Videos*: Creating 'how to' videos is another strategy that can be helpful. A student can explain how they solved a math problem and also show their work as they discuss their approach to a specific word problem. Explaining the reasoning and thinking process is helpful for other class members as well as for assessment purposes. The potential for differentiation here is quite obvious. Some learners may need strategies for developing effective PPts—some learners may start with images, others with words, and still others may move back and forth between images and words. Planning to group students by approach is another way to differentiate and asking the groups to report out on how they approached the task (see tutorials below) will help learners recognize there are many starting points to developing effective multimedia.
3. *Tutorials*: Students can visit a website and demonstrate how to use a specific web tool. These tutorial videos can comprise a library of helpful videos for others in the class to use and can be posted on the class LMS for easy access. We envision tutorials as being learner and teacher developed; as such they foster a community of learners with many resources in terms of class members.

Screencast-o-matic (http://www.screencast-o-matic.com/): Another screencasting tool from TechSmith is Screencast-o-matic, which captures up to 15-minutes of whatever is designated on the computer desktop. The user selects the portion of the screen they

wish to record (drag and resize) and selects file quality including HD that allow uploading to YouTube (http://www.youtube.com). Again the producer has the ability use a built-in or external microphone (checking the volume) as well as a webcam. (With middle and high school students use of the webcam may be appropriate, but we tend to recommend that elementary students not use a webcam in consideration of cybersafety.) The process is quite simple: hit the red record button, talk and pause when necessary—for example, changing the desktop screen from a PPt to a website. When finish, click the 'done' button. Publication options include Screencast-O-Matic, YouTube or personal video file (MP4, AVI or FLV) that can be embedded in LMS. Again, TechSmith is hoping users will purchase their Pro version that includes more editing features (e.g., blurring of faces), but we think the free version is acceptable for most educational purposes.

We offer a word of caution about Screencast-O-Matic. The recording time is WAY TOO LONG, and we *strongly* suggest limiting student productions to 7-10 minutes, depending on the age of learners. Our sense is that this tool is most appropriate middle school or secondary students. Ideas for using this tool include the following:

1. *Research Presentations*: Using a rubric that limits the time for screencasts, we think this program works well to present research information to others, which is aligned with the CCSS for middle and secondary students. Suppose, for example, that students have been studying the Harlem Renaissance. They could develop presentations on related topics (e.g., jazz, Zora Neal Hurston, Langston Hughes) and share these with their classmates. Differentiation in this suggestion is largely based on learner interest, which is a very important consideration (Zemelman, Daniels & Hyde, 2012).
2. *Alphabet Books*: Students could develop ABC books related to units of study. Suppose your class has been studying the solar system and outer space. Students could develop their own online ABC books (e.g., A = Astronaut; B = Black Hole; C = Comet) that summarize their learning. These books could include attributed images with words and recorded voice. For many students who struggle to write what they know about content, the use of visual image and voice allows them to show what they know about content.

Differentiation in screencasting occurs in the flexibility of the tools to support specific learners. Animoto, for example, has fewer options and requires no recording of voice, so this tool might be the best option for students who struggle with online composing and ensures a highly polished final production. Screencast-o-matic might be a better choice for a learner who is confident and has a great deal of information to share with their peers.

Creating Online Books: Ebooks, electronic books, are becoming more popular and it is common to see learners reading on various devices, such as the iPad or their smart phones. Getting students to write ebooks is very motivating because the final productions include image, text and often voice. Of course, you can develop books using PPt and recording narration, though unless you use a screencasting program, like Jing or Screencast-O-Matic, or a compression program the final book file may be a very large, unwieldy size. We have tried a number of ebook development tools with urban, at-risk learners and here are some that we have found very effective. Note: we use the term

ebook and digital book interchangeably with the idea that these books can be read online. For most purposes, the ebook programs we are suggestion are read in a linear fashion, much like a traditional book, though they may have additional features (e.g., the pronunciation of a word with a click on the target word). Positive results have occurred with primary youngsters on reading online (Ciampa, 2012; Taylor, 2012).

Scribble Press (http://scribblepress.com/) is a free online tool that allows the creation of books using students' images or stickers (500+ available), background options and text. Templates and categories of stickers (e.g., NYC) are included, so a learner can compose with related digital stickers. The final book can be posted in iBooks and shared on associated devices, such as iPads, for others to read. There are controls for teachers (e.g., turning off particular areas) as well, and the tool has received many awards. Here are a couple of suggestions for use:

1. *Collaborative Book Writing for Young Children*: Many young children struggle to draw a recognizable item. Stickers are a great way to by-pass this limitation. Students, as small groups or as individuals, might, for example create a book on shared interest topics.
2. *Writing Center*: We think this iPad app works well in centers to encourage students to compose with images and text.

Differentiation with Scribble Press is very much related to the learner's developmental level and their understandings of writing. For example, a very young child might or a student in the early stages of English acquisition might develop a book with only images or stickers on *Things I Like*, whereas others might include sentences as well as images on more complex topics (e.g., *Ways to Recycle, Reduce and Reuse*). Dyads are another way to differentiate with this tool and learners can assist each other through the creation of an ebook.

Book Creator (https://itunes.apple.com/us/app/book-creator-for-ipad/id442378070?mt=8&ign-mpt=uo%3D8) is another tool (iPad only) to assist students in developing their own books using images, audio, video and text in their creations, which is more complex than the previous ebook tool. Students develop pages that include movies and text or text alone; moreover there's an audio feature so that books can be recorded (iBook) and shared with others when complete. It's a bit costly at $4.99, but it's an impressive app and one that teachers might consider. Here are some ways that you could use this app:

1. *Bilingual Texts*: A text could be developed and recorded in both English and Spanish with a Hispanic student reading the latter. This values the student's native language and allows students to hear and view the book in two languages. It also provides a way to differentiate based on learners' writing and reading strengths and needs. For example, an easier book might be one on foods with both the English and Spanish version (e.g., apple/la manzana). A more challenging book might describing how do a particular task in both English and Spanish with images to illustrate the sentences (e.g., making a peanut butter and jelly sandwich).
2. *Informational Books*: Nonfiction texts might be developed with student generated images to illustrate the text itself. For example, if students were studying volcanoes, they might label the parts of a volcano, explain how volcanoes occur and then include a video of a simulated volcano from baking soda, vinegar and

food coloring. Students books would be very different based on their composing development and content knowledge, so again differentiation will largely occur based on learner choices.

3. *Class Cookbook Publication*: A series of class recipes might be gathered to showcase the variety of foods eaten as well as nutrition factors. Such books celebrate and honor the foods from various families as well as teach content, such as the healthy food plate (http://www.choosemyplate.gov/). Again these recipes are differentiated based on background with students serving as experts on their own cultural foods.

Digital Storytelling: The ability to tell stories from students' lived experiences allows them to build from authentic experiences. Success with the use of digital storytelling has been found with regular education students (Heller, 2007; Wawro, 2012), immigrant students (Ranieri & Bruni, 2013) and struggling readers (Sylvester & Greenidge, 2009). We have used digital storytelling effectively with urban students and recommend it with great enthusiasm (Gormley & McDermott, in press). Differentiation in storytelling, as we are using the term herein, is very much based on learners developing stories from their background knowledge rather than some movie they have viewed or a computer game the like. Hughes-Hassell (2013) stresses the importance of storytelling for youngsters whose cultures may be underrepresented or stereotyped in books; although she addressed the issue with older students, it provides a foundation for the importance of storytelling particularly for students from non-dominate groups.

StoryKit (https://itunes.apple.com/us/app/storykit/id329374595?mt=8) is a free app that has a drawing tool that helps illustrate a story or students can use photos they have added to an iPod or iPad. (Unfortunately, there's no app for computers.) It is very easy to use and even the youngest students can develop digital stories to share. Here's a suggestion for using StoryKit:

1. *Personal Narratives*: Students can write authentic family stories to share with their peers. We find that StoryKit is easy for students to manipulate and develop a digital drawing. Different cultures have different ways of storytelling and much can be learned about students and their cultures from storytelling (Sanchez, 2009).

i Tell a Story (a $.99 app, https://itunes.apple.com/us/app/i-tell-a-story/id420367212?mt=8) is a digital storytelling app that teachers should consider for the iPad. The audio recording and editing tool make it very appropriate for younger students, most likely grades 1-5. They can add a title, image and send it off for others to hear, and teachers can make classroom audio libraries of students' stories. Here's an idea for using this tool with students.

1. *Name Stories*: Often there is a history in how students were named. For example, Kay's name is Kathleen Anne—Kathleen was the name of her mother's favorite doll and Anne was her maternal grandmother's name. It's an opportunity for students to find out their name stories (or name stories of family members) from interviews. Again this values individual learners and highlights that cultures differ greatly in how children are named. Some cultures name children based on attributes (e.g., Native Americans) and others for deceased relatives as a honor of the past, though there are many different

examples. Differentiation will come in how students tell the story (e.g., circular, linear story structure) as well as the language patterns that are used to express their stories. Some children will be complete storytelling in their native language, which is not English; their story could be translated by another bilingual student or adult.

Read Along Books: Often struggling students can benefit from hearing stories and then reading along with them. Boeglin-Quintana & Donovan, L. (2013) found evidence that students benefitted from hearing stories fluently read on iPods in terms of motivation for reading. There are many free online books available and we recommend them with enthusiasm. Obviously, differentiation can occur by the books chosen or assigned electronic audio books that can also be read..

Tumblebooks Library

(https://www.tumblebooks.com/library/asp/home_tumblebooks.asp) and its associated websites [Tumblebook Cloud Junior (http://www.tbcjr.com/About.aspx) for grades 3-8 and Tumblebook Cloud (http://tumblebookcloud.com/) for high school students] are favorites of ours. These collections include fiction, non-fiction, graphic novels and videos—the latter two are not available for younger readers on Tumblebook Library. While these are typically used on computers they can be used on iPads and mobile devices as well (http://www.tumblebooks.com/library/ipad/book_details.asp?category=Story%20Books%20%28iPad%29). Schools can subscribe to this library of books for a fairly reasonable fee ($599/year, which is less than $1 per pupil for an average size school). It provides a number of resources, including book report forms and quizzes that we do not typically use but might be of interest to classroom educators. What appeals to us most is that the books are read to learners, and this feature can be shut off. We often suggest that our graduate students, who tutor at-risk learners in urban schools as part of their coursework, search the Internet for access to Tumblebooks through a public library. (Go to Google, search 'Tumblebook Library" and "public library' and a number of options will appear.) This resource provides hundreds of books that can be read to students; after several listens, the sound can be turned off so that students can read silently. A click on an unknown word results in that specific word being pronounced, which is helpful for struggling learners with word recognition challenges and English language learners. There are a number of ways to use TumbleBooks with learners.

1. *Author Study*: A Robert Munsch author study could begin by listening to his books on TumbleBooks. Students love hearing Munsch read his books, such as *50 Degrees Below Zero* and *The Fire House*, and students can begin to notice words and writing features that he often uses (e.g., YIKES!!!). A minilesson with a group of students (similar reading level or interest in humorous books) is one way to differentiate. Thereafter, this group could visit his website (http://robertmunsch.com/) and write books based on his style of storytelling. Another way to differentiate is by selecting easier and more challenging books and matching these to specific readers, with all students having some access to Munsch's books.
2. *Listening Centers*:, A listening center during the literacy block makes great sense for students who struggle with silent reading, English language learners as swell

as younger students. TumbleBooks provides a gradual release of responsibility to students as they initially listen to books and then reread them by themselves, fostering independence.

3. *Digital Book Access*: For students with limited access to actual books, TumbleBooks can provide a library for those students. We have found that many of our economically challenged students have family smart phones and computers, so they can access these books at home.

Tar Heel Readers (http://tarheelreader.org) is another source of books for students with significant learning issues or those just beginning to read. Originally designed for students with developmental disabilities, this website has free books for students that can be audio enabled. Be sure to preview the books used because some of them have content appropriate for older students (e.g., dating). There are many nonfiction books, but we suggest reviewing the books for language – some are better written than others and some have more supports built in (e.g., similarity in language structure). It is possible to search by topic (e.g., sea turtles) or broad categories (e.g., history, holidays). For example, when *sea turtles* is searched 18 books are displayed. Students can select the book to read, choose the color of page and color of text as well download the books or the teacher can differentiate by targeting specific books for specific learners by linking online. Collections of books and favorite listings can be made. Another option with TarHeel Readers is to write a book and we think this is a great publishing option for an individual student, group of students or classroom of students, while the teacher can vary support based on the specific needs of the learner(s) . Using Flickr (http://www.flickr.com) students select images that are attributed to use in their books and the production is very structured and clear.

Mee Genius (https://itunes.apple.com/us/app/meegenius!-kids-books/id364734296?mt=8) is free resource using iPad or iPhone that also reads books to learners. Once the app is downloaded the user has access to hundreds of books, though there's a fairly hefty yearly fee (nearly $60); however when you consider that it provides access to more than 700 books, the price seems reasonable. We suggest that you write a small grant to create a library of books that you students can read.

Access to books can be particularly challenging to urban learners and economically challenged students. Some families are unable to support learners by reading to them for many reasons. The Read Along Book options reviewed in this article provide learners opportunities to hear (and read) many books. Local public libraries and schools can consider purchasing options for their use, but even if these purchases are not possible students still have the potential for using Tumblebooks Library and TarHeel Readers through the Internet. Allington and McGill-Franzen (2013; Allington & McGill-Franzen, 2003; McGill-Franzen & Allington, 2003) and others (Kim, 2004; Kim & White, 2011) have extensively described the losses in reading abilities over the summer months for students with economic challenges and online books are a potential way to combat such loss by keeping learners fully engaged in reading/listening.

Online Whiteboards: Teachers and students use whiteboards in classrooms with ease and there is some beginning evidence that online whiteboards are effective in tutoring situations (Nash, 2012). We have found that online whiteboards are very helpful for quick demonstrations, which can easily be differentiated based on small group needs.

Educreations (http://www.educreations.com/), which is a recordable whiteboard, is one of our favorite free tools. Students might solve a mathematical word problem by writing and discussing their thinking as they progress through the example. Such demonstrations showcase students' approaches and can be used to model successful and logical reasoning in problem solving. The recording of the whiteboard with voice can be highly effective.

ScreenChomp (http://www.ScreenChomp.com) is another free online whiteboard app for iPads. It is a drawing board with markers and recording device, so it's easy to draw quickly, record voice and share as a re-playable video. It's another tool from TechSmith, developer of Jing and Screencast-O-Matic. We find this tool works great for quick explanations, responses to questions and so forth. The final video is uploaded to ScreenChomp and shared via a short URL link or it can be downloaded as an MPEG-4 file.

Online Bulletin Boards: Little is known about the effectiveness of online bulletin boards, but there is evidence that collaboration among students can positively affect student learning (Gouseiti, 2013) and by implication provides support for our recommending online bulletin boards. Just as students used to make collages and posters to demonstrate their understanding and display information learned, today students can use more dynamic electronic bulletin boards to include images, symbols, text, video and audio components, such that they become multimedia.

Popplet (www.popplet.com), a free tool that can also be used as a graphic organizer, allows users to embed video, audio, text and images. Popplets can be embedded in websites (first frame of the Popplet is shown) or the URL can be emailed. We see much potential for differentiating instruction with this tool. Here are a few ideas:

1. *Multimedia Non-Fiction Products*: Suppose a class is studying New York State history, specifically historical and current canal systems. A teacher might group students to explore specific related topics. Imagine that one small group is researching the Erie Canal system. The students could search for images of the how the canal system worked in the late 1800s, or they might post images from Flickr of the remnants of this canal system. They might research information about Governor DeWitt Clinton and post that content as well as his image. The students might actually record themselves singing a song about that canal system ("Low bridge, everybody down. Low bridge 'cause we're coming to a town.") They might include jpegs (scanned images that they have drawn related to the topic), and if they live close to Schenectady they might post an image of the current bike path (Erie Canal Bikeway) where at the height of the Erie Canal system the horses and other animals actually pulled the barges. All of these items could be placed on a Popplet and shared through the class website with the embed code. Collectively, all the Popplets created on the topic of historical and current canal systems could then provide a multimedia review of the content covered in the unit of study. Differentiation in this example is related to choice of topic and presentation choices afforded learners (Zemelman, Daniels & Hyde, 2012) and the creation of materials at their developmental levels.
2. *Research Projects*: Individual students might research a topic related to a specific unit of study, such as American patriots, and display their findings on a Popplet.

A student who was assigned Patrick Henry might post a summary of his contributions, a quick Audioboo (see earlier section on audio files) of his famous sayings, an image (with attribution) found on the Internet as well as student produced drawings. The same learner might create a quick Jing (see section on screencasting) that reviews websites dedicated to his accomplishments. All these could be posted on a Popplet and shared with the class. Differentiation with Popplet occurs in the amount of advanced options elected as well as the number of postings and, moreover, the teacher could differentiate options for documenting understanding (www.cast.org).

Glogster Edu (http://edu.glogster.com/) is another popular and free online bulletin board. [Don't get confused and select Glogster (http://www.glogster.com/) without 'EDU' because that website is available only to students who are 13 years of age or older and often contains risky content such as inappropriate images or topics for younger students.] Glogster Edu is very appealing to students and accounts are created by a classroom teacher and shared only as they designate. Students can change the background color, insert images and icons, link to YouTube videos, add text and more. There are many ways to use this tool:

1. *Multimedia Book Report*: Suppose you have a student who has read many Gary Paulsen books including *Night John*, the powerful story of a slave teaching others to read which warranted great punishment if caught. A student might develop a bulletin board on Glogster Edu that showcases this favorite book by Paulsen. The learner might include an associated book jacket, pictures of Gary Paulsen, connections to YouTube videos (e.g., museums on slavery), an audio file (e.g., Audioboo) that summarizes the appeal of the book, a link to Paulsen's website (http://www.randomhousekids.com/brand/gary-paulsen/) and a short interview with Paulsen (e.g., http://www.youtube.com/watch?v=UXRa3-oIOn8). The learner might also include background choices that connect to the book or small images that relate to the books (with attributions, of course), such as slaves reading underground. Collectively, a one page Glogster Edu could serve as a multimedia book report. Differentiation in this type of project would depend on individual book choice as well as the elements elected for use.
2. *Concept Explanations*: Dyads could create a Glogster Edu to showcase their understanding of a mathematical concept, such as patterning. They might create a short video wherein they capture images of patterning within their school; perhaps the tiles in the hallway are made with a specific pattern of placement, which might be used as an example. They might make a video on patterns they found on the Internet and discuss why these are examples of patterns. Another video might include patterns they have created with buttons and regrouping (e.g., shiny/not shiny, holes/no holes, small/medium/large) to show their flexibility with reasoning mathematically. Their Glogster Edu background might include patterns they develop. Finally they could include an audio definition of patterning and why it's important in mathematics. Differentiation occurs in how students elect to demonstrate their understanding (Zemelman, Daniels & Hyde, 2012) and choice is a very powerful motivator.

Our experience has been that students of all ages love to create glogs, the terminology for Glogster bulletin boards. We find they often produce far more intricate products than

we anticipate and show tremendous stamina for working on these multimedia productions. The possibilities are endless and we recommend Glogster Edu to you without reservation.

Padlet (http://padlet.com/), another free web tool (available on computers and tablets, iPad), is one of our favorite tools because of its ease of use and ability to display much information with sticky notes. Basically, there is a blank wall, and students drag and drop whatever they wish to add from text, images, audio and video, so the Padlet displays related information clearly on one page. Padlet can also be used for collaboration around a topic or question and allows for differentiation by the teacher (required options for completion of assignment).

1. *Reader Response*: Students might post their responses and connections to a book or text they have read in common. For example, suppose the class is studying immigration and have read *Letters from Rifka* (Hesse, 1992). They will probably be surprised at the separation of families on Ellis Island and will surely have a reaction, which might be captured on a Padlet.
2. *Thought Provoking Question*: A teacher might post a thought provoking question and have students respond by explaining their position on a controversial issue (e.g., euthanasia).

Collaboration Tools: Interaction with others is a major feature of online communication. Students can communicate with class members and the larger community by using various online tools that encourage collaboration (Gouseti, 2013). Moreover, Henry, Castek, O'Bryne & Zawilinski (2012) found that struggling readers emerged as coaches and leaders when sharing new strategies online. Fostering respectful interactions is a precursor to effective digital communication and we think that students are well-served by using such tools.

VoiceThread (http://voicethread.com/): VoiceThread (available on computers, iPads and iPhones) is a multimedia tool that allows others to comment and/or collaborate on published threads. Originally designed for students with special needs, we have found VoiceThread works well with students K-12. The creator develops slides (much like a PPt) and uploads them to the website. Then on each slide the creator can add a message—audio, video from a webcam or typing. Viewers of a particular VoiceThread can respond similarly with audio, webcam video or typed comment. There is even an option to phone in a response, which works well for students with limited access to computers. Here are some suggested ways to use VoiceThread:

1. *Poetry Display with Author Recordings*: Students might write poetry accompanied by their own drawings and record their original work. The class could upload all drawings and associated author recordings into a class VoiceThread. The URL could be shared with families to encourage feedback on learners' work, or it might be shared with a larger online community.
2. *Egg Hatching Project*: Many first grade or kindergarten classrooms hatch eggs. A VoiceThread summary of their work might be uploaded as a class project and then feedback requested from the school community. If pictures of youngsters are included, the teacher might want to embed the VoiceThread with their class website and all the described features will be available only for those with access

to the website. Differentiation herein could come from what learners are asked to contribute (e.g., drawing, image)

3. *Digital Persuasive Essays*: Older students might develop persuasive essays on topics of personal importance, and these VoiceThreads could be shared with peers with the requirement that students must respond to a specific number of their classmates using the various features. For example, if students are concerned about recycling, they might take pictures or videos of areas in their schools where opportunities exist for more green, sustainable measures. Such productions could encourage advocacy and action plans to engage others in the improvement of their communities. Differentiation here comes in the form of what learners elect to explore.

Not surprisingly, VoiceThread has a paid option. Users are limited to three VoiceThreads on the free version. To develop more, a user simple removes an earlier VoiceThread. Kay actually pays for the pro version ($60/year) because she embeds this tool in her online graduate classes. However, we think the free version is a good choice because all features are available to users.

Subtext (http://www.subtext.com/) is another free collaboration tool that encourages commenting on shared digital texts. It allows students to exchange comments and thoughts as they read the same digital texts (available for iPads only) with discussion groups, among other options. Subtext can tie clearly into the Common Core State Standards by asking students to provide text based evidence for answers and, thus, can encourage close reading. The annotation feature of Subtext encourages students to comment substantively. There are many other options available with this tool, and we encourage teachers with access to iPads to explore this app further.

Summary

There are many, many, many apps and web tools available for teachers, and we have just touched the surface with the choices we included. We believe the apps and web tools that we recommend in this article have the potential to assist teachers in differentiating instruction and engaging diverse learners in classroom literacy instruction. We argue that it is not the tool that differentiates, though some tools are easier to use and others provide more complicated options. Rather, the teacher's decision on how to use tools and choices given learners are where differentiation truly occurs. We recommend these resources because we have used them with many teachers and students and can attest to their usefulness. That said, educators are key in their successful use. Teachers need to identify student needs and then adjust instruction to meet their specific learning requirements—succinctly stated, matching student need to tool/app used is critical consideration.

We find that group work is something students benefit from, especially if group members are held accountable for their individual contributions. Modeling is important as is releasing responsibility to students to 'have a go.' Moreover, allowing work in dyads or small collaborative groups provides opportunities for students to learn from each other (Lapp, Fisher & DeVere, 2009). Sharing out findings and show casing students' work are also significant opportunities to increase learning and generalization to other projects.

Preparing students for 21st Century communication requires that they become facile with technology (Handsfield, Dean & Cielocha, 2009). Certainly, there is support for the inclusion of web tools and apps in the Common Core State Standards (2010), especially the writing anchor standards that discuss electronic communication and research. The use of the web tools and apps recommended in this article provide a solid resource for helping teachers differentiate their instruction and for improving the academic achievement of all of their students.

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