Assistive Technology Resources for Children and Adults with Disabilities

Closing The Gap

Solutions

August / September, 2013
Volume 32 - Number 3

nABLEing All Learners: Apps as Transformational Technology

Customizable Apps: What You Really Need

QR Codes: Creative Educational Uses

Creating a Stable Base for Success

I-DEAL= Smart Inclusion + D.E.A.L. - Digital Engagement Authentic Learning

DISKOVERIES: What's new for Elementary School Learners with Special Needs?

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31st Annual CONFERENCE

Closing The Gap

OCTOBER 9-11, 2013
Preconference Workshops
October 7-8, 2013
DoubleTree by Hilton Hotel Bloomington
MINNEAPOLIS, MINNESOTA

CLOSING THE GAP IS TRULY MORE THAN A CONFERENCE,

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Standard Rate	**$435**	**$465**	**$505**	**$535**
Group Discount - 5 or more	Groups 5+ Deduct $30	Groups 5+ Deduct $30	Groups 5+ Deduct $30	Groups 5+ Deduct $30
Group Discount - 8 or more	Groups 8+ Deduct $50	Groups 8+ Deduct $50	Groups 8+ Deduct $50	Groups 8+ Deduct $50
All group registrations must be received at the same time.				
Parent Rate *(A letter describing your child's disability must accompany registration)*				**$275**
Full-time Student Rate *(Proof of full-time student status must accompany registration)*				**$275**
Presenter Rate				**$335**
Exhibitor Rate				**$335**

Single Day and Exhibit Hall Only Registration	Price
Thursday Only - October 10	**$275**
Friday Only - October 11	**$125**
Exhibit Hall Only - Tuesday evening through Friday, October 8-11	**$175**

Preconference Workshops - Monday and Tuesday, October 7-8, 2013 (Includes Preview of Exhibits – Tuesday, October 8, 5:30 pm - 8:00 pm)	Price
Monday, October 7 *(Some preconference workshops carry an additional fee for materials)*	**$275**
Tuesday, October 8 *(Some preconference workshops carry an additional fee for materials)*	**$275**
BUNDLED PRICING! Monday and Tuesday Bundle ($75 savings)	**$475**

Conference Scholarship - Wednesday, Thursday, Friday, October 9-11, 2013

A limited number of scholarships are available for persons with disabilities or parents/guardians of children with disabilities. To apply, complete a conference registration form, indicating your scholarship request. Submit the form and attach a letter describing your/your child's disability and telling us why you would like to attend the conference. Applicants will receive written notification of acceptance or denial.

nABLEing

ALL LEARNERS

Apps as Transformational Technology

"This is the best time in history to be blind."

I often start my presentations with this statement because, as a person with a disability, I truly believe we live at a unique point in history when technology is opening the doors to unprecedented opportunities for people with disabilities. In just the last decade – since I was first diagnosed with a visual impairment – I have witnessed a significant improvement not only in the number of options I have available to me as a person who has progressive vision loss, but also in the overall quality of those options. A great example of this phenomenon is the iPad. This device provides not only built-in accessibility options for people with a wide range of special needs, but also support for a growing collection of apps that complement those accessibility features. Other factors, such as the portability of the device and its social acceptability, have made the iPad a popular choice (some have called it a "game changer") for students with special needs. Of course, the downside to having so much choice is that it can be, at times, overwhelming to educators looking to choose the appropriate technology for their students. What are needed then are frameworks to guide educators in the selection of appropriate apps that will not only meet the basic needs of their students, but also help them thrive in all areas of their lives. In this article, I introduce a few of these frameworks, including one I have developed that I hope promotes more transformative uses of the iPad with students who have disabilities. I call it the nABLE framework.

BACKGROUND

The nABLE framework builds on two existing frameworks: Universal Design for Learning (UDL) and the SAMR (Substitution, Augmentation, Modification and Redefinition) model for technology integration in education. UDL is a set of curriculum design principles developed by the Center for Applied Special Technology (CAST) that focus on providing all individuals with equal opportunities to learn (CAST, 2011). With UDL, barriers to learning are considered from the start and the goal is to develop instructional goals, methods, materials and assessments that work for everyone, rather than one-size-fits-all solutions. Thus, an emphasis is placed on flexibility through the application of three key principles (CAST, 2011):

- Multiple Means of Representation: information is presented in a variety of formats to account for the different ways in which learners perceive and process information. For example, a student like me who is blind or who has a visual impairment may need information to be available in an alternative format, such as audio or Braille. Likewise, a student who is deaf may need captions in order to access the information in a video shown in the classroom. Other students may need supports, such as a dictionary to look up unfamiliar words as they read or a graphic organizer to help them notice important relationships in the content.
- Multiple Means of Action and Expression: learners are provided with options for how they show what they have learned. For example, rather than requiring learners to submit an essay on a topic discussed in class, they may instead be given the option of creating a poster or making a video that visually shows their understanding of the key concepts.
- Multiple Means of Engagement: learning is made relevant and meaningful by appealing to learners' interests and passions. Furthermore, learners are encouraged to develop self-determination and autonomy as they choose what they want to learn and how they want to go about learning it (individually or in groups).

LUIS F. PÉREZ received his Ph. D. in special education from the University of South Florida. His dissertation research focused on the lived experiences of graduate students with visual disabilities, including these students' experiences with accessibility and assistive technologies. Luis is a frequent speaker at national and international conferences focusing on educational and assistive technology and his research interests include universal design for learning (UDL), disability studies and Web accessibility. Luis was recognized as an Apple Distinguished Educator in 2009 and he is the author of Mobile Learning for All: Supporting Accessibility with the iPad, from Corwin Press.

The key idea behind the UDL framework is that learning should be customized to account for and to take advantage of the increasing diversity among the students in our schools. More information about the UDL framework is available on the CAST website at www.cast.org.

While UDL responds to the growing diversity of our student population, the SAMR framework addresses the need for transformation in how new educational technology is implemented for students who have special needs. Developed by Dr. Rueben Puentedura, the model emphasizes the development of learning activities that leverage the unique affordances of new technologies to redefine the learning tasks that are possible. To learn more about SAMR, visit the blog of Dr. Ruben Puentedura at http://www.hippasus.com/rrpweblog/. The different levels of the SAMR model (Puentedura, 2006) are:

- Substitution: At the lowest level of the model, technology acts as a direct substitute and there is no fundamental change in the kind of learning tasks that take place. An example would be filling out a worksheet on a mobile device as opposed to using paper and pencil. Another would be using a word processing app to enter text the way you would on a typewriter, without taking advantage of features, such as copy and paste, to edit the text.
- Augmentation: At the next level, there is some enhancement in functionality. Continuing with the previous example of word processing, at this level students would use the built-in dictionary feature of iOS (the software that runs on the iPad) to check their spelling as they write their reports in Pages or other word processing apps, and they may insert images that they have found on the Internet to illustrate key points.
- Modification: At this level, the learning task is altered, but not fundamentally changed. This level marks the first step across the line from enhancement of the traditional curriculum to its transformation. An example consistent with the UDL principle of multiple means of action and expression is to allow students to submit a recording made with their iPad's microphone as an alternative to a written reflection on a topic.
- Redefinition: At this level, the learning task becomes increasingly student-driven, and there is a focus on collaboration. For example, students may use Google Docs to collaborate on a report that summarizes what they have learned, then publish it online through a blogging platform, such as Wordpress. Publishing the final product on a blog allows the students to get feedback from an authentic audience. Students could also go out into their community to interview residents on a range of topics (pollution, traffic, etc.) by taking advantage of the portability of their devices, as well as the audio and video capture capabilities built into them. The recordings could then be added to the final report to make it more concrete and to bring the content to life for others in order to bring about change in the community. Rather than using a number of devices, the iPad would allow the students to capture, edit and share from one device, simplifying the task significantly.

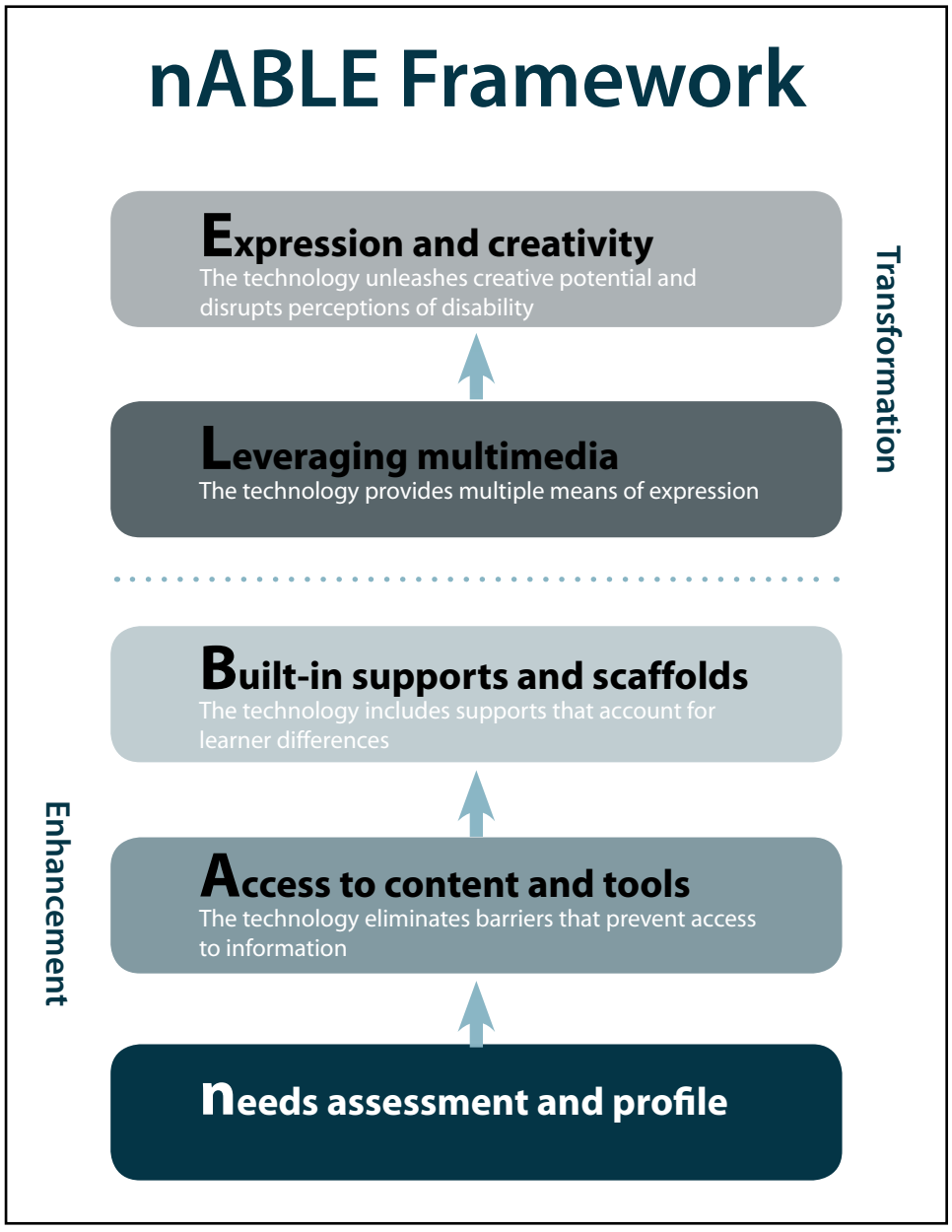


Figure 1 - nABLE Framework.

I have chosen to base my framework on the SAMR model for its focus on transformation. Dr. Puentedura emphasizes that the first two levels (which he groups under the category of Enhancement) should be transitional and temporary. They are necessary developmental steps, but the goal should be to move to the transformation levels (modification and redefinition) as soon as possible. While work at the transformation levels should be the goal for all students, it is important to recognize that some students may have more significant needs that may require that they spend more time at the basic levels.

I see real value in all the work that has been done to create more inclusive learning environments for students with special needs (and I have seen, firsthand, what a positive impact it has on people's lives), but I, as a person with a disability, am sometimes frustrated with the way in which technology is used with these students. More than a decade after Rose and Meyer (2000) published The Future is In the Margins, I still see technology used in mostly traditional "assistive" ways. By that I mean that it is often used to provide access to traditional activities that would otherwise be inaccessible, rather than to consider new opportunities for creative expression made possible by emerging technology. While addressing basic needs is important, so is giving students an outlet for creative expression through apps that provide them with the opportunity to develop their own voice.

As with the SAMR model, in the nABLE framework there is a distinction between a basic level of technology integration (access and built-in supports) and a more transformative one (leveraging multimedia for expression and creativity). I use Expression and Creativity to emphasize student agency and voice as the two driving forces for a more transformative experience with technology for students who have special needs. Now that I have provided a broad outline of the framework (which can be seen in Figure 1), let us take a look at the different levels in more detail.

ENHANCEMENT

Needs assessment and profile

As with Universal Design for Learning, implementation of nABLE (or any framework) should begin with a good understanding of the individual's strengths, weaknesses and interests. Once a detailed profile of the learner has been developed through a collaboration between parents, teachers and other trained professionals, the next step is select the appropriate apps for providing access to information and communication.

Access to content and tools

At a most basic level, students must be able to perceive and process the information before they can do something with it, and they must also be able to express their basic needs to others. Thus, at the Access level, the focus is on eliminating barriers to learning by allowing students to access information in the format that is best for them (UDL principle of multiple means of representation).

The iPad and other devices running Apple's iOS software already have a number of built-in accessibility features that can provide access for individuals who have vision, hearing, motor or learning difficulties:

- FaceTime: a video chat app from Apple that can be used by students who are deaf or who have a hearing loss to communicate using sign language.
- VoiceOver: the built-in screen reader for the iOS software that runs on the iPad and other Apple mobile devices and allows students who are blind to hear the information on the screen read aloud. Support for Braille devices is also available.
- Zoom and Invert Colors: these two features are intended for individuals with low vision. Zoom magnifies what is on the screen so that it is easier to see, while Invert Colors provides more contrast to make text easier to read.
- Speak Selection: with this feature, students can select text to have it read aloud. Starting with iOS 6, the text-to-speech capability has been enhanced with word highlighting for those students with learning difficulties who can benefit from it.
- Dictation: a built-in feature starting with the iPad 3 that allows students to enter text with their voice as an alternative to typing. The free Dragon Dictation app is an alternative for those who are using a device that does not support the built-in Dictation feature.
- AssistiveTouch: a feature designed to make mobile devices easier to use for people with motor difficulties. AssistiveTouch provides onscreen options for the few buttons built into the iPad and other iOS devices. It is also possible to create custom gestures for interacting with the iPad with this feature.

Along with the built-in accessibility features, a number of alternative and augmentative communication (AAC) apps can be used to eliminate barriers to communication. One of my favorites is the Proloquo2Go app from AssistiveWare ($249.99). With this app, students with communication difficulties can express their basic needs using symbols or typed text that can then be spoken aloud with a natural sounding voice.

Built-in supports and scaffolds for learning variability

Some students may not need to use the built-in accessibility features to have access to the content, but they may need additional supports to make it easier for them to process information. For these students, a number of apps are available that include additional supports and scaffolds, such as text-to-speech, word prediction and note taking and highlighting capabilities. These include:

- iBooks (free e-reading app from Apple)
- AppWriter US ($29.99): text-to-speech app with word prediction and special dyslexie font for individuals with dyslexia
- Speak It! ($1.99): text-to-speech app
- NeoKate, NeoJulie and NeoPaul (free): text-to-speech apps
- Typ-O HD ($14.99): text-to-speech and word prediction app
- Evernote (free): note taking app with ability to sync across platforms (Mac, Windows, iOS and Android)
- Notability ($1.99): note taking app with synchronized audio recording

To make it easier for you to locate the apps mentioned in this article, I have created a Pinterest board with direct links to the App Store for each app. This Pinterest board is available at http://pinterest.com/lfperez411/closing-the-gap-nable/.

TRANSFORMATION

Leveraging multimedia for learning

At this level, the focus is on providing students with a range of options for how they can show what they have learned. This is consistent with the UDL principle of multiple means of action and expression. Thus, students use the cameras and microphones built into their mobile devices to show their understanding by creating movies, narrated slideshows and voice recordings. For students who find it difficult to type, these options can provide a much needed alternative for expression. Apps that incorporate multimedia creation capabilities at this level include the following:

- Pictello ($18.99): app for creating talking books with images and text captions that can also include text-to-speech or voice recordings
- Book Creator for iPad ($4.99), Creative Book Builder ($3.99) and StoryKit (free): apps for creating multimedia ebooks on the iPad
- SonicPics ($2.99), Storyrobe ($1.99) and PixnTell (free): apps for creating narrated slideshows
- Inspiration Maps ($9.99): concept mapping app

Expression and Creativity

At the highest level of technology integration, the focus continues to be on providing avenues for creative expression, but there is a subtle shift in that the focus is on the development of a strong, independent student voice. Much of the work at this level is done with creativity apps not specifically designed for students with special needs, but ones that have accessibility support for these students. A key goal at this level is to disrupt and challenge preconceived ideas of what people with disabilities can do when they are empowered by technology. For example, I am legally blind and have less than ten degrees of vision. However, my limited eyesight has not kept me from taking photos and posting them to my Instagram account where I can share them with family and friends (my user name on Instagram is lfp1211 if you want to see some of these photos). This is all made possible because the Camera app for iOS is compatible with the built-in accessibility features, including the VoiceOver screen reader. A number of apps are available at this level to allow students with special needs to become musicians, artists, photographers and anything else they desire to be, including:

- iMovie for iOS ($4.99): app for capturing and editing video
- Garageband for iOS ($4.99): app for music creation and audio recording
- iPhoto for iOS ($4.99) and Snapseed (free): apps for editing photos
- Instagram (free) and Flickr (free): photo sharing services

The support for accessibility varies among the apps that students could use at this level. It tends to be better with the Apple apps (iPhoto, iMovie and Garageband) and to be less consistent with third party apps. As advocates, we can play a role in improving accessibility by bringing the need for it to the attention of developers. Adding in support for the VoiceOver screen reader, for example, does not just benefit those who are blind. Since many of the newer switch interfaces use VoiceOver to facilitate communication between the switch device and the iOS device, this support also helps individuals with cognitive and motor difficulties who rely on switch systems. The lack of consistent support for accessibility is a key factor that keeps many students with disabilities from being able to use technology at this more transformative level, but it continues to improve.

GOING FORWARD

I stand by my statement that we are living in "the best time in history to be blind" or to have any other disability. New technologies are providing a unique opportunity for people of all ages with disabilities to share their own unique voice and become powerful advocates for themselves. However, I believe we have some work to do to realize the full promise of technology for all learners, including those with special needs. In addition to pursuing full support for accessibility in apps, we will need to rethink the way in which we employ emerging technology so that it is not just assistive but empowering. When the technology is used in an assistive way, it helps learners complete activities of other people's design and choosing. When it is used in an empowering way, it is used by learners to complete activities of their own choosing and desire. As a person with a disability myself, finding my own voice with the help of technology has played a significant role in my academic and professional success. I would like nothing more than to see other students with disabilities have that same opportunity.

FURTHER READING

CAST (2011). Universal Design for Learning Guidelines version 2.0. Wakefield, MA. Available at http://www.udlcenter.org/aboutudl/udlguidelines).

Puentedura, R. (2006). Transformation, technology and education. Available at http://hippasus.com/resources/tte/

Rose, D., and Meyer, A. (2000). The future is in the margins: The role of technology and disability in educational reform. Available at http://udlonline.cast.org/resources/images/future_in_margins.pdf.

■

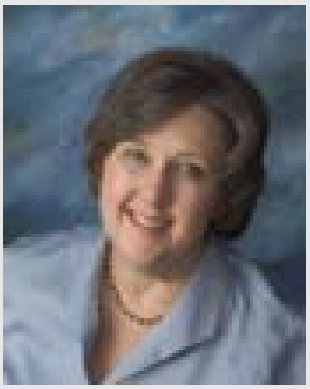
CUSTOMIZABLE APPS

WHAT YOU REALLY NEED

Education is still abuzz about the importance and future of tablet devices like the iPad and Android. High quality pictures and videos, great audio, inexpensive apps, easy direct access for students, super portability … the list goes on and on.

It's no wonder that these devices are reshaping the world of assistive technology for many children with special needs.

With hundreds of new apps being released each day, finding the apps that would best work for our students is often difficult, if not impossible. Search engines don't allow for the details for which we need to look. Searching for an app for "a student with autism who needs help with sequencing and responds only to trains" probably won't turn up what you need. If the app doesn't have our search term in it's name, we often can't find it. **We need apps that we can fit exactly to student needs.**



JUDI SWEENEY has worked in the field of education since 1969. She has been a regular education teacher (secondary English) and special education teacher in both public and private schools. She also taught and managed projects and grants in assistive and educational technology at the University of Connecticut for over 10 years. In 1997, Judi founded Onion Mountain Technology, Inc., a firm devoted to providing evaluation, consulting, training and presentation services to children, their parents and school systems interested in increasing their knowledge of and access to assistive technology. The company has also developed a number of assistive technology products including the LoTTIE Kits, a series of low- and mid-tech tool kits for informal assessment and evaluation. Judi is also a national speaker who consults and makes presentations nationally on assistive technology.

DO YOU NEED TO CHANGE SETTINGS OR REALLY CUSTOMIZE APPS?

Apps that allow for settings changes are valuable in many ways. The number of items, the lesson, the reinforcers, the voices and many other things can be chosen or adjusted, but in most educational apps, the content stays the same. Customizable apps are different. These apps allow teachers and therapists to change or even create content that exactly fits the student's needs and his or her world.

A year and a half ago, I set out to find these customizable apps, to categorize them and to find out what each of them allowed in terms of adding new audio and visual contents. Once I started really learning and using these apps, I found that there were a variety of skills and needs that were crucial to successful use of these apps. I also discovered that many of these apps had ways to share these content creations with others.

NEED-TO-KNOWS FOR CUSTOMIZABLE APPS

When I began working with teachers with customizable apps, I found that there were a few things that needed to be taught, or at least reviewed, before teachers could easily and successfully use customizable apps. When a picture, video or sound is not captured directly on the iPad, people need an easy, reliable and fast way to find and get these files onto the iPad so they can be used in custom lessons.

First, although it may seem obvious to many AT professionals, I check to make sure that users know how easy it is to find a Google image and then copy it to their Camera Roll. Showing teachers how to touch and hold on a chosen image and then copy that picture to the iPad's Camera Roll simplifies and speeds up the preparation needed for collecting images for custom lessons. Making assumptions that teachers know this easy-to-use trick is a mistake in my experience. Taking a few minutes to show them how to do it and how to store groups of these pictures in separate folders is well worth the training time.

For pictures that are on other devices, easy transfer to the iPad is absolutely necessary. Some teachers depend on device syncing or emailing, but I almost always include a short training session on how to use and set up Dropbox for easy and instantaneous transfer of audio and video and other files. Again, three out of the four teachers with whom I have worked claim to know Dropbox and perhaps even have a Dropbox account, but many are unsure of how to transfer and how to download files into their Camera Rolls or directly into customizable apps.

In addition, few teachers know how to crop or enhance photos taken and/or stored on the iPad. I routinely advise teachers to use the free Adobe Photoshop Express (Adobe) app for these and other tasks.

WHAT YOU CAN ADD OR USE TO CREATE A CUSTOMIZABLE LESSON

So what exactly can you use in a customizable app? The kind of files you can use to create a customized lesson varies from app to app. Basically, though, these apps allow you to add pictures, clip art, videos, recorded sound, sound files and/or text that, in some cases, can be read out loud through speech synthesis.

App descriptions rarely list exactly what file use is supported or how you can access these files. In many cases, I learned about the full range of files that could be used only by experimenting with the app or by actually changing file types of images or videos on the computer and then moving them to the iPad. Software, like Adobe Photoshop to change image file types and Audacity that changes audio file types, are invaluable for these kinds of exercises.

CATEGORIES OF CUSTOMIZABLE APPS

When I created the FileMaker 12 database of customizable apps and started working with them, I found that there were a wide variety of customizable apps and set about the task of categorizing them. I created initial lists of categories and changed and refined that list at least a half of dozen times. Eventually, I decided on 12 different categories and also realized that some apps could fall into more than one category. The categories I ended up with included:

- **Flashcards** – Apps that allow you to create decks of digital flashcards that contained pictures, text and/or recorded or synthetic speech.
- **Photo-Based Lessons** – Apps that use pictures entirely or primarily to teach or practice.
- **Visual Schedules** – Apps that allow students to see and carry out a list of tasks or steps through the use of pictures, text and/or recorded speech
- **Sequences** – Apps that present a sequence of steps or require students to put a sequence of steps or events into proper order.
- **Spelling & Dictionaries** – Apps that help students spell and/or recognize custom word lists or that help them create custom dictionaries.
- **Book Creation** - Apps that allow teachers and students to create their own books with pictures, text and often recording.
- **Language and Writing Development** - Apps that help students develop handwriting skills through tracing and apps that help build other language-based skills, including written discourse and sentence construction.
- **Choices** – Apps that allow students to make choices on the device and often to see the result of those choices (if/then).
- **Simulations** – Apps that simulate real life situations and environments to help students practice activities.
- **Games** – Apps that allow students to play games custom made by their teachers (either on or off line).
- **Check or Task Lists** – Apps that allow students to check off steps or tasks as they are done.
- **Timers** – Apps that allow for customized timing of tasks or activities.

SOME OF MY FAVORITES – BY CATEGORY

FLASHCARDS

One of the first areas I spent a lot of time researching, in terms of customization, was Flashcard apps. I had already been showing teachers how to use websites like Quizlet, and so using my Quizlet decks on the iPad seemed a natural extension. I looked at over 10 different flashcard apps, most of which were tied to a flashcard website and also allowed creation of decks within the app. I have come to really appreciate and regularly use two of these apps, both of which attach to Quizlet.com decks. The Quizlet (Quizlet) app allows for viewing and hearing the text on each card, as well as playing a matching game with the picture and text on the cards. The other flashcard app I regularly share with teachers is Quizard (GabySoft). It has the same standard features as Quizlet, but it has two other unusual games. The app will create a word search out of the deck's terms; and if the cards have both a label and a definition, the app can create a crossword puzzle.

PHOTO-BASED LESSONS

Another kind of flashcard app that I also put in the Photo-Based app category is my favorite customizable app. Bitsboard (Grasshopper Apps) (a free app now with an in-app purchase of individual or all games) has an easy-to-use interface and access to thousands of lessons created by other teachers and parents. The concept is simple – you enter information for each screen – a picture, text related to that picture and a recording of that or associated text. The app then allows the student do go through all the screens in that lesson through 10 different games. With so many fun ways to learn and practice vocabulary, no student loses interest with this app. (Figure 1)

I placed two other apps in the Photo-Based app category. Today, I would probably make a new category called Multimedia to describe how these apps work. Both Explain Everything (Morris Cooke) and Educreations (Educreations, Inc.) allow you to create visual and auditory lessons that can be saved and used as movies. For example, you can place a photograph in the background, then start the audio recording feature. As you explain parts of the picture, you can add text, arrows or circles to the picture while you explain all the things you are referring to. The students review the lesson as a movie, seeing the teacher's visual additions, and they hear what is being said or explained.

Another little-known app in this category is called Put It Away (leehsueh). This free app is designed so that you can put a picture of a room or location in the background. Then you can move small pictures of objects on the screen to the location they should be in when they are put away. If the item is put away in the correct location, it "disappears" from the picture. It's a fun learning tool for just this exercise, but I've also used it to create sorting lessons for academics. (Figure 2)

One of the Montessori apps, Montessori Matching Board (Grasshopper Apps), also allows you to create custom matching lessons with your own photos. Each screen in the app shows four pictures, two pairs of matches. Matches can be exact pictures, related pictures (leaf and tree pictures, for example) or the picture to its word (with the word saved as a picture in another program). (Figure 3)

One other interesting and very customizable app that deals with pictures is Special Words (Special iApps). This app comes with a wide variety of photo-clipped images and their labels. What is interesting is that the program comes with 15 different languages. The app provides for four games in each of the languages – matching pictures to pictures with a verbal prompt of the label, matching a word to picture, matching words to words and matching a picture to words. You can easily add your own labels, pictures and recordings in this app.

LANGUAGE AND WRITING DEVELOPMENT

The Language and Writing Category is broad and includes a variety of different apps. Some of my favorite customizable apps in this category include Little Writer, Symbol Support and Abilipad, three very different apps. Little Writer (Innovative Mobile Apps) allows the teacher to add words, pictures and recordings to its Words category. The student is then presented the added words, one letter at a time. He or she has to use a finger or stylus to trace the letter that is done part by part. When the entire name is spelled, the picture appears, along with the entire name, and the name associated is spoken out loud, along with a verbal reinforcer.

Symbol Support (Attainment) is an app that closely resembles the picture-assisted software programs we have used for years on the computer. It comes loaded with Slater Software pictures, as well as the GoTalk image library. However, you can customize the app by adding pictures and their labels to a file. As a student or the teacher types the words, the pictures appear over or under each word. (You can also save a picture of the picture-assisted

Figure 1 - Bitsboard (Grasshopper Apps).

Figure 2 - Put It Away (leehsueh).

Figure 3 - Montessori Matching Board (Grasshopper Apps).

text by taking a picture of the iPad screen and then cropping it in the free Adobe Photoshop Express. This newly cropped picture of the assisted text can be added to any of the book creation apps as a picture from your Camera Roll.) (Figure 4)

AbiliPad also approximates what we are able to do on the computer. It allows the teacher to create custom on-screen keyboards. Each key can hold a letter, word or phrase. Keys can also be grouped (in sentence order, for example) and color-coded. Students write by touching the keys on the custom keyboard. (Figure 5)

SEQUENCES

A newer sequencing app that is customizable is called Sequences by EdNinja (Club LIA). This app allows you to create three-, four- or five-step sequences that include your own pictures, text and recordings. Students look at the pictures and hear the descriptions of each of the steps as they touch it. They move each picture to its proper, numbered position. Every time the app opens, the steps are scrambled and the student has to put them in order again. (Figure 6)

GAMES

Customizable Game apps are few and far between, but there is one app called GoBingo (Cool Tool Apps) that allows the teacher to create Bingo cards with custom pictures and/or their labels. Cards can be printed out with the contents mixed on each card for up to 30 students, or students can play Bingo on their individual iPads that are using the same network.

VISUAL SCHEDULES

There are scores of Visual Schedule apps available to create schedules for students. Some include checks so that students can readily and easily see what is done and what is next. Some allow for viewing all the parts of the schedule on one screen, others show only one task at a time. In my experience, choosing and using these visual schedules for students to use independently often involves trial and error with several of them to see which works best for these students. Most students need to see at least several of the activities on the same screen so that they can prepare for the next activity. Among the apps teachers and students often end up using are First Then Visual Schedule (Good Karma Applications) or I Get... My Daily Schedule (I Get It, LLC).

TIMERS

Under the Timer apps category, I have just begun to explore Picture Prompt Timer (MDL). This custom timing app allows you to choose a timer duration, play audio when the timer is complete, play a remainder audio at a specified time, display photos or videos (doing now and what's next pictures, for example) and display text. Teachers I have demonstrated this app to think it's great. (Figure 7)

THE TIME IS WORTH IT

To increase motivation and provide meaning for our students, the use of customized app lessons makes a lot of sense. When the pictures or videos and the places match the student and his or her own world, the chances for learning really improve. Today I recommend that teachers choose one or two of the customizable apps that seem to best meet their needs. Next comes careful training about not only the app but also the process of finding, creating and adjusting the images and/or sounds. Mentoring and the ability to get answers swiftly in the initial stages of lesson creation are absolutely necessary. Once the lesson is done, though, the bulk of the work is done. Teachers become as excited as their students with the technology. They create again. They share. Kids learn.

For More Information on the File-Maker 12 Database or Workshops, please contact Judi Sweeney at <jsweeney@onionmountaintech.com>. ■

Figure 4 - Symbol Support (Attainment).

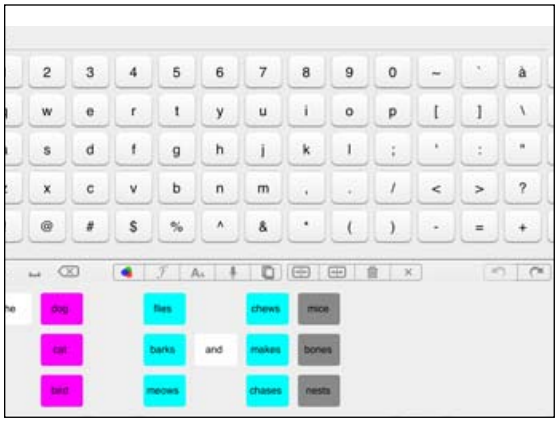


Figure 5 - Abilipad

Figure 6 - Sequences (EdNinja).

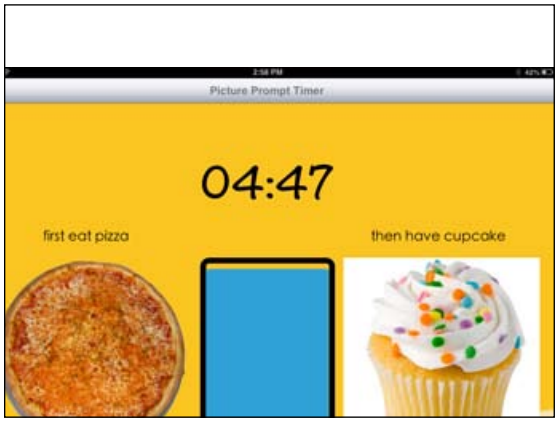


Figure 7 - Picture Prompt Timer (MDL).

QR Codes 101

Creative Educational Uses

WHAT ARE QR CODES?

QR (Quick Response) codes are graphics that are attached to an item (paper, product, etc.). QR codes link the physical world (item) to the electronic world (websites). When a QR code is "read" by a device, the user is able to access information related to that item. For example, when you buy a plant at a nursery, the QR code that is attached to the pot will give you information about the plant - what it is, how to care for it, etc. QR codes can contain links to video, audio, images, websites or documents. Many types of data can be used to create QR codes. This article will describe using website URLs (Web addresses) as the data contained by QR Codes.

Symphytum officinale

QR codes were first designed by Denso Wave, a developer of bar code readers in 1994.[1] Their task was to move beyond the bar code (a one-dimensional code) to enable more data to be contained. Their design, the square graphic we see today, was first used in the Japanese automobile industry. It can contain as many as 7,000 numerals and is quickly read vertically and horizontally. While Denso Wave had the patent rights to QR codes, it did not exercise them. This led to free public use of QR codes by people all over the world. With the development of mobile apps for phones that could "read" QR codes in 2002, the use of QR codes became even more widespread. Now we find e-tickets with QR codes for planes, trains and busses. QR codes are found on commercial packages, on conference brochures and even on rental apartment doors!

There are two types of QR codes: static and dynamic. Static QR codes provide a link to a specific website URL. They cannot later be changed. Dynamic QR codes are more flexible. They essentially redirect the user to the intended destination without having to change the original code image.[2] For example, if the website you want students to go to changes or if you want to switch to a different video, you don't have to change the QR code that had been printed on a poster.

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WHY WOULD AN EDUCATOR USE QR CODES?

QR codes help create a richer learning environment by linking to media to accompany written material. Imagine taking a virtual tour of the interior of Anne Frank's house or watching an interview of Anne Frank's father or Miep Gies while reading The Diary of Anne Frank. Using QR codes are a great way to support the principles of Universal Design for Learning by making it easy to provide access to multiple ways of taking in information (representation), supporting students in displaying different ways of demonstrating their knowledge (expression) and stimulating interest and motivation (engagement) But importantly, QR codes are fun to use! It is so much faster and easier to use a QR code than giving kids a long URL to type. 21st Century learning recommendations include ICT Literacy (Information, Media and Technology Skills). Learners are expected to apply the technology effectively.[3] Using QR codes exemplifies the effective application of current technology.

Image 1 - Using Audio Files: Example of using a QR code with an article/text to hear the content read aloud.

USING AUDIO FILES

Imagine a student independently completing worksheets, study guides or tests by scanning QR codes that "read" the instructions and questions (as many times as needed). Support auditory learners by putting a QR code on a short article/text to hear the content read aloud. (See image 1.) Introduce new vocabulary to young readers or English language learners by adding QR codes to picture books. Encourage the understanding and retention of new vocabulary by defining new words with QR codes. Provide further exploration of physical models or maps by adding QR codes with additional information.

School librarians and teachers have had students write reviews of books and record these reviews. Students then created QR codes of these reviews and attached the codes to the book. Peers can then select books of interest based on reviews by fellow students.[4] Other examples of student use include adding QR codes to poster board projects, such as timelines or biographies.

USING VIDEO FILES

Educators are finding innovative ways to use QR codes to access video content. Lessons are filmed and used to assist absent or home-bound students in keeping up to date.[5] Classroom demonstrations can be viewed at home to aid in understanding homework tasks. Videos can provide contextual or background information. Imagine a video demonstrating the influence of the moon on the ocean's tide. Older textbooks can be "updated" by adding codes containing digital information. Even pre-school students are learning the scanning process and linking to videos with pre-academic content like counting or ABCs.

Special educators and therapists use social stories and video modeling to support students needing to view steps of a task or preparing them for unknown or uncomfortable situations. QR codes with these videos can be printed, laminated and carried in a small book, on a ring or posted at a job site.

HOW DO I "READ" QR CODES?

To read a QR code from a mobile device, you need a QR code reader app. The app takes a picture of the QR code using the camera on the device. The app then takes you directly to the website or prompts you to follow a link to the website with the content you located or created. Table 1 lists QR code reader apps for iPhone/iPad and Android phones and tablets.

While it is easier to read QR codes and link to the content on mobile devices, you can also read QR codes via your computer by using the built-in camera or a webcam to take a picture of the QR code. This may be an expedient way to guide students to desired websites in computer labs. Table 2 lists QR Code reader apps for PCs, Macs and Chromebooks

Table 1 - QR Code Reader Apps for Mobile Devices

QR Code Readers for iPhone/iPad	QR Code Readers for Android Devices
iCandyMobile (free)	Barcode Scanner (free)
i-nigma (free)	i-nigma Barcode Scanner (free)
NeoReader (free)	Kaywa Reader(free)
QR Code Reader from Kaywa (free)	NeoReader for Droid (free)
QR Reader (free)	QR Droid (free)
QR Code Simple (free)	RedLaser Barcode and QR Scanner (free)
Redlaser (free)	

Table 2 - QR Code Apps for the Computer

QR Code Apps for PCs	QR Code Apps for Macs	QR Code Apps for Chromebooks
iCandy (free)	iCandy (free)	
QR Code Reader (free, requires Adobe Air)	QR Code Reader (free, requires Adobe Air)	
		QRreader beta (free)
QuickMark (free)	QuickMark ($3.99)	

HOW DO I MAKE MY OWN QR CODES?

The process of making QR codes is a three-step process: creating or locating content, storing content and creating the QR code. Let's walk through the steps.

1. Creating or locating content:

Audio files are created using software, like Audacity (http://audacity.sourceforge.net/), or mobile apps, like iTalk Recorder for iOS or PCM Recorder for Android. For video, use the devices you're comfortable with, such as flip cams, video cameras, mobile phones or tablets. Digital cameras, mobile devices or webcams can be used to take pictures (images). If you've located content already on the Web that you wish to use, simply copy the URL.

2. Storing content:

Once you have created your own content, you will need to store it on a website in order to procure a URL. It is important to remember that if you later move your file to another location (such as another page on a teacher website), you will alter the URL of that content and break the link contained by the QR code. Any static QR code you created will no longer work. (This is an example of where using dynamic QR codes may be helpful.)

There are many options these days for storing your own content. Some resources let you store different types of content (audio, video, documents, images). Here are some of our current favorites:

Dropbox <www.dropbox.com> - Dropbox is a great place to store content. Any file you put into Dropbox is given a URL that can be shared with anyone - even non-Dropbox users. See images 2 and 3.

If using the desktop version of Dropbox, just right-click on the desired file and go to Dropbox - Share Link.

If logged into Dropbox.com, right-click on the file, click Share Link, click Get Link and you will see a message that your link has been copied to the clipboard. Use that link for creating your code.

If you upload a movie in .wmv format to Dropbox, you may encounter some difficulty when trying to read the code on an iDevice but not on an Android device. However, .mov movie files are easily played by both iOS and Android mobile devices.

Google Drive - Many school districts use Google Drive to store content. Each file in Google Drive has a URL. In order to let others view your file without needing to sign in, you will need to first change your Share Settings for that file, to either "Public on the Web" or "Anyone with the Link". See image 4.

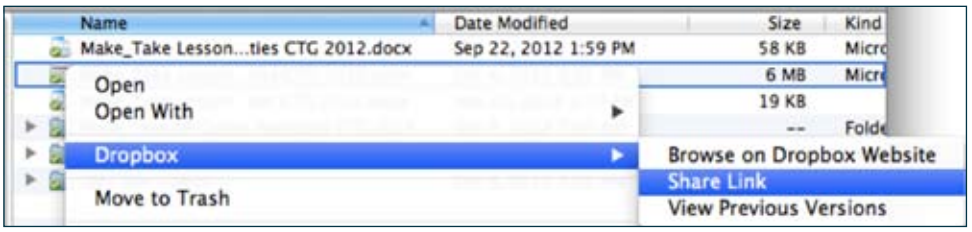

Image 2- Dropbox - www.dropbox.com

Image 3 - Using Dropbox to "Get Link" to share.

Image 4 - Google Drive.

Evernote <www.evernote.com> - Evernote (free and premium versions) gives you the ability to share a note using a public link. This means that the note can be viewed without signing into Evernote. If using the desktop version, simply highlight the Evernote item, click the Share icon and Copy Note URL to Clipboard. Right-clicking on the note will also get to you this function. See image 5.

Teacher Websites/Wikis - Edmodo, Google Sites, Wikispaces, school websites, etc. are all places where teachers (and others) can create, store and share content. Each "page" on your site has its own URL. See image 6.

Some resources allow you to create and/or store a specific type of content. Here are some that we currently like:

Chirbit <www.chirbit.com> - Chirbit is a free site that lets you record, upload and share audio files and more! Sign-up is required. You can upload an audio file

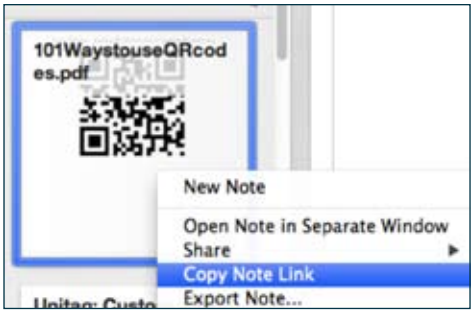

Image 5 - Evernote.

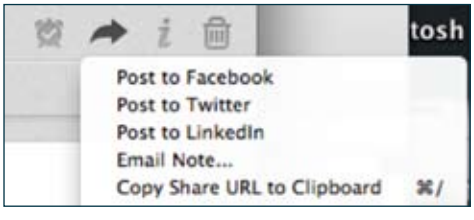

Image 6- Each "page" on your site has it's own URL.

(various formats from Audacity, Garage Band, etc.) up to 120MB. You can also record your Chirbit via a webcam or microphone for up to five minutes. Voice memos from your mobile devices can be shared/sent to Chirbit. The site also generates a QR code for you!

QR Voice <qrvoice.net> - QR Voice is a free site that lets you speak or type text (up to 100 characters). Typed text is turned into synthesized (computer) voice. A URL and QR code are also created for you! You don't sign up for this site, so it doesn't store any previously created content. See image 7.

Image 7 - QR Voice.

Recordmp3.org <www.recordmp3.org> - This is a free site with no sign-up (so no storing of your previously created content). After a quick set-up, record your content. When done, you can copy the URL or save to a desired location. Be sure to copy the URL before you close the dialog box ... otherwise you won't be able to get back to it.

There are a number of sites where you can locate already existing videos or post your own. They include YouTube, SchoolTube or Vimeo. (Vimeo is a free site for personally created videos. You can browse and view video created by others or upload your own videos.) Each posted video has its own URL. Some, like YouTube, may be blocked by districts. Also, once students have accessed the video you want them to see, they can click on other places on the site and get to others (even if you blocked the site). If this is a concern, then these types of sites may not be your best storage options.

3. Generating (Creating) QR codes

Once you have created your content and stored it on a website, you can use your computer or mobile device to create QR codes using websites, Web browser add-ins/extensions or apps that will generate codes.

Websites for creating QR codes:

GoQR.me <http://goqr.me/>

This is a free site that creates static QR codes. No sign in is required. Just paste in your URL. You can adjust the size of the QR code and change colors, etc. via Options. Click Open to have the QR code appear in a separate tab in your browser in order to right-click and copy the image. See image 8.

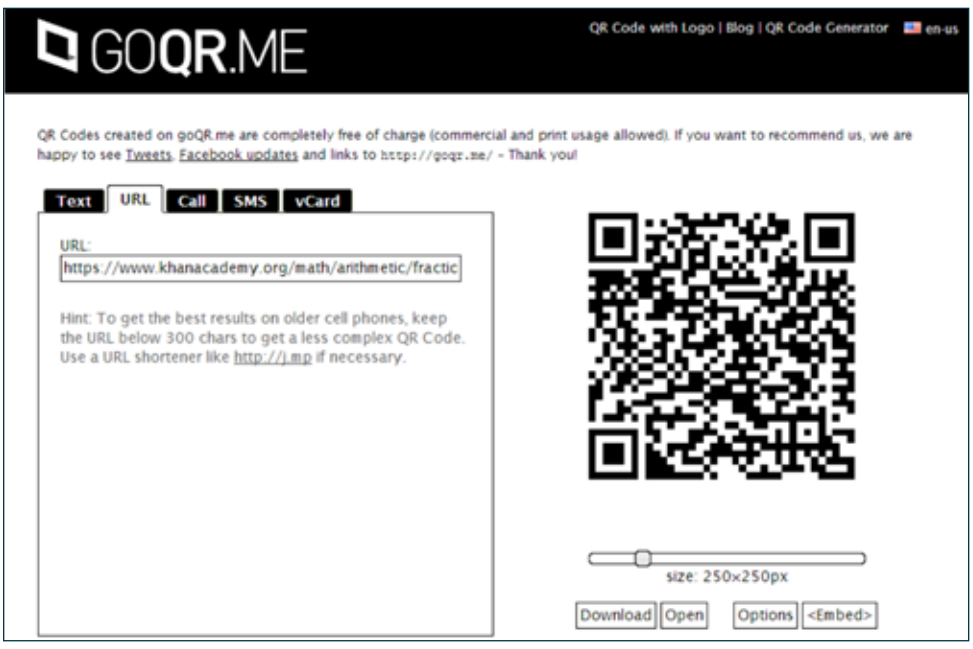

Image 8 - GoQR.

Kaywa <http://qrcode.kaywa.com> - Kaywa (free/paid versions) lets you create static or dynamic QR codes. The free version lets you create unlimited static codes and five dynamic codes. You are required to sign up to use Kaywa. You can sign in directly or use your Google, Twitter or Facebook accounts.

QR Stuff <www.qrstuff.com> - No sign-in is required for the free service (static QR codes) on this site. QR Stuff is clearly the most complicated-looking site. Don't be put off by its display. Just select Website URL as your data type and paste the URL into the provided space. The QR code is displayed on the right side. You can select to use the URL shortener if you want a simpler looking code. Then just click Download to download the QR code image (.png format). You can also select to email the QR code (under Output Type). From this window, you can right-click on the QR code and copy the image. You can also print your code directly from this site.

WEB BROWSER TOOLS FOR CREATING QR CODES

Chrome and Firefox also have add-ons or extensions used to create QR codes. Some are free while others come with suggested donations. Table 3 lists a selection of these tools.

The Google Chrome browser has apps and extensions to create QR codes. We tend to prefer the extensions because you do not need to leave the browser (to use the app). The Chrome extensions are very similar. An option is created in the contextual menu (right-click) that lets you create a QR code from the current Web page, link or selected text. The QR-Code Tag Extension also puts an icon on the toolbar. Once the (static) QR code is created, you can right-click on it to copy the image. See image 9.

The Firefox tools are also very similar. The icon appears on the bottom right side of the Firefox window. When on the desired website, click the icon. A static QR code is displayed. The QR Code Image Generator

Table 3 - Web Browser Tools for Creating QR Codes

QR Code Apps for Chrome	QR Code Apps for Firefox
QR Code Generator	QR Code Image Generator
QR Code Popup	Quick Response Fox 0.2
QR-Code Tag Extension	URL to QR Code
QuickMark Code Extension	

gives you the ability to alter the color of the code. Click the Download Link to save the image as a .png file. You need to take a screenshot to capture the image from the Quick Response Fox and URL to QR code tools.

MOBILE APPS FOR CREATING QR CODES

There are a few apps for mobile devices that not only read QR codes, but allow you to create codes directly from your mobile device. Table 4 lists these options.

TIP: When using the iPad to create QR codes, keep the app set for the resolution for the iPhone - don't enlarge it. This is needed to obtain a clear QR code image.

TOOLS FOR GENERATING QR CODES VIA URL SHORTENING SERVICES

We have all seen really long URLs. These would be very difficult and lengthy to type in order to get to a Web page. QR codes are a way to avoid typing. The longer the URL, though, the more dense the QR code. Dense QR codes can be more difficult for QR readers to recognize. For these really long URLs, it may be better to shorten them before creating the QR code.

These tools will shorten URLs and also create static QR codes.

Bit.ly <https://bitly.com/> - Bit.ly is free, but you will need to create an account. After using Bit.ly to shorten your URL, copy the shortened URL, paste it into a new browser tab, type ".qrcode" (without the quotes) at the end of the bit.ly link and press Enter/Return. This will automatically generate a QR code. Right-click and copy the image.

FYI - Bit.ly also is available as a Chrome Web Browser extension.

Google <http://goo.gl/> - Google has its own URL shortener. After clicking to shorten the URL, click "Details" to access the QR code. Just copy and use. You can also get information on the number of clicks for your QR code (traffic). FYI - You may be asked to enter displayed text to show you are a real person – this can be annoying. Also - all goo.gl URLs are public and can be accessed by anyone and cannot be removed.

WHAT ARE SOME RESOURCES FOR MORE INFORMATION ON QR CODES?

Black and White and Scanned All Over http://www.youtube.com/watch?v=ayW032sKtj8

Introduction to QR Codes http://www.youtube.com/watch?v=LMKLwFEiwOc

QR Codes as Assistive Technology

http://otswithapps.wordpress.com/2012/01/01/qr-codes-as-assistive-technology/

QR Codes Explained by Common Craft http://www.commoncraft.com/video/qr-codes

QR Codes in Education by Steven Anderson

http://www.livebinders.com/play/play_or_edit/51894#

QR Codes in Elementary http://www.youtube.com/watch?v=x9YR_1w4DJ8&feature=related

QR Codes in the Classroom http://www.schrockguide.net/qr-codes-in-the-classroom.html

QRMovie (QR Codes in Education)

http://www.youtube.com/watch?v=xcD5OUewbUU&feature=youtu.be

Want more? Do a search for "QR Codes in the Classroom" or "QR Codes in Education"

REFERENCES

1 "History of QR Code". QR Code.com. Denso Wave, Incorporated. 16 June 2013. http://www.qrcode.com/en/history

2 "QR Codes Static Vs Dynamic". Teacherstone Technology. 2 January 2013.

http://teacherstonetechnology.edublogs.org/2013/01/02/qr-codes-static-vs-dynamic/

3 "ICT Literacy". Partnership for 21st Century Skills, 2005. 16 June 2013. http://www.p21.org/overview/skills-framework/350

4 "QR Codes in Elementary". NVLA Elementary, Napa, CA. YouTube. 16 June 2013 http://www.youtube.com/watch?v=x9YR_1w4DJ8&feature=related

5 "Black and White and Scanned All Over". McGuffey School District, Claysville, PA. YouTube. 16 June 2013 http://www.youtube.com/watch?=ayW032sKtj8. ■

Image 9 - Googl Chrome Browser.

Table 4 - Apps for Generating QR Codes on a Mobile Device

Generating QR Codes on the iPhone/iPad	Generating QR Codes on Android Devices
QR Reader (free)	QR Droid (free)
Qrafter QR Code and Bar Code Reader (Reader is free, but Pro Pack used to create codes is $2.99)	

CREATING A SEATING SYSTEM FOR SUCCESS!

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Seating and Positioning
for Function in the Classroom

Reading, writing, arithmetic, seating and positioning are all integral components to a student's success. Students who are not provided appropriate seat and desk surfaces are often referred to as lazy, inattentive, fatigued and uninterested when in reality they are simply missing the appropriate postural supports required for functional sitting.

Typical active, ambulatory students who have a low tone base and decreased core strength often present with one or more of the following characteristics:

- **Balancing their head/chin in their hand – especially during writing tasks**
- **Trunk**
  - leaning forward on the desk
  - leaning to the side seeking support of the desk
- **Legs**
  - one or both tucked up under the buttocks
  - flexed under the chair or wrapped around the chair leg
  - straight out in front looking for something to push against for stability
  - One leg crossed over the other.
- **Messy handwriting**
- **Frequent fidgeting**

When a child presents with these characteristics, their seating set up is often overlooked, when this is an area that should be assessed and considered. Students sit in a wide variety of chairs and desks. These can be separate or combined units, and matching the appropriate set to the student is often difficult. A classroom is typically set up with one size chair and desk, with the students then presenting with great variations in height and physical characteristics, which will often not meet the needs of everyone. If a child is not fitting well within their chair and desk, they may be working harder than they have to in order to stay upright and focused on their school work. For example, a chair that is too tall with a seat that is too deep often forces the student to sit in a posterior pelvic tilt with decreased lumbar lordosis, increased thoracic kyphosis, and capital extension, or in other words, a rounded spine and forward head. This position does not allow for positive support through the feet to assist with maintaining an erect posture, and the student will be more apt to lean into their work surface, to seek the support they are not getting elsewhere. A chair that is too small on the other hand, will cause the child to sit in increased hip and knee flexion. Because the thighs are no longer supported by the chair the student's weight is shifted towards their back, which results in increased pressure over the bony points of their iscial tuberosities and sacrum. This can be uncomfortable, which can lead to decreased ability to sit for long periods, as the student will be repeatedly shifting their weight. These students often will move in their chairs often throughout the duration tasks.

If seating and positioning is thought to be effecting academic performance, a physical or occupational therapist can be consulted to help to evaluate the classroom seating and recommend any modifications or changes if the standard chairs or desks do not meet the student's needs. Basic seating and positioning guidelines refer to an optimal seated position of 90-90-90. This refers to 90 degree angles at the hips, knees, and feet and is referred to by Costigan & Light (2011) as an anatomical approach to seating. In recent years, a more functional approach to seating has been adopted taking into account the user, task, and environment.

The basics are the same whether you are looking at an anatomical or functional approach to seating and positioning. There is a postural positioning hierarchy that suggests looking at the proximal and central regions of the body first, then the distal or typically moving parts of the body second.

A TYPICAL POSTURAL POSITIONING HIERARCHY MAY LOOK LIKE:

- **Pelvis**
- **Trunk**
- **Head/Neck**
- **Legs/Feet**
- **Arms**

The occupational or physical therapist may use a chair measurement form to obtain basic information to assist with determining the appropriate size chair or desk for optimal alignment and postural stability. (see chair msmt form)

When assessing the students' chair, there are several key points to consider. First, do the child's feet touch the ground? If a student's feet are unsupported, their work of sitting will increase and their focus on class work will decrease. In order to have an active, erect posture, positive pressure is required through the student's feet. The second point to consider when assessing the student's chair and desk setup is if the desk is too high when they are sitting in it, and more specifically to look at the height of the desktop in relation to the students arm. If the desk is too high, (this would be noted by the desk being above chest height on the student and the need for them to either bring their arms out to the sides or to push their chair back and lean forward on the desk to be successful), or if it is too low,

Postural Positioning Hierarchy

You should look at each individual in their current position as well as think about the function you desire for them in the position you are working on. The goal is to reduce fatigue, improve posture and ability to fully participate throughout the school day.

- **Pelvis**
  - Alignment in sitting and impact on function
  - How much support is required to achieve the desired alignment
- **Trunk**
  - How much support is needed to maintain optimal alignment
  - Does this support level change when activity changes
    - Does the need for trunk stability have to increase to achieve more independent mobility at the extremities?
- **Lower Extremities (legs and feet)**
  - Position of the hips and knees in sitting
  - Seeking solid base of support
  - Are the feet supported?
- **Head and Neck**
  - Position as it relates to the trunk
  - Vision
    - How much support is needed to keep the head aligned to focus on the target task (smart board)?
    - What is their line of sight?
- **Other things to consider**
  - Belts, straps, laterals, wedges, etc can be added to chairs to support seating

Figure 1 - Poorly fitting chair.

(this would be noted by the student leaning far forward to successfully use the desk), both their comfort and efficiency for completing the requested activity will be impaired. The third point to consider: comfort and design. Often school furniture is solid and durable, however this may not equate to comfort. If a child is too large for the chair, as stated in the example above, a hard surface seat will only make the situation worse. Also for smaller students who may have strength compromises, they may not have the ability to pull in their chair once their weight is on it, so although the size of the chair and desk may be suitable, they end up being a far distance due to this leading to more postural work for the student, and therefore a decreased focus.

Figure 2 - No support.

Figure 3 - Support.

LETS TAKE A LOOK AT A TYPICAL POSTURE SEEN IN A STUDENT WITH LOW CORE STRENGTH SITTING IN AN ILL FITTING CHAIR (FIGURE 1)

It is often beneficial to do this from a side view. In this case, the depth of the seat is too great and is therefore contributing to the rounded pelvis and posteriorly positioned trunk. The chair is too tall and does not provide support through the feet. For this student with a low tone core, this support through the feet is vital to maintaining alignment throughout the pelvis and trunk for postural stability and freedom to use the upper extremities to type on the computer keyboard. So how might this be corrected? First, a properly fitting chair would be ideal. If this is not available, there are several options. The seat depth can be corrected by adding a cushion to the back of the chair. Foot support can be achieved by cutting the legs on the chair or adding an external support.

Sitting should be easy! When in school the student should be able to freely focus on the task at hand, with act of sitting in a desk falling simply into the background. As highlighted above, for many, sitting can be not only difficult, but distracting and uncomfortable. Often this is a missed area within the classroom for either the "squirmy" child or "lazy" child when assessments are performed. If the task or work of sitting can be made easier, then the child can focus more on presented activities, their postural muscles will not be overworking which leads to fatigue but instead will allow for improved use of arm muscles for fine motor tasks such as hand writing.

If a student has a mismatch between body size and chair size, or there is an issue related back to sitting, intervention can be tricky. Often children don't want to look different from their peers, particularly older children, so creative solutions should be sought, as often a minimal intervention can have a dramatic impact. A solution as simple as switching out chairs with other classrooms within the same school building is a cost effective and easy solution. Another simple solution that has a dramatic impact on seating is the addition of a thin padded wedge to a seat. When the wedge is placed with the higher side in the back, it will promote a more erect and work ready posture in sitting. By purchasing foam and cutting it, wedges can be made to any shape or size to fit each individual student need or preference. Fabric can be purchased to cover the foam in the student's preferred colors. This can be a class project to make as well. Back pads can be made in similar fashion if these supports are needed (Figures 2 and 3). For students that require much higher levels of seating supports such as trunk laterals, foot straps, head supports, etc. to fully participate in activities, seated postural support chairs are commercially available from many different manufacturers.

LETS TAKE A LOOK AT JUSTIN SITTING AT HIS CLASSROOM TABLE USING A TABLET DEVICE (FIGURE 4).

He appears to be using the device well with little difficulty but while observing him it is noted Justin only uses his right hand and never tries to use the left. In addition, it is found he never takes the left hand off the table. This is a sign that Justin is seeking additional support thorough his arm to stabilize for the activity. A second look at Justin, this time his entire body (Figure 5), shows beneath the table he is crossing his legs. He isn't swinging them for sensory input, but rather holding them in a fixed position for stability because the chair is too tall for his feet to touch the floor. Addition of foot support would help provide him with the stability he requires to use both extremities to use the iPad.

Now that we have reviewed the concepts of seating and challenges often seen in the classroom, let's go back for a minute and discuss the concept of functional seating. Functional seating describes the amount of supports required to perform functional activities. A student may require foot and back support as well as forearm support on the desk while engaging in an art activity where they are required to reach longer distances and across midline to access the art project materials that are being shared with other students. That same student may not require postural supports to sit quietly in a chair and read a book.

In addition to altering the seating and desk, another strategy that has been very beneficial for many students, particularly those with lower tone, has been taking exercise or movement breaks throughout their day. These breaks can consist of desk exercises such as chair push ups, pushing feet into the floor, etc. so as to not be distracting, or can be more vigorous such as several laps up and down the hall or stairs, wall push-ups or jumping jacks. The overall goal is to be able to provide core strengthening exercises in short bursts and then allow the child to return to their properly fitted chair so that they can maximize the amount of time they are able to stay focused on the presented tasks.

The work of school should focus around the presented academic tasks, and students should not feel distracted during their day by their desks and chairs. If there is a student you work with who is referred to as lazy, inattentive, fatigued, and uninterested they may simply be missing the appropriate postural supports required for functional sitting. A simple change can have a profound impact.

Figure 4 - Justin supporting with hand.

Figure 5 - Crossing legs to stabilize.

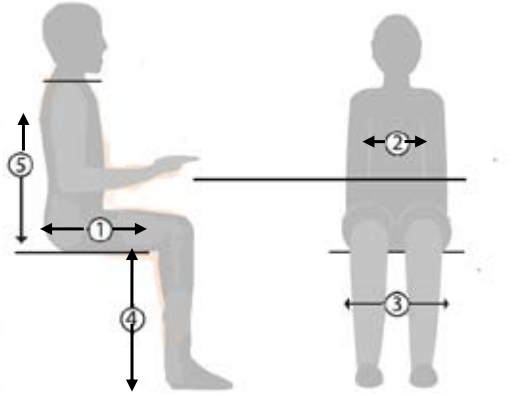
REFERENCES

Costigan, F. A., & Light, J. (2011). Functional Seating for School-Age Children With Cerebral Palsy: An Evidence-Based Tutorial. Language, Speech, and Hearing Services in Schools , 223-236. ■

THE CENTER FOR DISCOVERY, INC.

Activity Chair Measurement Form

Individual Name: Date:
Name of therapist:
Does individual currently have a wheelchair?
Reason for Activity Chair (please provide detail, especially if student has a wheelchair) :



Measurements:

1. Back of knee to back of bottom (if leg length difference left and right):
2. Width of trunk:
3. Seat width (at widest point of hips):
4. Floor to seat height:
5. Height from seat to axilla:

Options:

	Seat	Back
Pad (Y/N):		
Flat or Wedge Shaped:		
Thickness of pad (Front and back if wedge shaped):		
Size of cushion:		
Laterals (Y/N):		
Hip guides (Y/N):		
Lap Belt/Chest Strap:		
Anti-tippers/Base (Explain):		

JUDY SACKVILLE is an Itinerant Teacher of Assistive Technology who supports Burlington schools in Halton District School Board in Ontario Canada. She is also a Special Education Specialist. She has a vast teaching experience from French, Junior and Intermediate homeroom subjects to self-contained classes for students with learning disabilities. Judy is passionate about the power of assistive technology that can enhance performance and student learning, motivation and self-esteem for those with learning challenges. Judy can be reached at sackvillej@hdsb.ca

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SHELLEY GUZZO earned a Bachelor of Education degree in Aboriginal Education at Queen's University in addition to a specialist in Special Education. She is currently an Itinerant Teacher for Students with Developmental and Physical Exceptionalities supporting the Burlington area schools. Shelley has had the opportunity to teach a wide variety of self contained classes in addition to being a SERT, in both Northern and Southern Ontario. She can be reached at <guzzos@hdsb.ca>

I-DEAL = Smart Inclusion + D.E.A.L.

Digital Engagment Authentic Learning

Halton's Journey of Smart Inclusion

Andrew is a sixth-grade boy in a self-contained Life Skills class, with his head down, pencil constantly in motion, gaze fixed on his pencil and an educational assistant (EA) at his side trying to redirect his focus on a book.

Summer is a sixth-grade girl in another Life Skills class, in a wheelchair, with a smile on her face. Her whole body wiggles and she giggles in delight. Her EA or teacher uses hand over hand assistance for her to stir the batter when baking cookies or when using a turkey baster for painting a picture.

Now add nine other unique students with significant communication, physical, developmental, cognitive and medical needs ...

How do you unlock the potential of all children to increase communication, participation, engagement and achievement? How do we speak to inclusion with students with such diverse needs?

BACKGROUND

In Halton District School Board (HDSB) in Ontario, Canada, we have been asking these questions.

To respond to our students' needs, and after becoming aware of the success that the Upper Canada District School Board (UCDSB) had in 2008/2009 with Smart Inclusion, the HDSB put money and resources into SMART inclusion and the Digital Engagement Authentic Learning (DEAL) program.

The UCDSB had found that when "interactive whiteboard technology was paired with assistive technology, it was possible for teachers to offer TRUE Universal Design for Learning – multiple means of representation, expression and engagement, so that ALL students have access to education."

Halton's journey began in Spring of 2010 with an opportunity to see Smart Inclusion in action, within the UCDSB. We witnessed a group of adolescent boys in a system Life Skills class being engaged, participating and motivated to learn. Was it just the SMART board that had bridged the gap?

It was proven through the USCSB Smart Inclusion, that a SMART board, in combination with appropriate software, intensive training and support, within the framework of Universal Design for Learning (UDL), Differentiated Instruction (DI), Participation Model (PM), a focus on students with significant communication disabilities and a strong sense of teamwork, increases communication, engagement, participation and achievement.

Inclusion and learning for all level of learners was enough proof for the HDSB to feel safe to move forward with Smart Inclusion, paired with Bridges Canada, going Halton Style...

It began with five students and five classes. Andrew is just one of five success stories.

CASE STUDY: ANDREW, SIXTH GRADE, SMART INCLUSION 2011-12

Andrew is a sixth-grade boy with Down syndrome and autism and with limited verbal communication skills in a self-contained Life Skills class in Burlington, Ontario, Canada. Andrew's teacher, Christine Robertson, assigned him the task of finding two facts about planets, where he could place a sticky note with encouragement and direct prompting. The EA wrote the fact down on a recipe card for him to practice reading in order to present his facts to the class. Throughout both, the creation and presentation of his facts, prompting was consistently required to help him stay focused and share his thinking.

Over the six months of the project, we collected data by following the Participation Model, focusing on participation and support needed.

Step 1: Baseline Documentation - Observation Video 1 without SMART Board

A baseline video was made of Andrew finding two facts from a book on the planet of his choice and presenting the facts to the class. Our focus was on:

- Joint attention
- Following classroom instruction
- Response attempts
- Peer interaction (for presentation)

Step 2: Identification of Barriers

As a classroom Smart Inclusion team, we watched the baseline video to identify barriers to Andrew's ability to have joint attention to the task, following instructions and response attempts. He demonstrated difficulties in all areas in both participation and support needed.

Step 3: Design and Implementation of Strategies and Tools (tailoring of software)

As a team, we decided on the most applicable software for Andrew's task. A Boardmaker Studio writing template was customized to differentiate his learning. After implementing strategies over a period of three months, we would find Andrew standing actively engaged at the SMART Board, writing his assignment independently using a Boardmaker Studio Customized Writing Template on Planets.

Step 4: Video 2 with SMART Board, tailor next steps

Through video observation, it became evident that Andrew was clearly capable of manipulating the SMART Board to support his thinking. He responded well to the built-in text-to-speech, word prediction and symbol support. He was then able to use a similar template customized for his Iroquois Project and his Drug Abuse Resistance Education (D.A.R.E.) Essay, with increasingly more detail and accuracy.

In addition to this, he was able to more independently communicate to his parents about what he had done during his day. A paper copy was originally used with direct support from an EA, but by the end, Andrew could independently enter the information on the SMART Board and print a copy for sharing with his parents.

Step 5: Evaluation – View graphed results

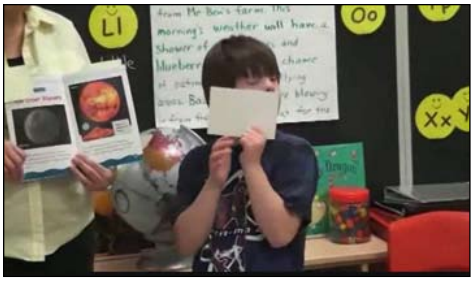
Before SMART Board, Andrew rarely participated and always required support

After SMART Board, Andrew always participated and required support just some of the time

TEACHER REFLECTION

Prior to using the SMART Board in my class, Andrew spent a chunk of his day with direct supervision and assistance from his EA. Direct prompting was required to complete any task and communicate his wants and needs. When the SMART Board first arrived, you would see Andrew sitting and listening, but he did not interact or do anything to participate yet. As he grew more familiar with the SMART Board, he began to slowly interact with it. When the Smart Inclusion project began, with the teams' support, I was able to focus on a task to assist Andrew with communicating information he had discovered on Space. With further involvement from his parents and their request to further develop his independence, we introduced him to a School-to-Home communication Boardmaker Studio template. He was able to use it independently right from the start! Andrew's growth did not stop there. He began to communicate more with his peers and he would approach and interact with peers more directly, not only his classmates, but other students in the school. He began to show confidence in interacting with others.

By focusing on Andrew, I discovered that this had a ripple effect. All of my students



Andrew presenting before using SMART Board in Smart Inclusion.

Andrew composing his Iroquois Project on the SMART Board using Boardmaker Studio.

increased their ability to communicate with one another and effectively use the SMART Board to complete academic tasks. It was incredible to see how all the students supported and encouraged one another to participate. Seeing a child who had had a limited ability to communicate with others now being able to share his thoughts touched me deeply.

EDUCATIONAL ASSISTANT REFLECTION

According to Mrs. Millet and Mrs. Chaplow, the SMART board was important for Andrew because it allowed him to have a voice and to be able to present his work in a meaningful and appropriate way. It helped him to become more confident in his abilities and to show his classmates and others just what he is capable of. The SMART board removed the work avoidance factor for Andrew as he was not fond of paper and pencil work and/or sharing his ideas and having someone scribe for him, but he enjoyed using the SMART board! It was also fascinating to see his satisfaction when completing a task with minimal support. The SMART board helped prove that he was able to learn many things, from math to language, using technology, as well as how quick it was to learn to be a proficient user of the technology. In a nutshell, it showed how successful a student can be, given the right tools.

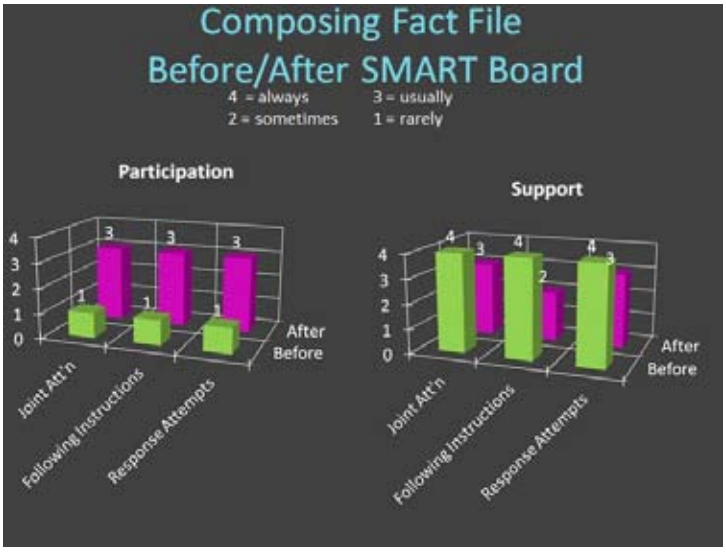


Figure 1 - Andrew's Composing Fact File Graph.

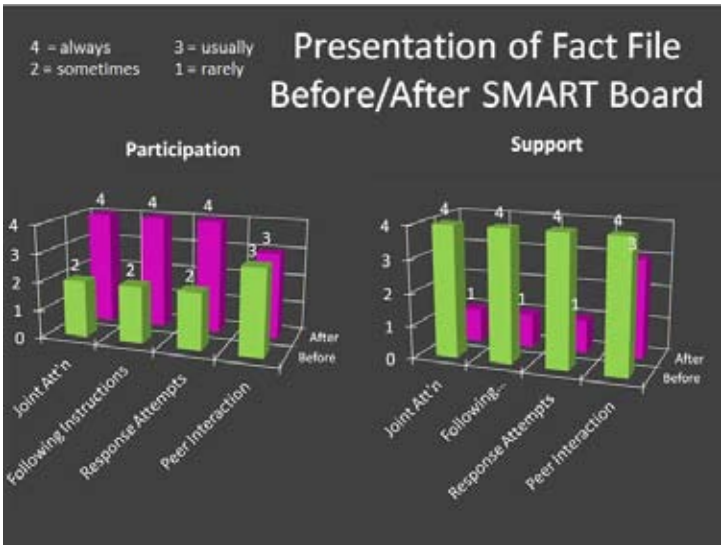


Figure 2 - Andrew's Presentation Graph.

PARENT REFLECTION

When Andrew's mother, Dianna, was asked about what she felt were the successes for him as a participant in the SMART Inclusion program, she stated, "It increased Andrew's self-esteem and confidence in his learning." She felt the challenges were to ensure that new staff understand and are aware of the positive learning experience Andrew has had with the use of the SMART Board as he goes into his third school in three years. Her hope is that "there are increased opportunities for SMART Board technology, perhaps in an integrated classroom setting where technology provides a level playing field. It would be wonderful to have personal-sized SMART Boards to allow for independent learning. Perhaps that's where the iPad comes in..."

What made the difference? How did this student with limited communication skills move from producing two sentences with direct prompting and adult assistance, to independently creating a rich piece of writing, as well as independently communicating with his parents?

WHY CONTINUE WITH THE PROJECT?

It became extraordinarily clear that the project was successful. All five students demonstrated growth in engagement, participation, achievement and independence. In addition to the target students, these significant gains were also made by their classmates. The students clearly demonstrated skills that allowed for better assessment and evaluation and setting of IEP goals. These results gave us the power to extend into the second phase and evaluate what had been done and where we should go.

WHAT WAS THE PROCESS AND WHERE DO WE GO FROM HERE?

How do you select the participants upon which the program will be tested? Is teacher involvement critical to the process and, if so, what responsibilities will be required of them? How do you select your teachers? What types of supports and training will be provided? How long will the program run and how will you assess success?

WHERE DID HALTON GO IN THE SECOND YEAR OF SMART INCLUSION?

Halton wanted to make the tools from the first year of Smart Inclusion available to all Life Skills classrooms, but with a less intensive framework, that could be better supported and integrated into daily classroom practice rapidly. Baselines and data gathering were already part of the practice in Life Skills classrooms, so DEAL merged some of the effective coaching practices of Smart Inclusion with current practice. The main goal was to develop individual student goals by using technology to support the individual student and classwide goals.

DEAL stands for Digital Engagement Authentic Learning and reflects Halton's move to expand the program to "authentic" learning environments where all students can benefit.

CASE STUDY: SUMMER, SIXTH GRADE, DEAL 2012-13

If, as Summer's teacher, you were to have only read her Ontario Student Record (OSR), you would likely develop an academic program that was limited. With an exhaustive medical history of Pierre Robin sequence, infantile spasms with non-myelinated periventricular white matter, repaired cleft palate, seizures, global developmental delay, non-verbal, G-tube fed and minor cerebral palsy (CP), her teacher may wrongly

assume that her educational program cannot be too challenging.

Fortunately, Summer showed a spark. A spark that told her teacher, Joan Harper, that she wanted to communicate at a higher level.

Summer was welcomed into the DEAL program, where her mother became an integral part of her educational team. The results were remarkable.

To start the process, we had to figure out what Summer was going to communicate to us. Our decision was for her to make a toy choice using a two-choice program because toys are important to her at this point in her life.

Step 1: Baseline Documentation - Observation Video 1 without SMART Board

A baseline video was made of Summer choosing between preferred and non-preferred toys. Our focus was on:

- Joint attention
- Following classroom instruction
- Response attempts

Step 2: Identification of Barriers

The baseline video reinforced aspects that we already knew about Summer in that she fatigues quickly and she easily gets distracted, visually and auditorily, because she doesn't want to miss anything. She has undergone visual testing and the results indicate that she only has peripheral vision and requires glasses, which she often removes. Another barrier to the process was that the support team was using their eyes and ears to see if she was communicating, but not knowing if they were accurate in assuming what she wanted.

Step 3: Design and Implementation of Strategies and Tools (tailoring of software)

We made two groups – 10 preferred toys and 10 non-preferred toys. This was done by presenting Summer with toys, one at a time, and her "communicating" whether it was a preferred or non-preferred toy. If she reached and grabbed for the toy, plus turned her gaze (eyes) toward the toy, the toy was deemed a preferred toy. If she showed disinterest, turning her head away from the toy, the toy was placed in the non-preferred category.

Next, a series of photos were taken of the toys. Summer was presented with two photos from which to make a selection. When she wanted a toy, she extended her right or left hand/arm toward the photo, plus she maintained eye contact with the photo. She was rewarded by being given the selected toy.

The next phase of DEAL involved Summer choosing between two toys on the SMART Board. The two-choice program had been created using Boardmaker Studio. If a toy picture was touched on the SMART Board, it would activate the noise of the toy itself. She would be rewarded with the toy selected.

Step 4: Video 2 with SMART Board

Remarkably, Summer chose her preferred toy each time or, if she had reached a point of fatigue, she would not touch either picture.

Step 5: Evaluation – View graphed results

Before SMART Board, Summer participated, but it was our assumption on what she was communicating

After SMART Board, Summer participated and was clearly communicating her preference

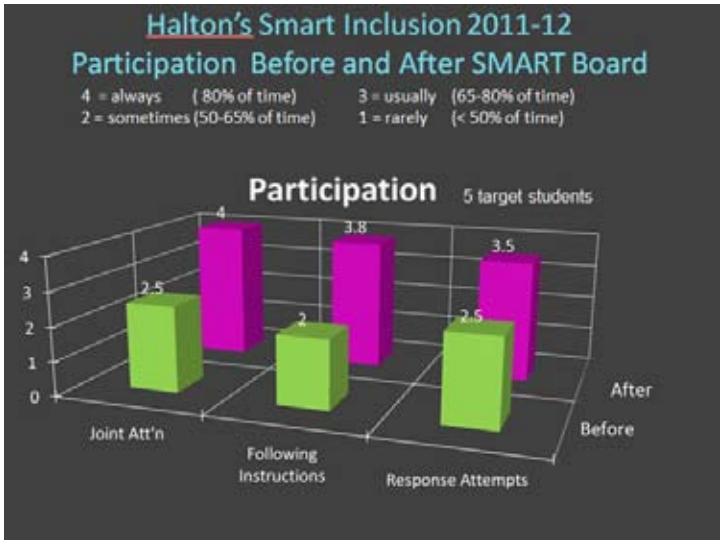


Figure 3: Halton Participation Graph for all five target students.

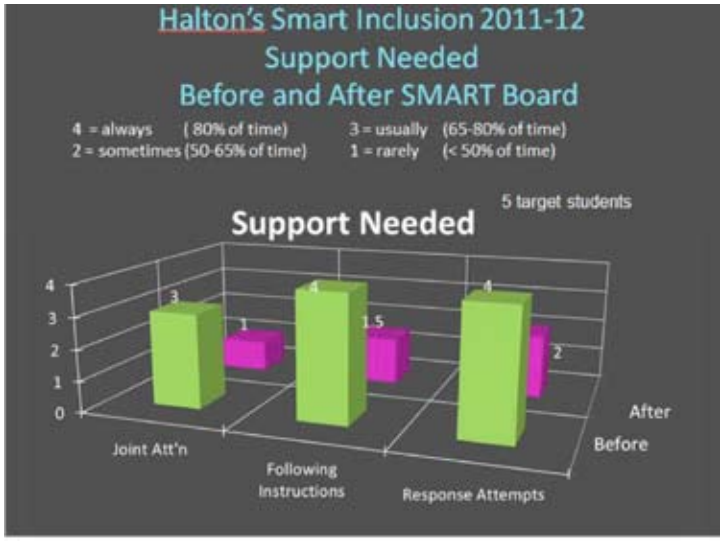


Figure 4: Halton Support Graph for five target students.

TEACHER REFLECTION

When you get a call in the middle of a hectic day from a parent who is sharing something so precious and remarkable, it makes you appreciate why you became a teacher. In May, Summer's mother did just that. She said, "I'm sorry I'm interrupting you at such a busy time, but I just had to share it with someone... I just worked with Summer for an hour and a half, using the photos, and she picked her preferred toy not 70 percent of the time, not 80 percent of the time, not 95 percent of the time, but 100 percent of the time! Summer is the type of kid that tells you

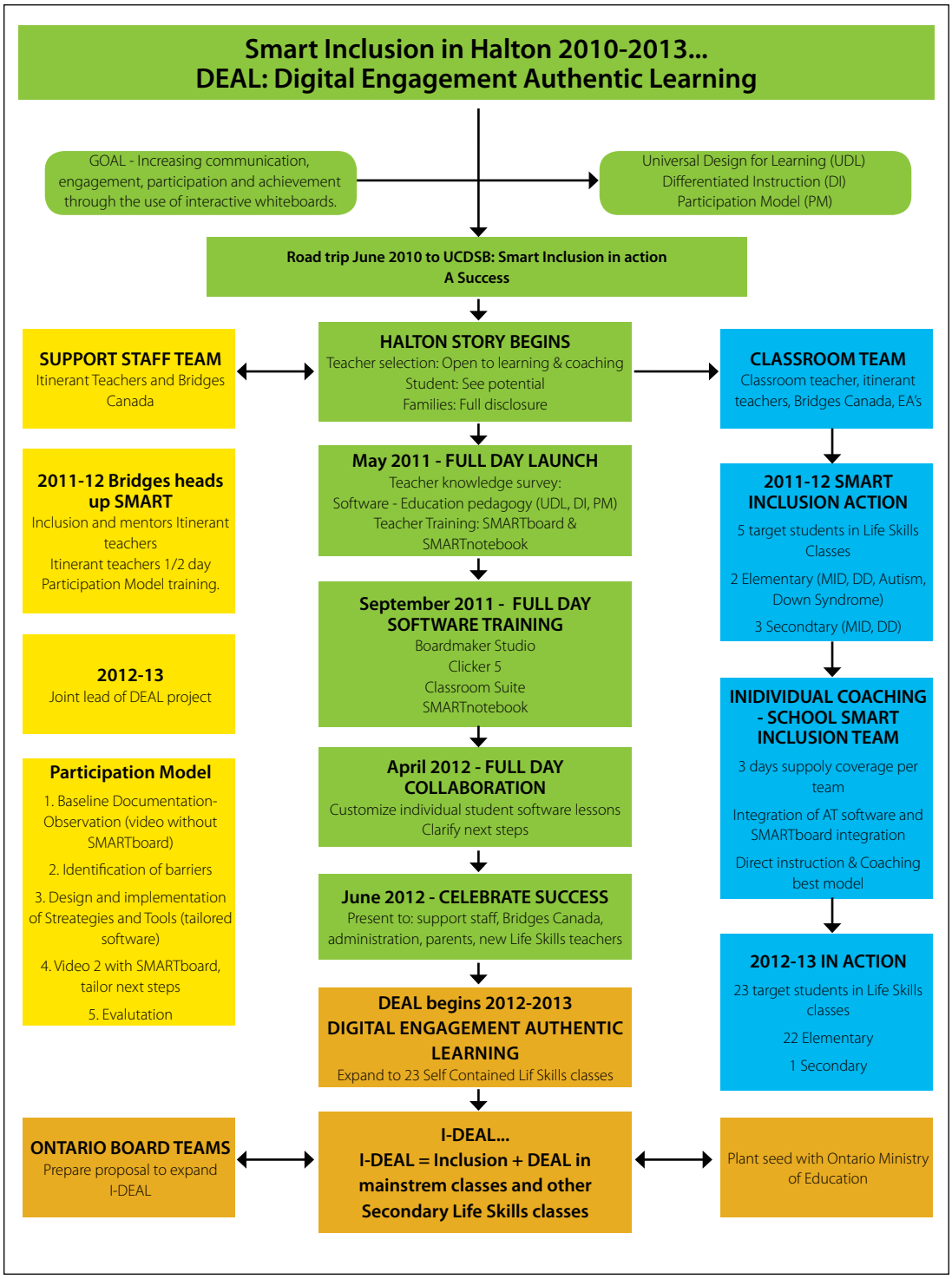
Summer at the SMART Board making her choice

Summer at SMART Board with toy

when she is ready for something new, and she is doing it now. It is so exciting as a parent of such a child to experience this." As Summer's teacher, I was thrilled to see that she had truly communicated her desire to be given a more enriching program. I was on the right track! What's next? Can the SMART Board and the Boardmaker Studio program we had developed springboard Summer into another form of technology, such as an iPad, so that she could communicate even more?

EDUCATIONAL ASSISTANT REFLECTION

When EAs were asked what they felt about the DEAL program, they provided the following opinions. Ms. Plant said, "I think using choices on the SMART Board helped Summer see the bigger picture and be able to communicate to us what she wants." Mrs. Sutton added, "...it decreases EA/teacher assistance, allowing the child to become more independent." When looking into the future, Ms. Plant stated, "I think the program would benefit a number of other non-verbal children, where the SMART Board and iPad can become their vehicle to communicate."



Smart Inclusion / DEAL Flow Chart - Halton's step-by-step process from June 2010 to present. The left side (yellow) identifies the process for the support staff team and the right side (blue) provides stages for the classroom team. The middle (green) identifies Halton Board process.

PARENT REFLECTION

When Summer's mother, Charlene, was asked what she felt were the successes of being a part of the DEAL program, she said, "It is so interactive ... she is interacting with me and I am interacting with her ... not just me assuming and guessing what she is communicating to me." As for the challenges, Charlene is wondering if she will be able to keep her daughter's attention and focus on the photos of the toys without her getting bored and disinterested and, eventually, giving up on the process. She hopes the program "will open up the door to more communication ... Summer's wants and needs, like going to the park ... it will be HER telling me her opinions and feelings, not me second guessing what they are ... and then, one day, she can communicate them, not just to me, but others too."

How did a student like Summer, who could not communicate verbally, find success in the program? How do you know what Summer is truly capable of? As her educators, we are using our eyes and ears to interpret what Summer is trying to communicate, but are we correct in our interpretation?

How do you bridge the gap? Summer has a unique and student-specific program (e.g., choice of two toys). On one side of the coin, do you make the skill something that is intriguing, beneficial and inclusive to the whole class? Or on the other side of the coin, do you take what Summer's fellow classmates are doing and make it part of Summer's world too?

EVALUATING DEAL 2012-13

SUCCESSES

- Engaged students, both target and other class members
- Clearly demonstrated skills allow for better assessment and evaluation and setting IEP goals

CHALLENGES

- Smart board arrival/installation problems
- Competing demands
  - Teacher's time (multiple students)
  - Support staff time (multiple projects)
- Method of data collection (meeting individual student profiles, consistency in use of level 1 to 4)

Figure 5 and 6 Summer's Graph Participation and Support.

Figure 6.

WHAT DOES THE FUTURE HOLD FOR 2013-14?

DEAL becomes I-DEAL where the elements of DEAL are now moved into the regular classroom to support students with multiple disabilities. The target students of DEAL continue to be part of the I-DEAL process.

I-DEAL = Smart Inclusion + DEAL
I-DEAL represents the ultimate of teaching – Inclusion for ALL!

KEY FACTORS FOR INCLUSION FOR ALL: THE 3 E'S

Empathy – Know your learner
- Supports: literacy, visual, physical, auditory, communication, social

Environment – Build an inclusive environment
- Safety, trust, access to tools and technology and team collaboration

Evolution – Recognize evolution: The student's Point A to Point B
- Unlocking the student's potential
- Embrace the process continuum
- Build and share a Personal Learning Network

Keep it simple – start small, focus on one student, one piece of software, work with people who can support you and move forward from that place – and you will discover you can make a difference for all your students.

THINK BIG but...start small
- Focus on 1 student
- Focus on 1 piece of software
- Work with people who can support you and move forward from that place

and....you will discover you can make a difference for ALL your students, the I-DEAL place for ALL.

RESOURCES

Halton AT Website: https://sites.google.com/a/hdsb.ca/hdsb-assistive-technology/

Available on Halton Assistive Technology Website:

Baseline Data Collection form - participation and support assessment

Downloadable activities used during the project, e.g., Planets template (Boardmaker Studio)

ASET Conference Materials 2013, Niagara Falls, Ontario

REFERENCES

Dunn, A. & Inglis, I. (2011). Smart Inclusion for the 21st Century Classroom: Integrating SMART Boards with Assistive Technology. Closing the Gap, 29(5), 7-11

Bridges Canada: Smart Inclusion 2011. Participational Model: The Process

Dunn, A (2013). Smart Inclusion: Centering on Success for ALL Students. ASET Conference Presentation 2013 Niagara Falls, Ontario, May 3, 2013.

Bridges Canada. (2011-12). The Participation Model: The Process

Smart Inclusion Team, Alison Inglis, Chief Psychologist or Alexandra Dunn, SLP

Upper Canada District School Board (2008-09) Smart Inclusion in the 21st Century Classroom: Integrating SMART Boards with Assistive Technology ■

DISKoveries

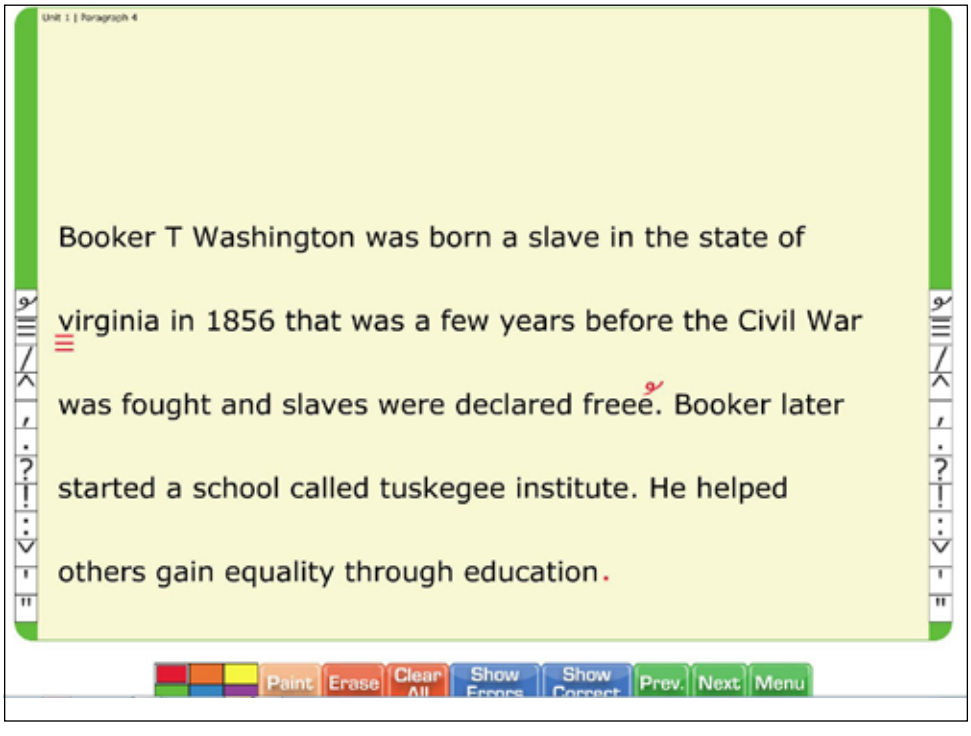
What's new for Elementary School Learners with Special Needs?

By Joan Tanenhaus

Interactive Learning: Paragraph Editing (Teacher Created Resources: www.teacher-created.com) This set of workbooks and CDs, one set for each grade from Grade 1 to Grade 4, is an excellent way to make grammar and spelling both interactive and motivating by providing interactive whiteboard activities. Each grade workbook and CD contains paragraphs that are divided into 25 units, with new grammar rules incorporated into each of the first 15 units. The activities meet one or more of the Common Core State Standards. In addition, the program teaches and reinforces the use of editing marks. Students can work on the paragraphs by writing directly on the whiteboard, with pen or finger, or by grabbing punctuation stamps built into the page and dragging them to the errors. If you want to use the programs on a computer, the punctuation stamps can be clicked and dragged with the mouse. One of the other outstanding features is the ability to show the location of errors without revealing the answers. You can also create and save your own customized paragraphs, with the program making an incorrect version for you. This is also a great way to give your students extra work on their special needs, such as creating paragraphs with sight words or extra work to reinforce ending punctuation. The included workbook presents a list of the grammar usage and punctuation rules taught in each unit. A reproducible list of the editing marks is provided and can be displayed and/or distributed to all students. The workbook also includes all of the paragraphs and pages and can be copied and given to students for desk or home work. If you have students who need more basic help in grammar and spelling, check out Teacher Created Resources sets called Interactive Learning: Daily Sentence Editing, previously reviewed in DISKoveries (October/November 2012).

Reading & Writing Lessons for the SmartBoard: Grades 4-6 (Scholastic: www.scholastic.com) This is an excellent set of ready-to-use SmartBoard (Notebook) files for grades 4-6, covering reading and writing skills correlated to Common Core State Standards. The lessons are divided into four areas: Spelling & Vocabulary (plural endings, common endings, prefixes, word building, homophones, spelling rules, suffixes and word roots); Writing (character sketches, note-taking, summarizing, connecting ideas, imagery, complex sentences and much more); Reading (idioms, myths, nonfiction texts, reading journals, fables and more); and Grammar, Mechanics & Usage (verbs and tenses, adjectives, word order, punctuation, prepositions and more). You can also build your own lesson. Included with the CD-ROM is a workbook that has a lesson plan, learning objective and independent worksheet for each activity.

SmartBoard Lessons: Capitalization & Punctuation: Grades 3-6 (Scholastic: www.scholastic.com) This workbook/CD combination contains SmartBoard (Notebook) in-



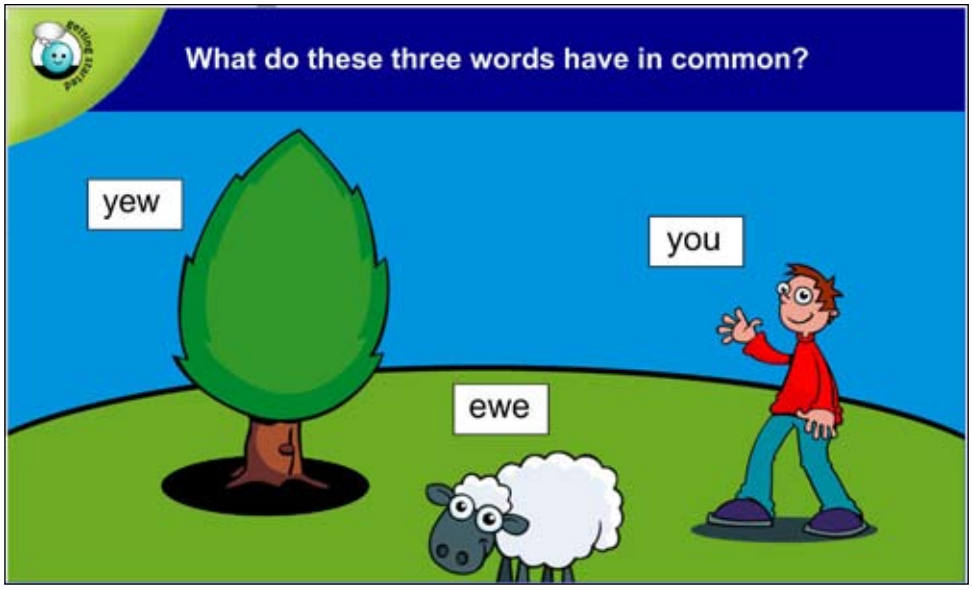
Interactive Learning: Paragraph Editing(www.teachercreated.com)

teractive units on Capitalization, Sentence Stoppers (ending punctuation), Commas, Quotation Marks and Apostrophes. Objectives, time period for the unit (i.e. three to four class periods of 15-20 minutes), standards and detailed lesson plans are included for each unit. SmartBoard activities allow the students to move, highlight, underline and change text right on the board. Very well done and motivating.

5-Minute Grammar Practice: Grades 4-8 (Scholastic: www.scholastic.com) This book and CD combination is a great idea. It contains over 180 quick and motivating activities that students can use to practice all kinds of grammar skills. It's good for daily warm-up practice, both individually or as a group on the interactive whiteboard. You can also reproduce the pages, have students work on the sheet for five minutes and then display and review the activity on the whiteboard. Students can use the pen function to write in or circle the answers or to drag and drop answers from a bank of options. There are four sections of activities: Parts of Speech; Sentences (types, subjects and predicates, subject-verb agreement and more); Mechanics (capitalization, punctuation, abbreviations, etc.) andUsage, including double negative, homophones and easily confused words.

Math Word Problem Mini Books (Scholastic: www.scholastic.com) A motivating way to make word problems fun for grades 2-3. This workbook contains 12 reproducible 12-page mini-books, each on a different topic, such as Number Sense, Fractions, Addition, Subtraction, Money, Time, Measurement and others. Each page of the mini book has a story problem, along with illustrations. There are riddles, rhymes, mysteries and all types of word problems that involve situations that students can relate to. Use them to reinforce math concepts, for group or individual work or for homework. Easy to assemble – just remove a page along the perforations, make double-sided copies, fold along the dotted lines and staple.

3-Minute Reading Assessments (Scholastic: www.scholastic.com) This series of two books (one for Grades 1-4, the second for Grades 5-8) were designed to provide teachers and specialists with a quick way to obtain diagnostic information about reading skills, particularly word recognition accuracy, fluency through reading rate, fluency through expression and comprehension. There are four different passages for each grade so that students can be assessed at regular times during the school year. Students are asked to read the passage orally and, at the end, the teacher asks the student to tell what he or she remembers about the passage. Included in the books are detailed instructions for recording data, as well as all the forms, procedures for calculating, a chart for measuring skills, a scale for assessing fluency and a rubric for determining comprehension. Procedures for scoring and interpreting the assessment are also included. This is a good way to screen students for strengths and weaknesses in these areas and to help monitor student performance and progress all year long.



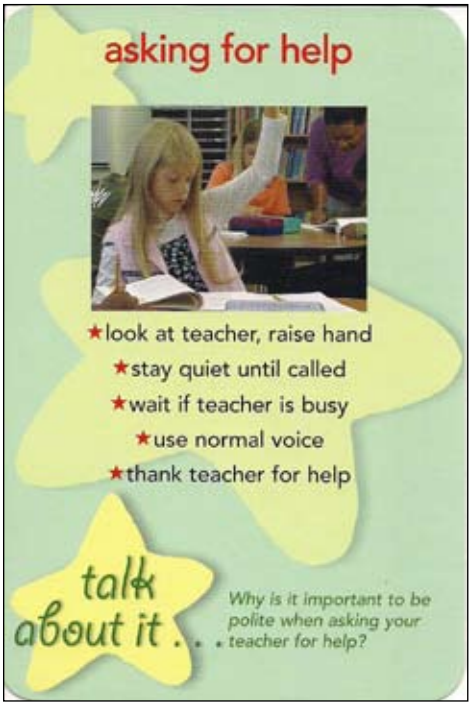
Reading & Writing Lessons SMART Board: Grades 4-6 (Scholastic.com)

Daily Warm Ups Language Skills (Teacher Created Resources: www.teachercreated.com) This is a series of books, available for grades 1-6. Each has over 150 warm-up activities, correlated to the Common Core State Standards, that reinforce parts of speech, sentence structure, vocabulary and mechanics and usage. Each activity includes an example of using the skill correctly, an activity for the skill and a follow-up writing activity for applying the skill. The books are available in three formats: book, eBook and enhanced eBook. (Both, eBooks and enhanced eBooks, are whiteboard compatible, rotate pages, zoom and search. Enhanced eBooks also allow the pencil tool to write directly on the document, let you add, print and save notes, perform read-alouds and more.) The eBooks can also be used on a computer, using the "Typewriter Tool" that is included that lets users answer the questions with the keyboard right on the digital file. Some of the Grade 1 activities include word order, writing a letter, predicting, synonyms-antonyms, contractions, syllables, etc. Grade 2 activities include compound words, prefixes, suffixes, multiple-meaning words, quotation marks, possessives and more. Grade 3 activities include spelling rules, double negatives, root words, colons, periods in abbreviations, adverbs, dictionary skills and more. Grade 4 activities include hyphens, citing sources, editing, transitional devices, analogies, vowel patterns, interjections and more. Grade 5 activities include prepositional phrases, word origins, ending patterns, frequently misspelled words, similes-metaphors, apostrophe use, advanced dictionary skills and more. Grade 6 activities include etymology of words, words known by their initials, proofreading, sequential order, thesaurus and more. Many activities, such as homonyms, appear in all grade levels, with the complexity of the chosen words advancing with each grade.

Daily Warm Ups Nonfiction Reading (Teacher Created Resources: www.teachercreated.com) Each book in this series for Grades 1-6 includes 150 leveled passages with a variety of interesting topics. They are followed by comprehension questions that target reading skills and strategies (such as recalling information, using prior knowledge, main idea, supporting details, cause and effect, sequencing in chronological order, identifying synonyms and antonyms, grade-level vocabulary, using context clues, making inferences and drawing conclusions. Available as a book, eBook and enhanced eBook, activities can also be used with the computer and the "Typewriter Tool."

Daily Warm Ups Nonfiction & Fiction Writing stresses writing fiction and nonfiction, for

Grades 1-6. Each grade's book also includes 150 writing activities that target six writing traits: ideas and content, word choice, fluency, voice, organization and conventions. There are opportunities to use both nonfiction and fiction writing on the same topic. Each activity meets at least one of the standards and benchmarks for McREL Standards, which correlate to the Common Core Standards. Included, also, is a section that offers a set of writing prompts to encourage further writing opportunities throughout the year. A sample scoring rubric is included with four skill levels explained for each of the seven traits. The activities were written so that all students in a class can participate, some writing more complex responses, while others will be able to write at their respective levels of competence on a daily basis.

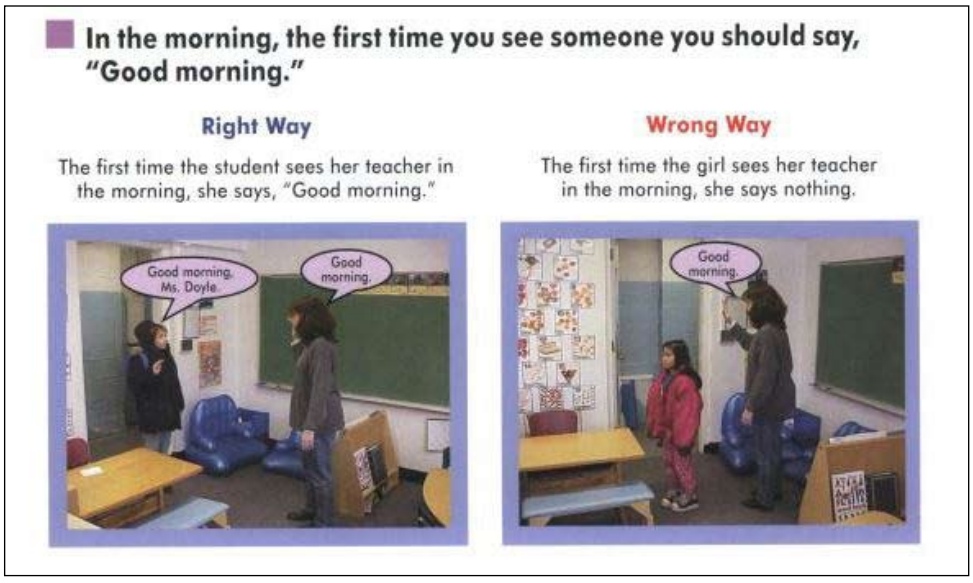


Know The Code Package (www.attainmentcompany.com)

FileMaker 12 (FileMaker: www.filemaker.com) FileMaker 12 is a powerful, easy-to-use program that will help you create databases for individual, school and class use. With new layouts, you can create databases with pre-defined fonts, colors and object styling. FileMaker helps schools collect, manage and report on student and administrative data and to comply with federal and state reporting requirements, advance teacher development and monitor student performance. FileMaker can also help schools more easily centralize and analyze student information – aiding in better data driven decision-making. You can also extend the use of FileMaker with the mobile benefits of FileMaker Go. This free app for iPads can be set up for easy access to student test scores and other valuable information. There is now mobile access to the full range of databases that are in place in the school.

SOCIAL SKILLS

Know The Code Package (Attainment Company: www.attainmentcompany.com) The Know the Code Package is a combination of three different components that form a comprehensive program to use with students with high-functioning autism or related behavioral disabilities. The Social Standards at School book is a student self-monitoring program with a set of 53 social skills for students K-6. These skills are organized so that they correspond to a typical school day: Getting Ready, Transitions, Classroom, Breaks and Special Events, Any Place, Peer Relationships and Super Social Skills. It includes record keeping forms (home contact forms, data collection forms, goal statements, etc.) and resources. Individual sections include teacher guidelines and student pages with a self-monitoring checklist. There is also a CD included with a PDF of the entire book. Another component is a set of Know the Code Cards, a behavior and social skill card game, for students in grades 1-6. The cards illustrate 50 typical, daily social skills, with five steps to accomplish each. The cards can be used for eight different games (Memory Match, Talk About It, Go Fish, Slap That Card, Verbal Recall, Pictionary, Top Ten and Charades), role plays and as cue cards. Children can have fun while learning key and critical social skills. Two sets of 50 laminated 4x6 inch color cards with instructions are included. The third component is the Know the Code at School DVD. It includes six excellent video segments, including A Day at School, Charles Gets Teased, Dion Scores!, Shana and the Secret, Tameka and the Bully and Kristi's First Day. There are also excellent segments where two engaging hosts analyze the social situations from the videos and open them up for classroom discussion. It also includes PDF files of Social Standards instructor's guide and a Know the Code Video Guide. Each product is also available separately.



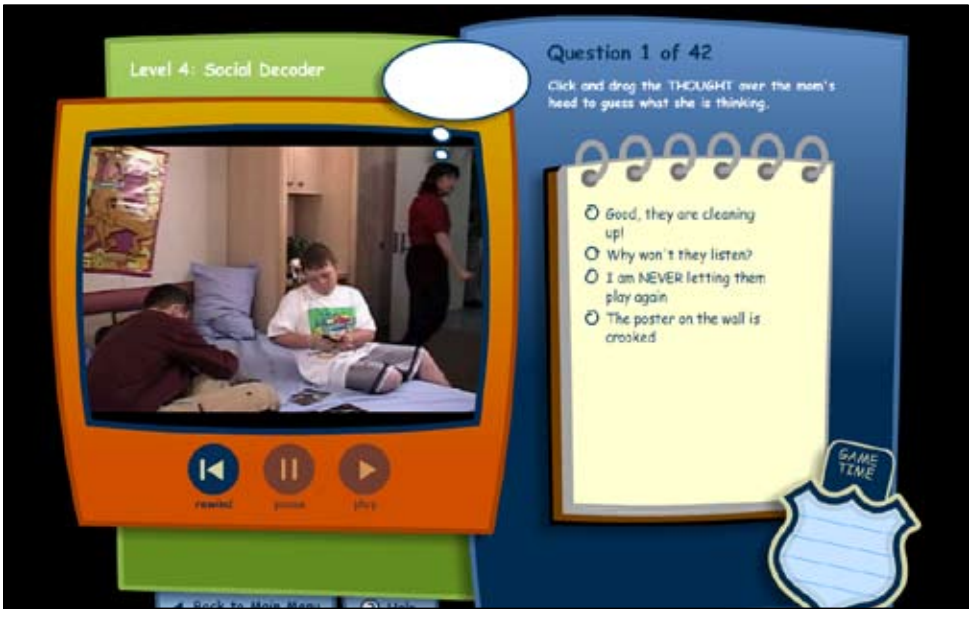
The Social Skills Picture Books (www.FHautism.com)

The Social Skills Picture Books (Jed Baker: www.jedbaker.com, www.FHautism.com) These two exceptional books use a primary visual strategy to teach social skills and, therefore, are particularly helpful to children with auditory/language processing difficulties, difficulties in abstract thinking and for those on the autism spectrum. The books show step-by-step pictures of children demonstrating various social skills. Each skill is presented sequentially, like a cartoon strip, with pictures of real children combined with text and cartoon bubbles to denote what the children are saying or thinking. Included are the right and, sometimes, the wrong way to act. Each page also includes other text that indicates hints on how to carry out the task, comments on the pictures and other explanations about the behaviors. The books are not meant as a substitute for practicing the skills, but can be helpful in understanding, reinforcing and augmenting learning of the skills. They show users the positive outcomes of performing a skill and how people think and feel in response to their behaviors. In the first volume, **The Social Skills Pic-**

ture Book: Teaching Play, Emotion and Communication to Children with Autism, some of the skills include: communication-related skills (don't be a space invader, greetings, introducing yourself, and 10 others); play-related skills (joining in play, sharing, turn taking and four others), and Emotion Related Skills (Keeping Calm, Accepting "No" for an Answer", Dealing with Mistakes and 4 others.) The second book, **The Social Skills Picture Book for High School and Beyond**, for older students, has the following skills: nonverbal cues/body language, conversation, building and maintaining friendships and dealing with school and work. The images in the books are also available on CD-ROM and are excellent for group learning and discussion on a whiteboard.

You Are a Social Detective! (Social Skill Builder: www.socialskillbuilder.com) Targeted for ages 7-12, this interactive computer program, for Mac and Windows, helps your students become more skilled at deciphering expected and unexpected social behavior. It has been developed by Social Skill Builders, in collaboration with Michelle Garcia Winner and Pamela Crooke and based on their book "You are a Social Detective." Student users are trained to use their eyes, ears and brain to investigate clues that help them see the relationship of their own behavior to others. There are six interactive levels: Social Trainer (learn key vocabulary and concepts); Basic Investigation (identify behaviors in various social setting and identify what kind of thought they cause in others); Social Predictor (determine which tools – seeing, hearing, know and feeling – are used in different social scenes and predict what will happen next); Social Decoder (guess which thoughts and emotions that the children in the scenes are experiencing; Social Tool Box (identify what was seen or heard to help the child make a smart guess, figure out what the characters were thinking and choose what they will do next); and Social Behavior Mapping (create a social map of the behaviors, identify the consequences and feeling of themselves and others). Included as part of the training are more than 200 video prompts that help users see the behaviors and then allow them to break down the situations to understand thoughts, behaviors and emotions of others. "Social Detectives" answer questions related to the video clips and analyze behaviors and thoughts of others. Like other software by Social Skill Builders, this program is well designed, with excellent video presentations that can be repeated by the student and with directions and questions and answers that are read aloud. It is very motivating to students and can also be used as an excellent training program for the classroom if used with a whiteboard.

iPad Adaptive Equipment: www.shapedad.etsy.com.



You Are a Social Detective! (www.socialskillbuilder.com)

My Community (Social Skill Builder: www.socialskillbuilder.com) This excellent software program, for Windows and Macintosh, is designed to help individuals with a cognitive age of 5-15 years develop appropriate social behaviors, interactions, expectations and safety precautions with their peers and adults. There are eight areas in the community. Level 1 familiarizes the user with specific elements of a social interaction and of peer relations, using realistic video clips. Appropriate and inappropriate behaviors are presented with printed and spoken explanations/summaries for each segment. Level 2 presents the video clip segments followed by multiple-choice questions that identify appropriate and inappropriate behaviors. Level 3 presents four pictures, and users identify the correct one (or more) from descriptive clues of social situations. Level 4 presents images represented in each social scene. The user matches written thoughts and/or feelings to the people. Level 5 challenges the user to predict and formulate novel responses and/or explanations to questions about various social situations. The Lesson Plan area in the CD-ROM allows you to customize the presentation of the program by turning specific questions on or off. There is also a record keeping option. Other equally high-quality software from Social Skill Builder includes previously reviewed programs: Preschool Playtime Volume 1, Preschool Playtime Volume 2, My School Day, School Rules! Volume 1, School Rules Volume 2.

Social Skills Apps: See Community Success (Attainment), Social Skill Builder (Social Skill Builder) and Social Quest (Smarty Ears) in the app section below.

IPAD AND ANDROID ADAPTIVE EQUIPMENT

Are you working with individuals who are having difficulty accessing the iPad and other capacitive devices, such as the iPhone and Android tablets? If so, read on about this wonderful collection of adaptive equipment, all created and produced by Ivo Beckers from Shapedad. Ivo, from the Netherlands, designed and makes these assistive devices for iPads. Thanks, Ivo for the time and effort you have taken to help those with

special needs. All the adaptive equipment can be found at www.shapedad.etsy.com. With fulfillment locations in Europe and the US, fast and economical shipping is available. If you want to know more about Ivo, you can find information at http://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=10841682.

Steady Stylus: This T-shaped stylus is excellent for those who have difficulty holding an object, like a pen, but who are able to firmly grasp with their hand. It is available in two sizes: regular and junior. The junior is geared towards younger children and uses Chewy Tubes as its core. This handmade, durable, fully conductive T-shaped stylus has a grip made from transparent rubber wrapped around a wooden stick. The pointer is made from aluminum with a conductive fabric sock plug as the tip. The outer dimensions are 10x10cm, the grip diameter is 15mm and the tip diameter is 9mm.

Strap Stylus: This can be used by those with limited hand and finger grip. It consists of a longer stylus that is placed between the index finger and the thumb with a strong Velcro strap that holds it in place. It does not need to be grasped or held, but it moves in sync with the hand. The tip of this can also be purchased separately for use with your own device.

Flex Stylus: This stylus can be held with the knuckles. It is made of a flexible metal strip that can then be bent to the exact angle that works. The metal is covered with a braided cotton sleeve and a silicon tube for extra grip.

Mouthstick Stylus: This stylus contains three parts: the mouthpiece, the stick and a conductive plug (tip). The mouthpiece is made from a durable food-safe plastic and comes with a set of silicone caps for a snap fit connection with the stick. The stick is 12 inches (30cm) long and made from anodized aluminum. And the conductive plug uses the same conductive fabric stylus sock concept as all of their other iPad styli. All parts are also sold separately There are two versions: a regular fixed 12-inch version and a Pro version that telescopes from 9 inches to 17 inches in length.

iPad Stylus Socks Pro: This stylus has a 40 percent smaller tip than the Stylus Socks II. It is ideal for notetaking and fine drawing. As with Stylus Socks, it is a hand-sewn sock of highly conductive fabric wrapped around a pen holder, with a wooden handle and a felt top. Very light weight, it requires no pressure when pointing and dragging.

Conductive Plugs: If you already own a mouthstick or stylus, but need it adapted for a capacitive touch device, this is your solution. The package contains two conductive plugs, one with a hard rubber kernel and one with a flexible silicone kernel. The inner diameter is 6mm/1/4 inch and the length is 25mm/1 inch. The plug's fabric is the same used in all of Shapedad's stylus socks. Just wrap the plug on or over the handle's tip.

IPAD ACCESSORIES

Brookstone HDMI Pocket Projector (Brookstone: www.brookstone.com) Have you ever wanted to project the screen contents of your iPad (or your laptop, or camera) so that a class or audience can view it … and then found that there was no projector available? This pocket projector solves that problem. Measuring only 3.9 inches wide by 3.8 inches deep by .89 inch high and weighing .5 pounds, it fits into an included cloth case and right into a pocket or pocketbook. The lamp projects up to 85 lumens for up to two hours on a single charge via an AC adaptor. A built-in focus wheel lets you adjust the display for optimum resolution. There are built-in dual speakers with a volume control or you can add additional sound via the 3.5mm audio-out jack. To use with the iPad, you need to have the Apple Digital AV adapter (not included). You get a great, sharp, clear image up to 60" diagonal on any flat surface (wall, screen, ceiling). To keep you projector even more secure and easier to use, there is a Travel Case, which is a zippered case, with interior pockets for projector, cords and adapters and a collapsible tripod stand (available separately).

Kids Drawing & Activity Case for iPad (CTA Digital: www.ctadigital.com) This iPad case and drawing board has an iPad holder on one side and a dry-erase marker board and clips for drawing paper on the other side. The iPad fits into the case, locks into place and allows access to the volume control, the power button, headphones and charging. The iPad part of the case can be used in the upright position for watching videos. The frame tilts back and can be adjusted to the desired viewing position. This frame also rotates 360 degrees and allows the iPad to be used on a flat surface for drawing apps. There are also a storage tray and two extra drawers for art supplies. The case latches for travel and has a carrying handle as well. When closed, the iPad is fully protected. A stylus for the iPad, a dry-erase marker with eraser cap and a large dry-erase marker eraser are also included. Universal Activity Tray for iPad helps protect the iPad from damage of all kinds (bumps, spills, etc.) while making it convenient and easy to use for young children. It can be attached to a car seat, a stroller or to a wheelchair tray. The iPad slips into the tray pocket, which secures it in place. The pocket is closed with a zipper to insure its safety. The tray is made of soft spongy padding and has a sealed, water-resistant top layer of clear vinyl. The plastic cover protects from spilled liquids and provides complete touch screen control.

Kids Drawing & Activity Case for iPad (www.ctadigital.com)

Brookstone HDMI Pocket Projector (www.brookstone.com)

New and Noteworthy Apps for the iPad

KEY
* - Lite or free version is available
A - Android version is also available
M - Mac Store app version is also available

Producer/website		Brief review – Check on iTunes, developer's website and YouTube for more details, pictures and videos
Smarty Ears /Smartyearsapps.com		This company has been a leader in creating high-quality and a large variety of apps for speech-language pathologists. Excellent video tutorials on all apps
Apraxia Ville		For childhood apraxia of speech and severe speech-sound disorders – video modeling for both vowel and consonant targets and the abilty to create custom words. It has a game format for one to four players; three activities – sound production, single word production and mutiple word production; data collection; use of print referencing aids phonological awareness and literacy.
Reading Comprehension Camp		50 stories andability to create your own; data collection; five levels of stories (2nd – 7th grade); stories will read aloud; can also record student's reading; 11 types of questions assess comprehension (use all or select certain types, such as who, what, inferences, compare/contrast, etc.); stories and quizzes can be customized; can be used to encourage writing skills, as well as narrative skills, sequencing, etc. by having students write their own stories. Excellent app!
Social Quest		For older elementary-high school ages; to improve pragmatic skills in social situations; includes naratives about real-world situations with questions to increase social awareness and communication in different locations and situations; questions for receptive (multiple choices) and expressive (open ended) skills; helps to teach awareness that there is more than one answer to different situations; game format for one to four players.
	*	Free apps: Teacher Resource Center keeps data for individual students from all SmartyEars apps, free chronological age calculator
Computerade/ www.computerade.com		Originally published for the computer, these excellent apps help develop scanning skills, as well as beginning communication with symbols
Catch the Cow		Helps teach children to select pictures using a switch and scanning; starts with two objects and progresses to row-column scanning; can regulate scan interval, difficulty level, space between boxes; can use switch interface.
Sentence Match		Helps to teach that words and sentences have meaning corresponding to symbols; students choose a symbol sentence that corresonds to a given picture; can also choose a picture that corresponds to the symbol sentence; data tracking.
Sentence Key		Students create a sentence with words or picture symbols and then see the sentence animated; can show symbols only, words only or both; eight pre-arranged sets of symbols/words. Data tracking.
Virtual Speech www.virtualspeechcenter.com		Well designed and motivating, all have auto-scoring, multiple students, disable written words, audio recording feature, track correct/incorrect responses, email.
Audio Processing Studio		For ages seven and up with auditory processing disorders; focus on auditory discrimination (16 levels), auditory closure (17 levels), phonological awareness (16 levels), with ability to add background noise to practice listening skills in noise; appropriate for adults (just turn off the reward system, which allows users to play various musical instruments, etc.); bottom-to-top approach – also consider Auditory Workout (reviewed in DISKoveries October 2012) to complement this app.
Syntax Workout		For preschool and elementary school-age; syntax and grammar activities within a bowling game context; 1500 stimuli in: 3rd person singular, subjective pronouns, objective pronouns, possesive pronouns and demonstrative pronouns; multiple students; data collection; disable reward for older students,
Verbal Reasoning		For ages 12 and up; excellent presentation of the following: identifying problems-causes-solutions; state problems-causes-solutions; what will happen next; what would you do if; what would happen if; stating pros and cons; why questions; similarities and differences between items. Options to read aloud or to display multiple-choice answers or no answers (for expressive langauge response); game reward can be turned off for older adults; excellent for TBI, autism.

Comprehension Aphasia		Focuses on auditory comprehension of increasingly longer and complex yes-no questions and directions, with ability to turn on background noise; yes-no questions (6 levels), basic directions-1 element (12 levels), 2 elements (12 levels), temporal directions (18 levels,) conditional directions (9 levels); excellent for adults and children, age-appropriate for all; more than 1,700 pre-recorded audio instructions; can use with multiple users; enable or disable feedback sounds and background noises; auto-scoring; tracking; email or print results; excellent for receptive language disorders, autism, attention, aphasia, and other cognitive deficits and TBI; for classroom, therapy or home practice.
Reading Aphasia		Excellent for adults and older children who struggle with reading comprehension; graphics and text are clear and free of distractions; over 2000 stimuli, organized in 12 semantic categories; three levels: Word (picture-picture, word-picture and word-word matching), Phrase (picture-phrase, phrase-picture, Phrase-Phrase matching), Sentence (picture-sentence, sentence-sentence matching and sentence completion); option to use background noises and feedback sounds; multiple students; auto scoring, tracking; print and email results.
Describe with Art		For preschool and elementary school-age; following directions (listen as an object is described) and expressive task to describe objects, categories, etc.; for verbal descriptions, student can press a button to get guided questions (name the place, what can we do there, what do you see in the place, etc.) to help them describe; reward is related to drawing a picture.
	*A	Quick Artic is free, Auditory Workout is available in Android.
Oceanhouse www.oceanhousemedia.com	A	Great classic stories, professional narration, words are highlighted, autoplay mode too, or read page-by-page, now lets you record your own voice and share
Dr. Seuss Short Story Collection	A	Eight classic titles in one app: The Big Brag, Gertrude McFuzz, King Looie Katz, The Glunk That Go Thunk, Too Many Daves, The Zax, I Can Lick 30 Tigers Today, and What Was I Scared of?
	*	Oceanhouse has many free apps to try.
Wanderful wanderfulstorybooks.com	M	The Living Books are back! Great interactive stories with hot spots to press – excellent for language, sequencing, visual perception and just plain fun. Play inside a story and interact with characters, words. 12 fully animated pages, virtually every item on each page comes to life when tapped; touch words,too. Two modes: Read to Me/Let Me Play; activities guide available as an in-app purchase. Available in other languages too and from Mac App Store.
Little Monster at School	M	Mom wakes Little Monster; watch him get ready for school and go through the school day's learning and adventures
Tortoise & the Hare	M	Classic fable about Slow and Steady Wins the Race – in English, Spanish and French
Arthur's Birthday	M	A fun tale for children about resolving conflicts and choosing between friends – English and Spanish
Arthur's Teacher Trouble	M	Arthur, his teacher Mr. Ratburn, and a spelling bee –in English and Spanish
Ruff's Bone	M	Ruff the dog has an offbeat adventure in search of his bone – English and Spanish
Berenstain Bears In The Dark	M	A tale of taking charge of one's imagination, especially when it makes you afraid of the dark – English only
Berenstain Bears Get In A Fight	M	A classic story of how sibling arguments can sometimes escalate and how they can be resolved - good lessons on avoiding arguments. In English and Spanish
Harry & The Haunted House	M	A spooky story of how imagination can make things seem scarier than they are – in English and Spanish – fun for Halloween time
	*	Free Storybook Sampler with pages from some of the classic, interactive books originally published by Living Books
	A	Android versions coming
Therapy Box / www.tboxapps.com/		
Predictable	A	Text-based AAC app; users can type in message with on-screen keyboard with word prediction; there is also a phrase area – 12 different categories with lists of related phrases that can be touched to be spoken aloud; three keyboard layouts; Access: direct touch, switch with scanning or touch anywhere options.

Marblesoft / www.marblesoft.com		
Discovery Pictures Deluxe	*	A challenging hidden-picture app for player of all ages, with puzzle packs for beginner to expert; input can be changed from drag and drop to an easier touch mode – touch the object on the bottom, then touch the hidden object; options also let user change the drop precision, background and highlight color.
Morning Breakfast		A sign language app with a story about breakfast time, with core vocabulary of around 20 words – words are highlighted in color with symbol for word; tap the symbol to see a full-screen video of the ASL sign; instructions and suggestions on how to best implement a sign language training program
Bath Time Bubbles		Sign language story about bath time – 20 new signs with word from first app also highlighted for review.
	*	Free app by Marblesoft - Citizenship: A Leader Is
Attainment / www.attainmentcompany.com		
Mini Mystery Readers	*	High interest, easy-to-read detective stories for ages 5 to 9; 24 books at grade 2-4 reading level – all text is read aloud – touch any word to hear it spoken; search for clues; solve the mystery; multiple choice questions at the end; record keeping; switch accessible; options to custoize. Wonderful app!! Lite version too.
Attainment's Show Me Math		Covers +, -, _, ÷, with numbers up to 20, and shows computation with actual objects and an animated video for each problem – helps students visualize math; enter answers by tapping number, choosing from multiple choice format or writing number with finger; tracking; customizable settings; switch and scanning.
Attainment's Community Success		24 community activities, like riding the bus, shopping, going to the movies, etc.; includes video modeling, photo-based directions, talking stories and great illustrations; professional narration; word highlighting followed by a quiz; tracking; customizable setting; switch and scanning. Excellent for transition skills.
	*	Free Attainment apps: SymbolSupport Viewer, Go Talk Now Free, Mini Mystery Readers Free
Social Skill Builder **www.socialskillbuilder.com** Social Skill Builder Full Social Skill Builder Lite	*	10 modules with video sequences of real interactions in preschool, elementary school, middle school, high school and community settings, showing common social interactions. Each module has 10-15 questions with corresponding videos, totaling more than 100 learning interactions. Goal is to teach key social thinking, language and behavior critical for everyday social success; pause anwhere in video to discuss, teach,etc. If you are interested in only one of the age groups, download the lite version and then purchase the specific modules that your students can use.

Joan Tanenhaus, M.A., CCC, Speech-Language Pathologist/Assistive Technology Specialist, is Founder and Executive Director of Technology for Language and Learning, Inc., a non-profit organization dedicated to advancing the use of computers and technology with children and adults with special needs. (email: ForTLL@aol.com) ■

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