

Closing The Gap

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Solutions

**Communication and the
Use of Tangible Symbols**

**Teaching with iPads for
Students with Multiple
and Visual Impairments**

**The Windows 8 Tablet:
The Best of Both Worlds**

**A Cure for the
Evaluation Report
Writing Blues**

**iLOVE Writing:
Using the iPad to
Support Struggling
Writers**

**DISCOVERIES:
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**Technology Trends:
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Communication and the Use of Tangible Symbols

In this world of fast-changing communication technology, it is easy to reach for the newest and fanciest gadgets and think, "With all these features, communication is bound to happen."

We all want the best for the clients we serve and most of us are willing to try everything out there in order to find it. However, we often put "the cart before the horse."

CAN WE REALLY EXPECT COMMUNICATION TO PROGRESS TO THE LEVEL WE WANT FOR OUR CLIENTS IF WE DON'T BEGIN INTERVENTION AT THEIR LEVEL?

Research shows there are no prerequisites to communication intervention, but there is another important fact that should always follow this statement and is often forgotten. Although there are no prerequisites to intervention, there does appear to be a logical sequence. Knowing where your client's communication skills fall in this sequence is essential for intervention. Dr. Charity Rowland of the Oregon Health and Science University first developed the Communication Matrix in 1996. The Communication Matrix is an assessment tool designed to pinpoint how an individual is communicating and to provide a framework for determining logical communication goals. Described within the Communication Matrix are seven levels of communication. The levels described in the matrix break down communication into understandable units and help make communication goals functional. The following are brief descriptions of each communication level.



LORI DAHLQUIST is a Speech Pathologist and Audiologist with over 35 years experience in the area of assistive technology. For more than 20 years, her primary focus was working directly with children with severe disabilities. Lori has worked for Adaptation Inc. since 2000 as their Speech/Education Coordinator. She is an experienced presenter, having presented educational sessions at national, regional, and local conferences and workshops.

Level 1 of the sequence begins with “Pre-Intentional Behavior.” At this level, behavior is a reflection of the individual’s general state (i.e. hungry, sleepy, uncomfortable), but the behavior is not under their control. In typically-developing children, this stage occurs between 0-3 months.

Level 2 is labeled “Intentional Behavior.” At this level, the individual’s behavior is under their control but is NOT used to communicate intentionally. Generally, the caregiver interprets and acts on the behaviors. In typically-developing children, this stage occurs between 3-8 months of age.

Level 3 of the Communication Matrix is where intentional communication begins. It typically occurs between 6-12 months and is called “Unconventional Communication (pre-symbolic).” Communication is considered pre-symbolic because it does not involve any form of symbol. At this level, communication behaviors are consid-

ered “unconventional” because they would not be considered socially acceptable at an older age. Communication behaviors include body movements, vocalizations, facial expressions and gestures.

Level 4 is referred to as “Conventional Communication (pre-symbolic),” occurring between 12 and 18 months in typically-developing children. At this level, communication behavior still does not use any form of symbol. It is considered conventional because behaviors are considered socially acceptable, and we continue to use them to accompany language as we mature. Examples of communication behaviors at this level include pointing, nodding, waving and looking from a person to a desired object.

At Level 5, symbolic communication begins and is known as the “Concrete Symbol” stage. Concrete symbols can look like, feel like, move like or sound like the

thing they represent. They can include objects, pictures, gestures or sounds. Typically, development of this skill occurs between 12-24 months.

Level 6 is the “Abstract Symbol” stage. This stage involves symbols, such as speech, manual signs, Braille or printed words for communication. The symbols used are abstract because they are not physically similar to what they represent. The abstract symbols at this stage are used one at a time. Typically this state is between 12-24 months.

Level 7 is known as “Language.” Symbols, both concrete and abstract are combined in two or three symbol combinations. Here the individual understands that the meaning of a symbol combination will differ with how symbols are ordered. In typically-developing children, this occurs around 24 months.

Children without disabilities move through all the above levels of communication, beginning pre-symbolically. Pre-symbolic communication can be effective, but limits the communicator to the here and now. Moving on to symbolic communication is the only way to communicate about things outside the immediate context. The use of true language can only develop if the communicator can use a form of symbolic communication.

To better understand symbolic communication, we must look at its parts. Symbolic communication is made up of symbols. But what is a symbol? A symbol represents people, objects, places, activities or concepts. Symbols differ from gestures because they allow the user to refer to things that have occurred in the past, will occur in the future or things spatially out of sight. There are two subset symbol groups that help to further explain symbolic communication. They are known as Abstract Symbols and Concrete Symbols.

Abstract symbols are symbols that make up languages and include speech, manual sign language and printed language. The main characteristic of an abstract symbol is that it has no obvious relationship between the symbol and the physical properties (auditory, visual, tactile) it represents.

Concrete symbols DO have an obvious physical relationship to their referent. One form of a concrete symbol is the use of iconic gestures we might use when playing charades. Children will often mimic the shape, movement or sound of what they want to communicate. For example, a child may make a “smacking” sound if he wants a kiss or pat a chair if he wants someone to sit.

Tangible symbols are another form of concrete symbols. Tangible symbols may be either three-dimensional (objects) or two-dimensional (pictures), with which we all seem to be more familiar. Two-dimensional symbols are pictures of the referent and might include photographs and a variety of line drawings. Various commercial two-dimensional systems are available for purchase, making it easy to keep vocabulary consistent - a blessing as well as a curse. Because the two-dimensional symbols are so readily available and often have a built-in organizational system, we sometimes forget to consider the use of three-dimensional symbols. Three-dimensional tangible symbols, (real objects, miniature objects, partial objects or textures) can fill the communication void for individuals who cannot use other symbol forms and should be given full consideration when exploring



Tangible object cards samples

symbol options. Learning to use tangible symbols lays the foundation for the acquisition of more abstract symbol systems.

The use of three-dimensional tangible symbols was first described in the 1960s by Jan van Dijk as a means of communication for people who were congenitally deaf-blind. However, their use has now been extended and considered effective for many. Those who have learned to use tangible symbol systems include individuals of all ages who lack the skills to communicate clearly using speech or other abstract symbol systems. This includes individuals with the following disabilities:

- severe intellectual disability
- developmental disability
- autism or pervasive developmental disorders



Tangible Object Card on Pal Pad.



Tangible Object Card Bundle with Lex.

- severe vision impairment
- severe orthopedic impairment
- multiple disabilities
- deaf-blind

Unlike standard two-dimensional picture systems, little has been done to establish a set of standardized three-dimensional tangible symbols. There appears to be two schools of thought on this matter, favoring either an individualized or a shared approach.

Those favoring an individualized approach believe the objects chosen should be individualized for each communicator. This ensures that the objects chosen have meaning and are motivating for the user. Although ideal, this may not be functional.

Based on clinical experience, this author has adopted a shared approach for the following reasons:

First: Language is NOT individualized, it is shared. For you to read this article, you must share my language. For signers to sign to each other with meaning, they must share the same system of signs. In the world of augmentative and alternative communication (AAC), we try not to have a different set of symbols for each user. Given this, why would we take a different approach with three-dimensional tangible objects?

Second: Simply for practical purposes — it is easier to house, maintain and keep track of individualized tangible objects for a number of learners if they are shared, especially if they have several symbols each. It is also more difficult and more expensive to replace individualized items when they go missing (and they will) than it is with shared items that may be purchased in bulk. This shared approach also makes implementa-



Proxpad with tangible object card.

tion easier for staff, and we MUST keep staff in mind. Because a commercially produced tangible symbol system might not meet all individual communication needs, it can be individualized with the addition of personalized symbols.

Third: The communicator learns the intended representation of the object through the established process of frequent and long-term repetition. Although it is not best to pick a totally abstract object, the process of repeated and consistent presentation is more important than the object itself.

Fourth: The development of a basic set of standardized tangible symbols would provide continuity within an organization. The uniformity and availability of symbols throughout a program can help instill a culture that values the use of a communication system.

Fifth: There are already those out in the field using a shared set of three-dimensional tangible symbols effectively!

CURRENT LITERATURE REGARDING THE USE OF THREE-DIMENSIONAL TANGIBLE OBJECTS HAS NOTED SEVERAL PROPERTIES THAT MAKE TANGIBLE SYMBOLS UNIQUE.:

- They are manipulable — meaning you can hold them and touch them.
- They are permanent — they exist in a permanent display and don't have to be recalled from memory.
- They can be discriminated through one's tactile sense.
- They represent something else — they are symbolic.
- They include two-dimensional symbols (photos, line drawings and/or text) to support communication.

Adaptation's Tangible Object Cards are now available and are helping to fill the void of a standardized three-dimensional symbol system. They are made up of whole objects, parts of objects, associated objects or textures that stand for or represent common things we communicate. The above properties were kept in mind when these object cards were developed. This commercially available system reduces the time required for teachers, therapists and parents to search

out, purchase and make the symbols. It also ensures uniform quality and durability.

These Tangible Object Cards are a core set of 20 vocabulary items and six supplemental vocabulary sets containing five items each, for a total of 50 available cards. The vocabulary was chosen based on findings in the literature and from working with professionals in the field. Although the 50 objects are obviously not all-inclusive, they do represent the items most often requested.

When using objects that bear a strong resemblance to what they represent, one runs the risk of the user confusing the symbol with the referent. To avoid this problem and establish symbol consistency, each object in Adaptation's commercial symbol set has been attached to a 5x7 plastic card. This gives each symbol boundaries and establishes a consistent symbol size. It also allows an easy and consistent way to attach the symbols to other areas, such as switches, communication devices, calendars, schedules, doorways, etc. Blank 5x7 cards are also available for expansion of vocabulary.

There are also various options for pairing a two-dimensional visual cue with each object. Color or black-and-white pictures are available, pre-printed on small detachable plastic cards. Blank small cards are also available for adding the picture cue of your choice.

The goal of an object communication system is always to provide a means for the learner to attain a higher level of communication. While the focus is initially on the object, the learner is seeing the symbol every time the object is presented, hopefully providing scaffolding of knowledge from what the learner knows to what he doesn't know - a link to future learning and language acquisition.

The desire is that tangible symbols provide the pre-symbolic communicator a way to move into the world of symbolic communication as easily and successfully as possible. It is often difficult to determine which type of symbol to start with. For example, even an individual with functional vision may require the concreteness of a three-dimensional symbol to make the cognitive connection between the symbol and its intention.

Tangible symbols can be used for receptive communication development, as well as for expressive communication. For receptive communication purposes (a means to provide information to an individual), tangible symbols can be used prior to the

emergence of intentional pre-symbolic communication. Using symbols receptively increases the odds of the communication being understood. It also helps to reinforce the association between the symbol and its referent. This will be an advantage when the communicator is ready to use the symbol expressively.

THERE APPEARS TO BE THREE MAJOR INDICATORS THAT SUGGEST READINESS FOR THE USE OF TANGIBLE SYMBOLS EXPRESSIVELY:

- The individual has intentional behavior that may be used to indicate a symbol. Example behaviors include picking up the symbol and giving it, pointing to the symbol, eye gazing to the symbol or guiding someone's hand to the symbol.
- The individual understands that he can control the behavior of another person through some pre-symbolic means, such as pointing, extending objects, facial expression or vocalizing. Research (Rowland & Schweigert, 2000) shows that individuals that already communicate pre-symbolically will more readily learn to use tangible symbols.
- The individual does not already use abstract symbols to communicate. An individual who can use a higher level of communication efficiently should not be asked to use a lower level of communication unless the environment does not support this level of communication. One word of caution – communicators may need a lower form of communication when new concepts and vocabulary are introduced.

THERE ARE MANY DIFFERENT STRATEGIES FOR IMPLEMENTING ANY TYPE OF COMMUNICATION SYSTEM, AND THE USE OF TANGIBLE SYMBOLS IS NO EXCEPTION. IT IS BEYOND THE SCOPE OF THIS ARTICLE TO ELABORATE ON EVEN ONE, BUT THERE ARE SOME GENERAL PRINCIPLES TO FOLLOW:

- Be consistent: To help ensure consistency, establish a policy regarding how tangible symbols will be used.

- Training is essential: Everyone involved must be trained in order for the use of tangible symbols to be successful.
- Keep it simple: Present only one tangible symbol at a time, and don't try too much too soon.
- Limit "wait" time: If the learner has to wait too long after a tangible symbol is presented for the intended outcome, he will forget about the symbol. This is especially true when using the objects for transitions.
- Be patient: Even with consistent programming, it can take weeks, months or even longer for a learner to make a connection with the objects.

A common question concerning the use of three-dimensional tangible objects is, "Can you use them with other forms of technology?" The answer is, "yes" - although most of us are more familiar with technologies that support the two-dimensional forms of symbols.

Probably the simplest way to add technology to three-dimensional symbols is to attach the symbols to a switch. For example, you could attach the object representing "play" to a toy. Adaptation's large Pal Pad switch is sized for the Tangible Object Cards. This switch is flat, making it easy to attach the cards. Once the card has been attached to the switch, it can be activated by touching the object, by pulling the card off or by pulling off or attaching the picture card - making it versatile for the motor needs of the learner.

Adaptation developed the Lex Communicator with the Tangible Objects Cards in mind. The Lex is a single-message communication aid with three levels. It uses natural voice recorded speech and is pressure sensitive, like the Pal Pads (activated as listed above.) It works great for creating visual schedules, as well as a general communication aid.

The ProxPAD™ by Logan® ProxTalker® is the newest communication device developed for the Tangible Object Cards. The same size and shape of the Lex, it easily accommodates the Tangible Object Cards. It functions using recordable "tags." These tags are attached to the object cards (either on the back or on the front) just like the two-dimensional picture cards available for the Tangible Object Cards. The ProxPAD recorded tags come with SymbolStix pictures printed on them.

Blank recordable tags are available to create unique vocabulary. Messages are recorded using natural voice and are easily changed. The ProxPAD can be activated by touching the tag to the device or, when in its proximity mode, by "waving" the tag over the device.

All of the above mentioned technologies offer fun and functional ways to combine the use of technology and three-dimensional symbols, such as the Tangible Object Cards. They offer a variety of features that can help to meet the motor access needs of the targeted learners who often have multiple issues.

In summary, we can safely say that tangible symbols are key in the development of higher levels of communication. Of the two kinds of tangible symbols (two-dimensional and three-dimensional), it is the three-dimensional symbols that are often forgotten. Give careful thought when choosing symbols for learners, which, for some, can be the bridge to meaningful communication. Keep in mind the communication level of the learner and meet him at that level. We cannot choose the symbols for our learners based on what is most convenient for us or for the technology we want to try. All of us want the best for those we serve, and that could mean starting with something new!

Tangible Object Card Vocabulary

CORE	School 1	Community
Bathroom	Art	Church
Bed	Bus	Eat Out
Brush Teeth	Music	Library
Clean	PE	Sports
Comb	Snack	Theater
Computer		
Cook	School 2	Wellness
Dress	Classroom	Dentist
Drink	Group	Exercise
Eat	OT	Medicine
Game	PT	Nurse/Dr.
Listen	Speech	Pain
Money		
Outside	Leisure	Fast Food
Play	Bubbles	Dessert
Read	Sand	Fries
Shop	Swim	Hamburger
TV	Swing	Hotdog
Wash	Watering	Pizza
Work		

RESOURCES

Adapt This...a picture-book guide for adapting anything! Available at [Adaptiva-tion](http://Adaptiva-tion.com)

There are great functional ideas for implementing communication with tangible objects at <http://talksense.weebly.com/objects-of-reference.html>

For information about Tangible Object Cards, the Lex Communicator, Pal Pad Switches, ProxPAD™ and other devices and products from Adaptation Inc., please contact Adaptation Inc, 2225 W. 50th, Suite 100, Sioux Falls, SD, 57105, by phone at 800-723-2783 or through their website at www.adaptiva-tion.com

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Teaching with iPads for Students with Multiple and Visual Impairments

You are a teacher of students with visual impairments (TVI) and have just recently learned you will have a new student named Margaret.

Her family is very involved with her educational program and excited about her learning how to use an iPad.

Margaret is a sixth grader with cerebral palsy and visual impairments. Her visual impairment is Retinopathy of Prematurity (ROP). She has partial bilateral retinal detachments, which impact her vision with blank and black areas in her central and peripheral vision and spatial distortions. She uses a power chair for mobility, but has limited motor ability in her hands. She has a one-on-one aide who reads almost all her work to her. She currently uses a video magnifier for enlargement, but not regularly. She advocates for herself by letting her assistant know if she is unable to see the materials. Her primary learning media is auditory, but her goals suggest she would like to use her visual skills as much as possible; she is a large print reader. Her other needs are high contrast materials and preferential seating. Her interests are reading novels, such as the Twilight Series, listening to music and talking to her friends. Margaret controls her wheelchair independently and uses a long cane for travel. She may benefit from a stylus with her iPad and the team should consider mounting the iPad to her wheelchair.

Margaret's story is a familiar one and an iPad is an ideal assistive technology option. Assistive technology (AT) is a universal equalizer, providing VI students far greater access to information using available accommodations, such as screen readers and video

magnifiers (Kapperman & Sticken, 2000; Presley & D'Andrea, 2009). Despite the attention given to technology and, most recently iPads, in the field of visual impairment, students with visual and multiple impairments still lack adequate access to assistive technology. Research studies consistently report less than 50 percent of students with visual impairments are utilizing AT for reading, learning or researching (Kelly, 2011; Lewis & Edwards, 1998; Johnstone, Altman, Timmons, & Thurlow, 2006; Kapperman, Sticken & Heinze, 2002; Kelly & Wolffe, 2012). Kelly and Wolffe (2012) found that only 42 percent of the transition students [students ages 18-22 working on post-secondary, adult living skills] with visual impairments were using the Internet regularly. Students with visual and additional impairments have even lower rates of assistive technology use (Copley & Ziviani, 2004). Students like Margaret need a comprehensive AT plan that will address their unique abilities.

AT has improved the lives of students and adults living with visual impairments by providing access, connectedness and engagement. AT is one of the nine areas of the Expanded Core Curriculum (ECC) used to help guide the instruction in the field of visual impairment (Hatlen & Sapp, 2010). Instead of separating AT as one unrelated component of a student's program, the iPad



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offers educators an opportunity to integrate AT throughout a student's program at school and home. This integrated ECC and iPad strategy can be applied to meet Margaret's need, as illustrated in Table 1.

ACTION PLAN

Zabala's framework (2012), which includes the components of Student, Environment, Task and Tool (SETT), can be used to address Margaret's unique needs by developing a set of specific iPad goals linked to the ECC. A stylus will provide Margaret greater touch screen access. For better general accessibility, the iPad needs to be mounted to Margaret's wheelchair. RJ Cooper (<http://www.rjcooper.com>) has a large selection of wheelchair mounts that may work well for Margaret. When positioning the iPad, the teacher (or the TVI) needs to consider the following:

- Field preference: position the mounted iPad where Margaret sees best. Too often, students with visual impairments are hunched over looking at iPads on a flat surface.
- Glare: watch for issues around too much reflection or changes in lighting that will affect how easy it is for Margaret to see the screen
- Clutter: separate apps into folders and use Apple's Large Text to make it easier to target items. For Margaret, we know that she experiences spatial distortions, which can be confusing when trying to interpret visual information.
- Landmark: Placed by the TVI, tactile bump dots landmark the home button, microphone and camera for increased efficiency and targeting for repeated tasks.

IMPLEMENTATION

The action plan for Margaret will include instructional steps and a long-term curriculum plan. Without thoughtful individualized planning, the AT implementation may not be fully effective. In order for the iPad to be an effective learning device for Margaret, the following key components must be included in the implementation plan (adapted from the Quality Indicators for Assistive Technology, 2012; Zabala, 2007):

- iPad use must be implemented across Margaret's school day;

Table 1: Margaret's iPad and the Expanded Core Curriculum

Table 1: Margaret's iPad and the Expanded Core Curriculum	
Expanded Core Curriculum Area	Margaret is low vision with multiple impairments (Margaret's Apps)
Compensatory Academic/Functional Academic including Communication Modes	Pages will be used as a word processing app for Margaret to complete her class assignments.
Orientation and Mobility (O&M)	Maps with a stylus will be used for Margaret's O&M and additionally, taking a screen shot of the map will make it accessible when out of Wifi range.
Social Interaction Skills	Facebook with Siri will be used to socialize with her peers and she can post status updates by commanding Siri to "Post a status update to Facebook."
Independent Living Skills	iCal with stylus will be used to keep track of her appointments and prepare her for transition to post-secondary life.
Recreation and Leisure Skills	Read to Go will be her reading app with which she can access audio books for her recreation and leisure time. Additionally, Read to Go will enable Margaret to read her textbook assignments independently instead of having her aide read to her.
Career Education	Email will give Margaret great practice towards post-secondary life and for emailing assignments.
Assistive Technology	Bigger and Brighter will give Margaret a way to enlarge print in her community, such as menus or forms.
Visual Efficiency	Penultimate will provide an interactive drawing and notetaking app for Margaret. With Penultimate, Margaret can photograph a worksheet, zoom in on it, modify it and email.
Self-Determination	Safari will be Margaret's research and connectedness tool. She can look items up, using the "reader" function, when available, to easily read (listen to) articles with VoiceOver.

- iPad training must be collaborative, involving Margaret's one-on-one aide, parents and all other educational team members;

Plan must include easy-to-follow instructions and troubleshooting advice with hardware and/or software recommendations;

All team members must consistently communicate information about Margaret's iPad use and utilize progress data in order to make evidence-based decisions.

PRACTICAL APPLICATION OF THE PLAN

When the plan is ready to be implemented, a strategic approach should be used to introduce any new AT software or hardware. Figure 1 illustrates an instructional sequence to introduce software or hardware to the student:

1. The new device or software is introduced and discussed.

The device or technology is then modeled with verbal descriptions or “teacher talk,” depending on what is appropriate. For instance, if the student would benefit from knowing the reason for choosing an application, “teacher talk” should be used while modeling such as saying, “I need to jot down that appointment in my calendar before I forget it, so I will open up iCal to make sure it is on my schedule.”

The next step is to scaffold, where the student is helped in the use of an application or hardware with hand-under-hand instruction, if necessary.

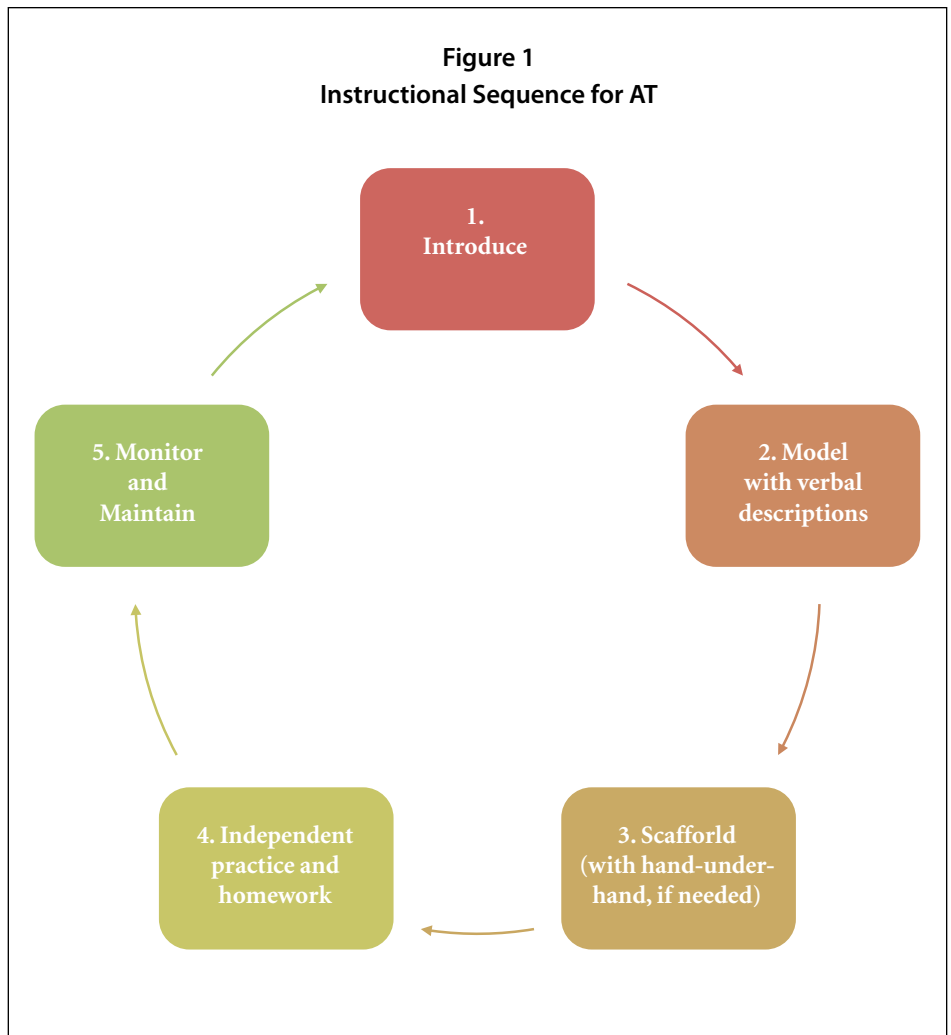
Once the student has practiced with help, the student should be allowed individual practice, which is potentially the most important step of the instructional sequence. When a student is practicing independently, it is important not to take the iPad if something is not working correctly. It is best to help a student troubleshoot the issue. If all troubleshooting fails, then ask if you can take a look at the iPad. (Note: If troubleshooting is needed, grabbing the iPad to fix an issue may send the message to a student that they will not be able to truly navigate an iPad on their own).

The last step in the instructional sequence is to monitor and maintain the iPad. Some examples of this may be that during one-on-one meetings with a student, the teacher checks in or asks the student to demonstrate a task on the iPad. Additionally, monitoring iPad use can include collaborating with team members on a periodic basis to ensure the iPad is integrated throughout the school-day. This is also an opportunity to make sure a student is taking care of his or her iPad. Questions to ask are, “Have you been updating your applications? Have you been experiencing any issues or roadblocks with your iPad?”

MOVING FORWARD ... MARGARET’S PLAN LONG TERM

When implementing AT for students, it must be integrated into the student’s educational plan and future-focused. The question is: How well will this device serve a student right now and in the long term? The iPad is a mainstream, socially appropriate, multi-functioning device that will be less likely to be discarded (Alper & Rahiriniaria, 2006).

Using Margaret’s program needs as a guide, a suggested lesson order for a TVI, special



education teacher or related service professional is presented in Table 2.

SUMMARY AND IMPLICATIONS

When using iPads as a teaching and learning device for a student, stay focused on what it can do. Also consider that there may be a workaround for something a student wants to do with their iPad that does not seem instantly accessible. The iPad is a mainstream device that most students are highly motivated to use. Students who have low vision may be able to use their iPads in several ways in the classroom, for example, taking a picture of the board in order to zoom in on it, that will promote independence and accessibility.

Some cautionary advice is also important when considering using iPads. For younger students who are pre- or early-symbolic communication learners, iPads do not replace real objects or tactile symbols. With the ECC in mind, iPads are an effective tool for cause and effect, expressive or receptive communication, visual stimulation and

learning games. Any “native” Apple applications will be the most accessible using VoiceOver since Apple apps will have labels on nearly all the buttons and graphics. An application from a non-Apple source may not be totally accessible but there may be workarounds that make the app worth using. When there are iOS updates, changes may occur in the functionality of an app and workarounds may be needed for inaccessible features.

In conclusion, what the iPad can do far outweighs what it cannot do. Students with visual impairments deserve equal opportunity and the ability to choose what AT will work best for them, depending on the task they are trying to accomplish and their educational goals.

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Table 2: Suggested Lesson Order

Lesson #1: Introduce the iPad	Go over hardware accessibility: Triple click home button, camera for zooming in and screen shots (home and sleep button quick simultaneous push)
Lesson #2: Accessibility features	Go over software - VoiceOver, Zoom, Large Text
Lesson #3: Accessibility Apps	Bigger and Brighter and Read to Go
Lesson #3: Safari	Essential features: home bar, tabs, home screen links to Web pages, searching
Lesson #4: E-mail and Facebook	(1) Have student email you by adding you to their contacts (2) Show basic features – flagging, reply, forward, printing, compose, and set up email “behaviors” (3) Go over functions and behaviors of Facebook and practice status update with Siri
Lessons #5, 6, & 7	Introduce iCal, Reminders, Maps, Camera and Pages
Lessons # 8, 9 & 10	(1) Monitor and Maintain the iPad and continue to practice with apps (2) Download only one or two new apps each week, where applicable, (Note: remember that iOS apps will be required to be more accessible than non-native Apple apps)

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The Windows 8 Tablet: The Best of Both Worlds

Tablets have revolutionized the world of assistive technology. Up until now, the sacrifice for portability and cost meant giving up the full functionality of desktop software, such as Microsoft Word, PowerPoint and powerful special needs software programs, in exchange for apps with limited functionality. The absence of a USB port on the popular tablets limits the devices that you can connect to them. The Windows 8 tablet gives you the best of both worlds by providing the portability and the touch access of a tablet with the computing power of a desktop.

The most popular tablets are the iPad, which will run apps from the Apple Store, and Android-based tablets, such as the Google Nexus, which runs apps from the Android Market store. In March of 2013, Microsoft released another tablet called the Surface Pro. This tablet runs Windows 8, which not only gives you access to the Windows store but also has the traditional desktop, which will allow you to install and run desktop software programs and offers touch access. It is priced pretty high, starting at \$899, but thankfully is not the only Windows 8 tablet out there. Many different hardware manufacturers, such as Dell, Samsung, Acer, HP, Asus and Lenovo, now manufacture Windows 8 tablets, and the prices have gone down considerably.

Prior to the release of the Surface Pro, Microsoft released their first tablet, called the Surface RT. This tablet was originally priced at \$499 to compete with the iPad. The Surface RT runs a version of Windows called Windows RT. This scaled-down version of Windows 8 will only allow you to install

new apps from the Windows Store and does not have the capability to install and run traditional third-party desktop Windows programs. If you plan on running any of your current desktop software, a tablet running Windows RT is not what you want.

As owner of a software company that focuses primarily on switch and touch screen software for Windows, I had to make sure that our software worked on both the Windows 8 tablet and the Windows 8 desktop. In this article, I plan on sharing my experiences, both positive and negative, with regard to the Windows 8 tablet.

I purchased a Windows 8 tablet to test out our Windows software programs. I chose the Samsung ATIV SMART PC 500t 64GB a few months ago for \$575 and as of this morning, I've seen Windows 8 tablets for as low as \$350 on Amazon. I would recommend getting at least the 64GB version because Windows itself uses up a considerable amount of the advertised storage. The more expensive Windows 8 tablets in the thousand dollar range come with a faster processor, higher resolution display and more memory. Though the tablet I purchased was inexpensive in comparison, it ran all software that I loaded, including Microsoft Office, without a problem and without any delays whatsoever. The display was also excellent. The battery life on my tablet is an impressive 14-1/2 hours.

One huge hardware advantage that the Windows 8 tablets have over other the iPad and Android-based tablets is the traditional USB port. Most come with the standardized USB port found on desktops. Some



The Windows 8 Tablet

come with mini USB ports, where you can use an adapter to convert these mini USB ports to standard size USB ports, for under \$10. Having a standard USB port directly translates into cost savings. You can take the USB mouse or keyboard from your desktop and plug it into the USB port on your tablet and it will work perfectly. The Windows 8 tablets usually come with only one USB port. To expand the amount of USB ports, you can plug a "USB hub" into the USB port of the tablet and it will expand the number of devices you can connect. USB hubs generally cost about \$10. Just as a side note, the Windows tablet also has Bluetooth capability. See photo 1.

The first issue was installing our Judy Lynn software programs on to the tablet. The problem is that the tablets do not come with a CD drive. The USB port on the tablet gave me two options. I could copy our software on to a flash drive and install it from there or plug in an external CD drive into the USB port and install it from the CD. I tried both ways and they both worked fine. A



ELLIOT PLUDWINSKI is a software developer and owner of Judy Lynn Software, Inc. (www.judylynn.com), makers of switch accessible software programs for Windows Desktops, Windows Tablets and iPads. He can be contacted directly at elliott.pludwinski@judylynn.com. Judy Lynn Software programs are developed specifically for students with special needs.

third option was to download the software from our website, which is the way we sell it today for the Windows tablet. The installation of the software automatically put the program icon in the app section to launch the program. When the program is launched from the app section, it automatically opens up the desktop of the Windows 8 tablet first and then runs the program from the desktop automatically.

The second issue was that I would have to assume that not everyone running our software on the Windows tablet would have an external keyboard attached to it, whether it was Bluetooth or connected via the USB port. This was a problem because in most of our programs, if you wanted to go from an activity back to the main menu, you would press the escape key. If there wasn't a keyboard attached to the tablet, you would never be able to get back to the main menu. I didn't see an Esc key on the on-screen keyboard. In order to solve this problem, I coded a button on the upper right hand corner of each activity screen in each program that says "double tap on this box to exit to the main menu."

The USB port on the Windows tablets opens up the world of accessibility. I plugged in my Don Johnston USB Switch Interface, plugged in my switches and everything ran perfectly. See photo 2. When I installed and tried our programs, like Introduction to Cause and Effect and Animated Toys II, switch access worked flawlessly. With regard to the dragging and dropping functionality with a mouse in programs like In Sequence, I was able to drag and drop with my finger on the screen without any problems whatsoever, just like a tablet was designed to do.

Another feature that makes the Windows 8 tablet the best of both worlds is the ability to integrate the built-in microphone and camera and use it directly to customize your powerful desktop software. Before this, the typical way to import your custom video and audio into the software was to take still photos and video with your digital camera. You would have to attach a cable to your digital camera and then upload it to a folder on your computer. It is time consuming, takes several steps and probably discourages many people from creating customized activities. The Windows 8 tablet makes this procedure very simple because everything you need is built in and contained in the tablet.

Let's take, for example, a therapist who wants to create a simplified activity for a student. The task is to arrange the steps for

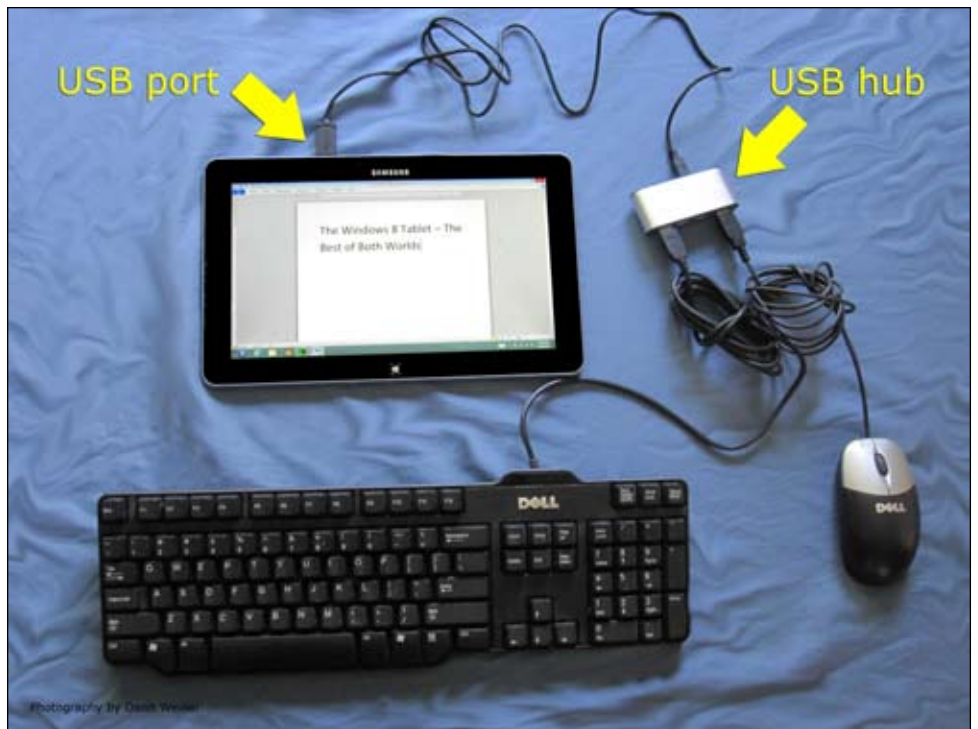


Photo 1 - The USB hub expands the number of USB devices that you can connect to your tablet.

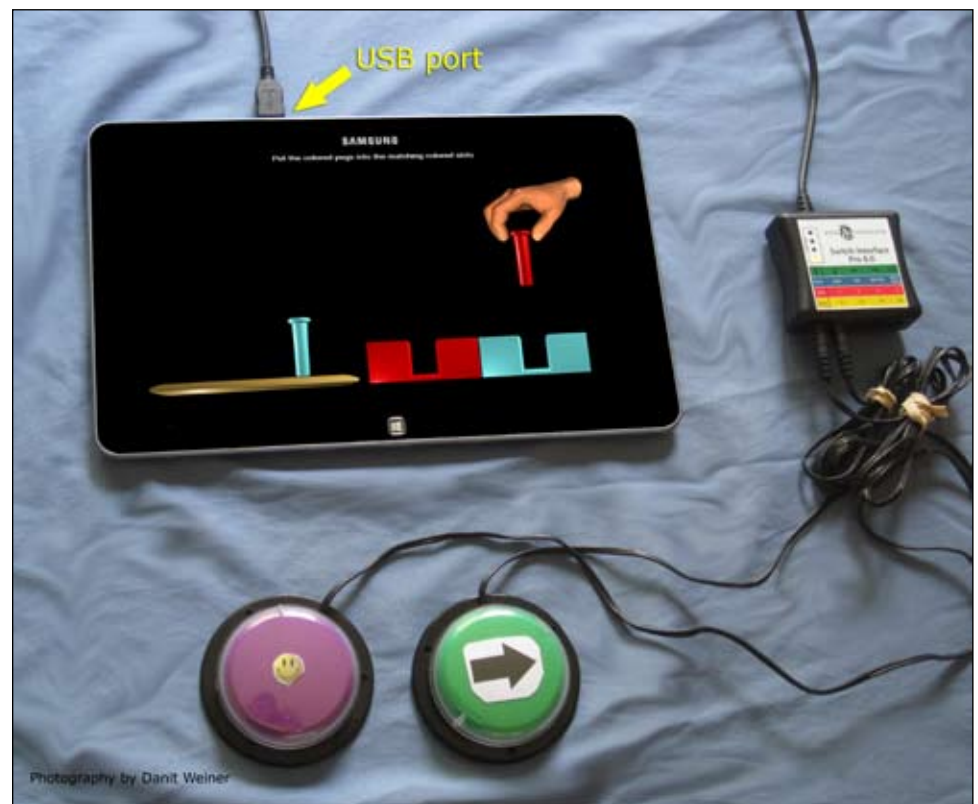


Photo 2 - Screenshot of the Judy Lynn Software program "Virtual Motor Skills" running on a Windows 8 tablet using the Don Johnston USB Switch Interface and two AbleNet Jellybean switches.

eating a hamburger. The student's job is to open up the bun, put a hamburger patty in the bun and, lastly, eat the hamburger. The activity will have video modeling and photos. The Windows 8 tablet that I purchased came with software with the ability to take still photos and video using the integrated camera and microphone. The first thing I did was set it to video mode and then videoed a person doing all three steps while narrating what he was doing. Next, I took three still photos based on the task. The first photo was opening the bun, the second was putting a hamburger in the bun and the last photo was taking a bite out of the hamburger. I was able to crop the pictures very easily to include only the pertinent parts of the picture using the software that came with the tablet. I then launched the In Sequence software program and was able to add the video and still pictures to create my customized task. What took so many steps to accomplish on the desktop took much less time and effort on the Windows 8 tablet. The extra benefit of the tablet is the touch access. Now students using the program can use their fingers to drag and drop the photos into the proper sequence, instead of having to use the mouse. See photo 3.

A minor issue that I encountered involves the on-screen keyboard. In desktop applications, the on-screen keyboard doesn't come up automatically when you put the cursor into a text box. You have to open the on-screen keyboard manually. Once the on-screen keyboard appears, it covers up the bottom half of the screen, which might cover up the box that you want to type into. When you type, it will type into the box but you won't be able to see what you typed until you hide the on-screen keyboard. If the desktop application that you are running on a Windows 8 tablet requires a lot of typing, I would suggest using an external keyboard instead of the on-screen keyboard.

Windows 8 was introduced on desktop computers before Microsoft made their tablets available. Being a software developer, I had to make sure that all of our software programs ran well on a Windows 8 desktop. I downloaded and installed the beta version of Windows 8 on one of our test computers. Like most people, I don't enjoy reading manuals. I've used other versions of Windows for the past 25 years and thought that the new upgrade would be intuitive. I had no idea how to navigate past the opening screen and couldn't even figure out how to shut it down. I was very frustrated. It was only after all of my experiences with the Windows 8 tablet that I



Photo 3 - Screenshot of the Judy Lynn Software program "In Sequence – Daily Living Skills" running on a Windows 8 tablet using the drag and drop option.

realized that Microsoft tried to put an operating system designed for a tablet on to a desktop. Swiping your finger from right to left is a common hand gesture on a tablet, but moving your mouse from right to left while the mouse clicked to mimic a swipe isn't very intuitive. The negative reviews that came out on Windows 8 running on a desktop put the Windows 8 tablet at a huge disadvantage even before it was released.

Windows 8 may not be very intuitive for a desktop but I have to say it is very slick on a tablet and I was very impressed. The learning curve was short and the hand gestures became second nature. Although I am comfortable and very familiar with the iPad, I reach for the Windows 8 tablet more often than the iPad for quick browsing for information.

I also had a chance to experiment with the Speech Recognition on the Windows 8 tablet, which was very impressive. Programs can be opened up with speech, and text can be entered into a text box that accepts input just by speaking the text. I briefly looked at the "Narrator" app that comes with the Windows 8 tablet. I was very impressed with the quality of the speech as it read what was on the screen, but I thought that the hand gestures to run Narrator were a bit complicated. I did find many good YouTube videos that were very thorough on teaching the hand gestures for Narrator.

Windows 8 uses "active tiles" as icons. These active tiles relay the most important information of the app right on the "Start" screen to save you the time of opening up the app it is attached to. For example, the active tile on the email app will tell you how many emails you have. The active tile for the weather app will show the current temperature.

In summary, I'd like to be very objective. There are pros and cons to both the Windows 8 tablet and other tablets. You have to evaluate your needs if you can only choose one device. If it is apps you are looking for, then the iPad or Android tablet offers you the largest selection of free and paid apps in their respective stores. If you are looking for very easy switch accessibility with hardware and powerful desktop software you may already own, then you should consider the Windows 8 tablet. I would first obtain information from the software company of the software you plan to install to see if they certified it as Windows 8 compatible and if it was tested on a Windows 8 tablet. I would also find out if an external keyboard is needed to operate the software. The software may just require the external keyboard to customize it, but once it is customized, you can just hand the tablet to the student to use just like any other tablet, without any additional peripherals. As always, explore all your options carefully and make your decision based upon your individual specific needs. ■

A Cure for the Evaluation Report Writing Blues

The following is based on a conglomeration of many true stories. Although the story is fictitious, it is garnered from multiple events that actually occurred. The names have been changed to protect those in the same predicament.

Molly felt her pockets for the keys. Nothing. Had she locked them in her car again? Her lack of sleep might be causing her mind to play tricks. Brief lapses in short-term memory were another awkward side effect of sleep deprivation. It wasn't like she didn't know the cause of the problem. It was that old, familiar friend named "Stress." That ugly step-sister had moved in about three years ago when she took her new job as an assistive technology specialist and had been using all the hot water ever since.

When she accepted the position, she remembered feeling elated and eager to start. This was THE job she had dreamed of and worked hard to get. She was qualified, com-

mitted, competent, experienced and genuinely concerned about making a difference in the lives of others. She was actually going to be spending her every day helping students achieve their educational goals by recommending, acquiring and implementing technology. She had planned to be an adjunct member of each student's educational team to help decide, collectively, what solutions would be least restrictive and most appropriate given the current situation. She had wanted to help make improvements in the lives of students, the supporting family members and the other surrounding educators. Sure, she had expected a little paperwork. The job was in special education after all. Paperwork just came with the territory. Now, three years later, she was desperate to find a way out. Her expectations and reality had mixed about as well as oil and water.

Relief washed over her when she heard the familiar jingle of her hand brushing passed the keys in her purse. Phew! At least something was going right. She made her way to the coffee shop, purse and laptop bag strung over her shoulder. Coffee had a way of making everything better.

It was just another typical Saturday morning. Grab the extra large latte, snuggle into the chair in the corner, fire up the laptop and get to work on writing the reports from the evaluations she had done all week.

It was May and, with summer fast approaching, break felt more like a stalker than a savior. She had four reports to write for students she had seen this week and two due from the previous week. When she scrolled through the names in her spreadsheet, she saw that she had completed 224 evaluations so far for the school year. With the other assistive technology evaluations she already had scheduled, she was on pace to hit 255 before the end of the school year. She thought about that number for a moment. Her contract was for a 180-day school year. That meant she was conducting and, consequently, drafting a report for more than one evaluation per day. No wonder she was spending every Saturday morning sucking down Skinny Cinnamons.

"Excuse us?" a woman said out of the blue. "I'm sorry to bother you, but don't I know you from somewhere?"



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SALLY NORTON-DARR, MS, CCC-SLP, is an assistive technology trainer for Loudoun County Public Schools (<http://www.lcps.org/at>) in Virginia as well as a nationally certified speech-language pathologist. She enjoys her work in the public schools and has fun presenting internationally, regionally, and virtually to diverse audiences on a wide range of low to high-tech strategies, interventions, and solutions. Sally is the also the co-author of the ISTE publication: The Practical (and Fun) Guide to Assistive Technology in Public Schools.

The woman had light brown hair and, Molly had to admit, a familiar face. She was sure they had indeed met before. When she looked past the woman to the gentleman accompanying her, the flame of recognition ignited.

"Yes!" Molly smiled. "We met at the state Assistive Technology Conference last year. We sat at the same table for lunch or something, right?"

"How's it going?" the man asked, genuinely interested.

Molly was about to offer the automatic response of "Okay" when she realized that this would be a complete and utter lie. She was anything but "Okay." She was so frustrated she was ready to throw her laptop across the room. Instead, she offered up the truth.

"Actually, not good. I spend just about every Saturday here, writing up reports on the students I've seen. Besides that, I've got every person I talk to wanting a tablet computer, whether that is the right tool for the job or not. I attend massive amounts of Individualized Education Program meetings. I barely

have time to train the teachers on the devices they are getting and, when I do, I never leave feeling good about the job I've done. I'm constantly chasing my tail here, trying to keep up, and, frankly, I'm ready to pull my hair out!"

"Do you mind if we sit down?" the woman asked, pulling out a chair. "I'm Sally and this is Chris. We totally empathize with your situation. We've been there."

"I used to spend every night, including Friday and Saturday, writing reports. My wife



would be upstairs watching a movie while I wrote up recommendations for tools and strategies. It sucked," Chris offered.

Molly felt a little bit of tension release from her shoulders. She wasn't alone. "Misery loves company," she thought. Then she realized that these two comrades didn't have the telltale bags under their eyes. These two actually looked happy about their jobs and did that guy just say "used to," as in past tense?

"You mean, you don't write reports like this?" Molly gestured toward her laptop.

"We do," Sally explained. "It's just that maybe we conduct 10-15 evals a year, on average, which means we only write up 10-15 formal reports a year."

Molly felt the world spin in the opposite direction for a moment. Once, in her teens, she had a bad case of vertigo where she lost all sense of balance. She had spent that evening lying on the couch with an ice pack on her forehead, hoping someone would stop the world so she could get off. Luckily, the feeling passed more quickly this time, and she managed to ask "You're joking, right?"

"Don't get us wrong," Chris started. "We do lots of consultations on cases. I've probably done 50 or 60 this year alone. We send a follow-up summary in an email after each one, too, which is sort of like a mini-report. The difference is that we only focus on technology that is already presently available in

the environment. That and, in an email, one isn't required to be so formal. We're still professional, just not as formal. You know?"

Molly did not know. Email was used for scheduling meetings and sending attached reports to respective parties, not drafting consultation summaries. Molly did not know, but she wanted to.

"Hold up," she said, raising a hand. "Can you explain your process?"

"Sure. When our team started, we were given one directive from our administration. Every evaluation for a student needed to be requested via the student's individualized education plan. With that bit of guidance, you know what we did?" Chris paused, waiting for Sally to pick up where he left off.

"We asked everyone, whenever they had a question about assistive technology, to request an assistive technology evaluation for us to help them."

"And you know what we got?" This time Chris addressed Molly.

This time, Molly knew the answer, "Lots of requests for evaluations?"

Chris clicked his tongue to the roof of his mouth and pointed both index fingers at her. The gesture indicated that she hit the bull's eye on her first shot.

"That's what we do now," Molly added.

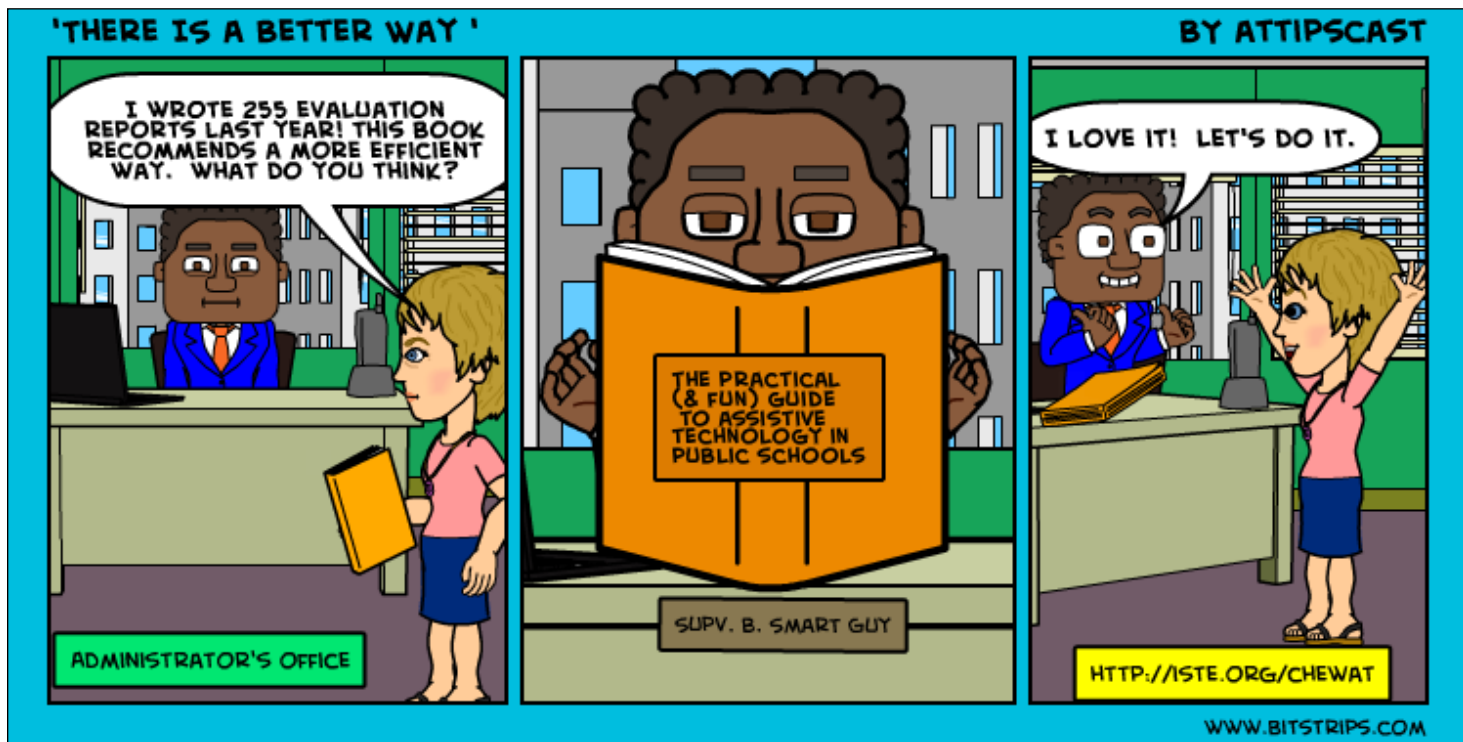
"Yeah, that's what a lot of people around the

country do, or so we've heard," Chris added. "But we learned something over time. The vast majority of our recommendations were for tools and strategies that were already in the environment. Most teachers just didn't realize they existed, that they had access to them or how they could implement them."

"So we changed our practice. We made it our mission for people to contact us without requesting an assistive technology evaluation. This is mostly teachers or case managers, but any IEP team member, including a parent, is welcome to contact us. We brainstorm solutions and then write them up in a follow-up email. In many cases, we get that email out within a day or two. Students are using strategies that much faster, without the delay of having to wait on the writing up of an official report," explained Sally.

"But, what if you can't solve the problem with technology already in the environment?" Molly asked, thinking she found a reason why this couldn't work for her.

"There are times when an evaluation is warranted to help decide what technology, above and beyond what is already available in the classroom, should be acquired. That's when we explain the process of requesting an assistive technology evaluation." Oftentimes, the strategies suggested and tried in the classroom offer supportive data should a different piece of technology need to be considered.



Could this be possible? Obviously it was. These two were working on a team who was using a totally different, and possibly more efficient, process. Molly guessed at the number of evaluations she had written where the recommendations were for items already in the environment. Without pulling the reports and counting them, she couldn't be sure, but she estimated the number to be around 200. That was about 80 percent of her evaluations. Could she cut down report writing by 80 percent? Whoa! What would she do with all that found time? Maybe spend time with her husband on Saturday mornings again for one thing, but what would that mean for the rest of her job?

"What do you do with all the time you used to spend writing reports?"

"Training," Sally and Chris said together, smiling at the simultaneous answer.

"You mean like after school workshops?" Molly asked. It would be nice to train some teachers rather than always playing catch-up.

"Some," Sally started. "We do after-school workshops and our attendance varies at those. The truth is, adult learners are just like student learners. There isn't one way that fits everyone best."

"We diversify our professional development offerings," Chris continued. "We do group face-to-face workshops, work directly with students to model practices for teachers, send out emails with links to various tutorials, maintain a website of our favorite resources, manage an online repository of resources we've curated from the Web, create our own videos to be placed on our website and on DVDs, share audio files from our favorite podcasts and develop a digital and paper-based Strategy-A-Day Calendar to keep the tap of good ideas flowing."

"We're in the process of including multi-tiered online courses, as well, to our cadre of offerings," Sally included.

"With all of these different options, people can choose the best way for them to acquire the content. Too busy to stay after school? No worries. Watch a video. Video not your style? Listen to a podcast on your commute to or from school. Would you rather chill out to some Huey Lewis in the car? Not a problem. Look up resources on our site while you're tooling around the Web later that evening. Not everyone has to drink the same juice in

our school district. If you like apple, you can have apple, but if you like cherry, well, we've got a shot of that flavor syrup too."

"Oh, and we try to have fun with the trainings. No one wants to attend something if it has the reputation of being boring. We try to inject some personality into the offerings, which, we hope, brings people back for more."

"How about Individualized Education Program meetings for students? Attending those meetings must take up lots of your time as well?"

Sally and Chris shared a quick, knowing, pensive look. "We typically don't attend IEP meetings."

Molly nearly fell out of her chair. She fought the urge to look around for the hidden cameras. She was surely on some reality television show. Someone was bound to leap out yelling, "Gotcha!" at any minute.

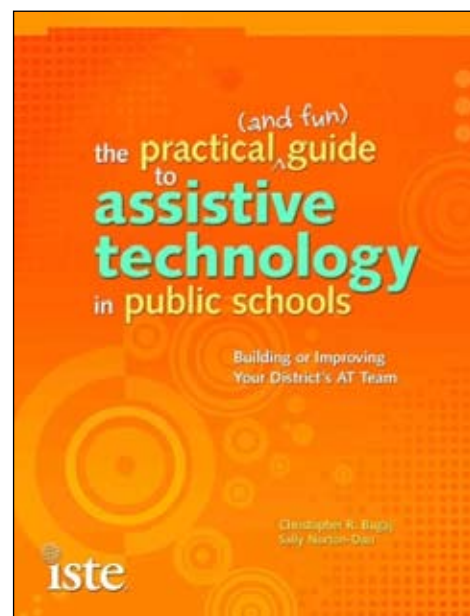
"Seriously? How else do you explain your recommendations to the team working with the student if you don't attend IEP meetings?"

"Training," the duo said again in tandem. Laughing, Chris gestured to Sally to continue.

"We'd rather spend our time going over the recommendations with the teacher than attending an IEP meeting. It is imperative that we empower the teacher to know what those recommendations are and what they mean. The best way to ensure that a teacher knows exactly what is meant within a recommendation is for him or her to have to explain it to others. When we're present, we might say all sort of things that could be done, but, in the end, it is the teacher, along with the other IEP team members, who need to implement the tools and strategies."

Molly took a sip of her latte and, despite the rush of caffeine, felt oddly relaxed. She considered the implications of what these two were saying. Less time writing reports and less time attending IEP meetings equated to more time training educators and students to actually implement technology. That sounded strangely like teaching, the profession she fell in love with ages ago.

The theory was sound, but was this sort of change doable? It might take some time for the teachers and administrator to learn to contact her first, but it could happen. If she



reminded them, made a media campaign, met with them to explain the benefits and showed everyone how the results would better serve her constituents, they could change.

No. They would change.

More than just the educators and students, she needed this change as well.

"I'm buying your coffees," Molly stated, no question in her voice. If she hadn't stumbled upon these two strangers and if they hadn't recognized her, she'd probably be searching for jobs later that night. Now, she had a plan of action that could change her job for the better, forever. She reached for her purse to pull out her credit card. She felt she had to do something to show her gratitude.

"No. No need." Sally said, a gracious hand shooing the credit card away.

"Yeah, there's no need to buy us coffee," Chris added with a coy smile. "But if you want, you could buy our book. We had this conversation a few years ago and a representative from The International Society for Technology in Education asked us to write a book about our team's challenges and solutions. You can share the book with your administrators to validate these and more tried and proven suggestions for practical (and fun!) ways to implement assistive technology in the public schools."

If you would like to listen to this story go to <http://bit.ly/ctgc4twwb14> ■



iLOVE Writing:

Using the iPad to Support Struggling Writers

Are you working with students who struggle with the process of writing? Does their spelling impact the readability of their work? Would you like for them to be more efficient and independent writers?

Students have had access to computers and software for years, supporting their academic independence and achievement. Graphic organizers, text-to-speech and word prediction can support many students (not just those identified with learning differences).

...If we move to a different medium, these tools are just as powerful!

Today, iPads are changing the landscape of the 21st century classroom and becoming an invaluable tool to all students, particularly to those who learn differently. Given that many students are digital learners, they are embracing this new technology, which is socially acceptable and easy to use. Teachers are finding creative ways to integrate iPads into daily instruction and independent learning activities, making the learning environment richer and more diverse.

However, there are some things we must consider when using the iPad as a writing tool:

Although many students are already using touch technologies, we must acknowledge that there will be some new learning. Using the iPad to play Angry Birds is different than completing a history essay!

Accessing the iPad can be physically difficult for some students. Therefore, use of alterna-

tive keyboards, stands, and/or styluses can be helpful.

The virtual keyboard presents a challenge for many students due to sensory factors, the visual presentation (which also requires a different motor pattern) and the inability to "touch type."

Printing from the device requires a compatible WiFi printer or the use of e-mail ... this can be a challenge if the student is in a location with limited or no Internet access.

With hundreds of thousands of apps on the market, it is difficult to know which ones can be most beneficial to the students you are working with.

APPS FOR ORGANIZATION

Inspiration Maps

This app has a presentation that is very similar to the computer-based software, so transitioning students to the iPad is easier. It offers templates in a variety of areas or allows you to create your own. The best

part of the app is that (like the computer software) it allows you to switch between diagram and outline views. To assist with visually connecting ideas, color-code the cells!

Tools4Students

This app has 25 different organizers, including Character, Drawing Conclusions, Cause/Effect, Main Idea/Detail, Sequencing and Making Predictions. There is a space provided for responses and book/page numbers when appropriate. The organizers can be used again and again.

APPS FOR WORD PROCESSING

Writings

This app is customizable in many ways! It contains multiple fonts, and the font size can be adjusted up to 40-point. (Great for our students with visual impairments!) Background and text color can be changed and page width adjusted. This app also provides a visual word count and offers an additional



Inspiration Map's Diagram and Outline Views



KELLY CHARLEBOIS, ATP is a RESNA certified Assistive Technology Professional who has been in the field of Assistive Technology for over 15 years. She is the Executive Director of TechACCESS of RI, where she works closely with educational and therapeutic teams and families to identify assistive and educational technologies to support students in the classroom, as well as with state and regional agencies to promote the independence and achievement of people with disabilities through the use of technology. She presents workshops on a variety of assistive technology topics statewide, regionally and nationally. Kelly can be reached at kellyc@techaccess-ri.org.

keyboard with commonly used keys (i.e. semicolon, quotation marks and parentheses).

NewPad Plus

This word processing app also provides speech feedback to support writing and editing. Additional features include: a text editing toolbar that allows you to apply styles to text, such as bold, italic, underline and strikethrough; highlighting of text in multiple colors; a keyboard with left/right arrow keys for text navigation; definitions of words within the app; and superscript and subscript of numbers.

Typ-O HD

This word processing app contains both speech feedback and word prediction. Even better, the word prediction offers support for phonetic spelling, has a "Predict Next Word" feature, allows predicted words to be spoken prior to selection and allows users to add words to the prediction list via speech-to-text!

Clicker Docs

This app provides speech feedback (three voice choices) with highlighting and context-based word prediction (up to eight choices), with the added feature of word banks. There are ready-made word banks, or customized word banks can be created. Clicker Docs will also automatically develop word banks from pasted text anywhere on your iPad, including any Web browser, such as Safari, and the app allows users to access word banks from Crick's LearningGrids from within the app. For those students with visual impairments, the font can be adjusted up to 70-point. Two notes of caution: the word bank and the keyboard are not visible at the same time, and the word prediction does not typically offer choices for phonetically spelled words.

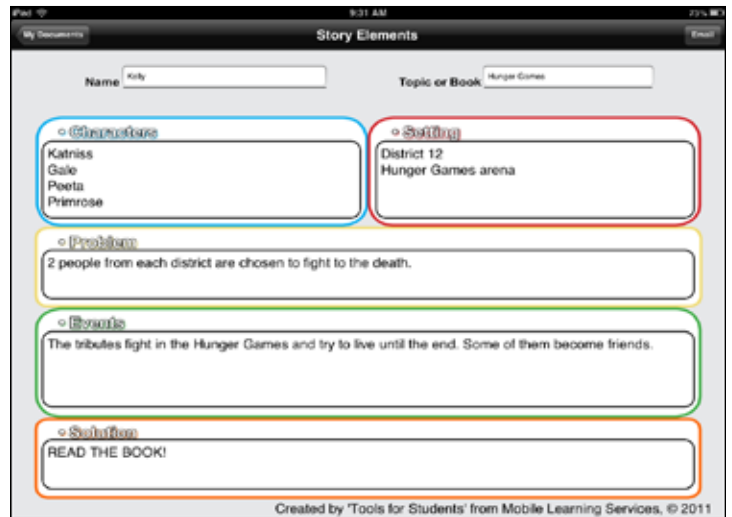
PaperHelper

This app splits the iPad screen in half to give students simultaneous access to an Internet browser and a word processing document (placement of windows can be "swapped" left to right). Additional features include:

- Internet Browser:
 - Allows users to create Bookmarks and identify five Favorites
 - Allows printing of Web pages to a wireless printer from within the app
- Document:
 - Gives users access to commonly used editing tools (i.e. the ability to bold/italicize, change the font and font size, justification)
 - Font size can be adjusted
 - Three fonts available (Arial, Helvetica, Verdana)
 - Nine text colors available
 - Keeps a word/character count

PaperPort Notes

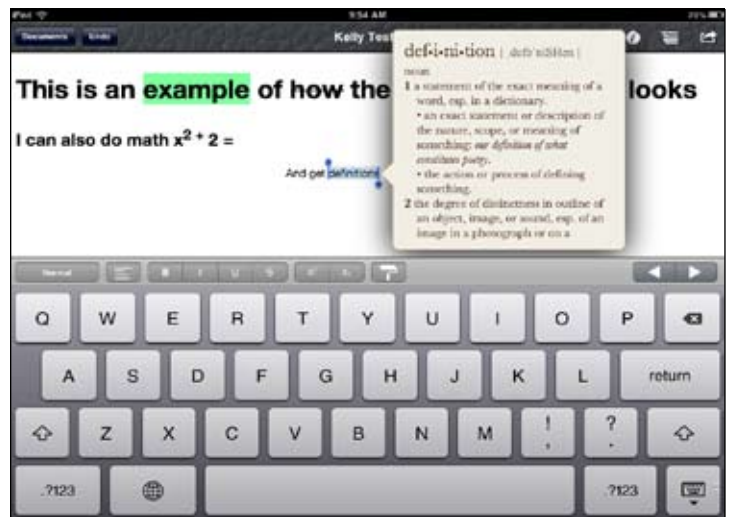
This multi-function word processing app presents visually, like the native iOS Notes app. It includes built-in speech recognition (even if you are using an iOS device without Siri). This app also allows users to create audio recordings, draw illustrations, highlight their work (five different colors are available), utilize "sticky notes" and create text boxes. It also supports picture imports.



Story Elements Template in Tools4Students



Writings app keyboard



NewPad Plus Screenshot

USING THE IPAD CAMERA TO SUPPORT STUDENTS

Some students struggle with capturing information from the board in a timely and/or legible manner. The iPad's built-in camera can help! Consider having students capture information from the board (i.e. illustrations, homework assignments) that they may have difficulty copying, by taking a photo of it. For students with visual impairments, this is a particularly helpful strategy because they can then use the built-in Zoom feature to magnify it to meet their visual needs.

SUMMARY

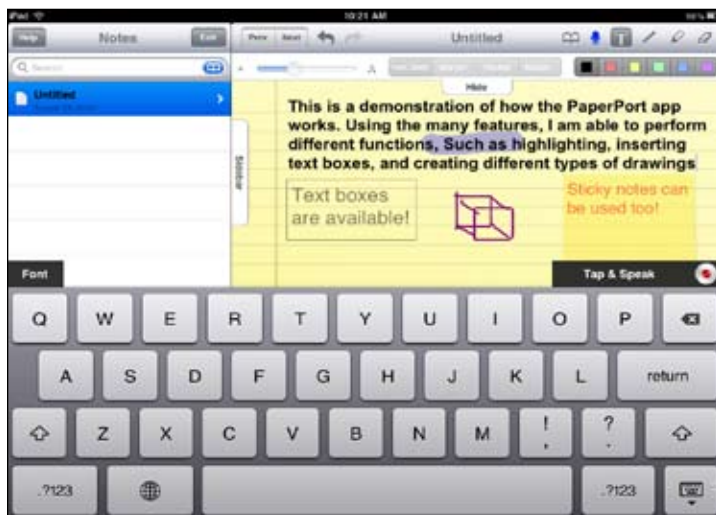
The iPad is a wonderful tool to support writing. Apps exist to support students of all ages with all aspects of the writing process. Apps should be selected based on a student's skills and needs and trialed and monitored to insure their appropriateness. And we must acknowledge that although many students are adept at using touch technologies, they will still need support to utilize these tools effectively. But with the right apps and the right supports, you just might hear your students say "iLOVE Writing!" ■



Typ-O HD Screenshot



Clicker Docs Word Bank screen



PaperPort Notes screen shot



PaperHelper Screen Shot

DISKoveries

eBooks

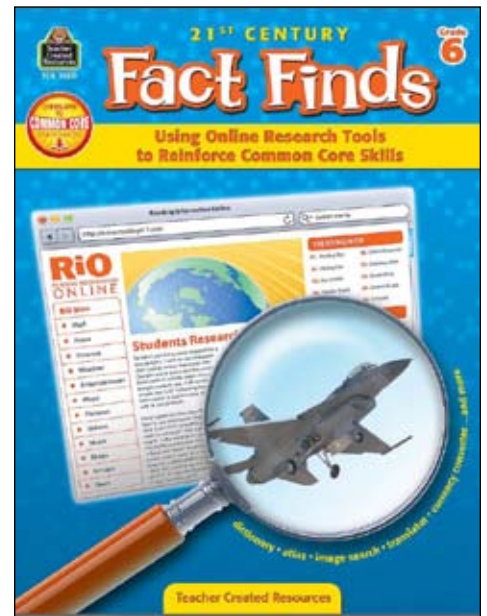
By Joan Tanenhaus

eBooks are taking many forms now – digital storybooks, PDF files with special options like a Typewriter Tool and electronic books that have built-in tools for the SmartBoard and have the ability to read aloud. They seem to work well for both individual work at the computer and for group lessons on the SmartBoard since they are interactive, read text aloud and can be saved and printed. The range of learning material is growing each day, from very simple picture storybooks to complex workbook style learning materials for all ages. Watch for even more in the future. Following are some of the newest and most innovative.

21st Century Fact Finds, Grades 4, 5 and 6 Enhanced eBooks (Teacher Created Resources: www.teachercreated.com) This outstanding series of eBooks is one of the best new series available and addresses skills for learning to use online research tools to learn and reinforce Common Core Skills. (Teachers are encouraged to always review Internet safety with the class and a sheet of important topics is included in each volume.) Its structure, design and choice of topics and follow-up activities are interesting and highly motivating, and all can be used on the computer and/or the SmartBoard. These eBooks let you add notes and comments anywhere, use pencil and typing tools, copy and paste text, mark up pages, have text read aloud, take snapshots and more. Each book consists of 25 high interest stories, at grade level

and based on true information. By design, they also include some factual inaccuracies (i.e., a country may be in an incorrect location, an event may be placed in the wrong century). Some stories have no errors, while others have from one to four errors. Students are directed, by icons and words, to research specific facts using an online dictionary, thesaurus, encyclopedia, calculator, atlas, image search, translator, metric converter, temperature converter or currency converter. Test questions are in multiple choice, true/false, short answer and complete sentence forms. A written paragraph is also required at the end – some ask students to draw a conclusion, support conclusion, etc., to help the user critically think about what was read, use new vocabulary, etc. An answer key is included. Each activity meets one or more of the Common Core State Standards. Grade 4 stories contain 350-425 words; Grades 5 and 6 have 425-550 words. Although the Internet tools remain the same, each grade includes stories and problems of increasing complexity. It should be noted that all questions can also be answered using more traditional off-line tools, such as dictionaries, atlases, encyclopedias, etc. if preferred.

Weekly Writing Lessons Grades 3-4, Grades 5-6 Enhanced eBooks (Teacher Created Resources: www.teachercreated.com) This unique series of eBooks teaches strategies for writing and can be used on the computer and/or the SmartBoard. You add



Fact Finds (Teacher Created Resources: www.teachercreated.com)

notes and comments anywhere, use pencil and typing tools, copy and paste text, mark up pages, have text read aloud, take snapshots and more. It also has an answer key. Each week a new strategy is introduced and it is developed over a period of five days. The lessons build on one another and conclude with a series of five writing projects that incorporate all strategies learned. The weekly format includes introduction and direct instruction, teacher models strategy with

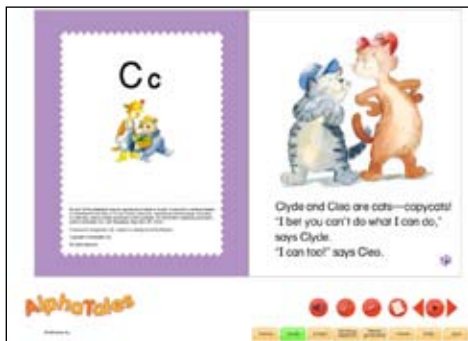
JOAN TANENHAUS, M.A., CCC, Speech-Language Pathologist/Assistive Technology Specialist, is Founder and Executive Director of Technology for Language and Learning, Inc., a non-profit organization dedicated to advancing the use of computers and technology with children and adults with Special Needs. (email: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

the class, partners complete fun activities to practice the strategy, independent writing assignment with guided instruction and independent writing. Grade 3-4 strategies include Super Starters, Traveling Transitions, Clever Closings, Electrifying Elaborations and Fancy Figurative Language. Grades 5-6 strategies include Outstanding Openers, Terrific Transitions; Fantastic Finales, Awesome Adjectives and Fabulous Figurative Language.

Interactive Learning Beginning to Read



Rourke (EBooks: www.rourkepublishing.com)



AlphaTales (Scholastic: www.scholastic.com)



Ugly Duck (Newmark Interactive Folk Tales www.newmarklearning.com)

Grade K (Teacher Created Resources: www.teachercreated.com) This eBook is available as either a CD or a direct download from the website. It contains 100 short reading passages, followed by a “drag and drop” activity that is a matching, sorting or sequencing activity. Children match number/word, picture/words, words/words, beginning/endings of sentences, rhyming words and more. They sort words by beginning sounds, final sounds, number of syllables, rhyming words, concepts, sentence completion and others. Sequencing activities include selecting the correct words to complete sentences that retell the story. Whiteboard tools to draw, highlight, erase, and add text are available. It includes a PDF with all the reading passages so they can be printed out. All activities can be used on whiteboards and on the computer also.

Write From the Start! Writing Lessons Grade 3, 4, 5, 6-8 Enhanced eBook (Teacher Created Resources: www.teachercreated.com) This series of eBooks has lessons on all different types of writing. Each lesson begins with a sample text, which serves as a model to be read and discussed with students. A group of activities follow, that give guidance and practice in writing similar type of text. Lessons include activities that help with grammar, punctuation, vocabulary and spelling and a guided activity for writing the particular type of document being worked on. Grade 3 types of writing include writing a narrative, a recount, a poem, information report, description, opinion, persuasion, describing a procedure, invitation, thank you and research projects. Grade 4 types of writing include the previous plus humorous verse, description of a place, explanation, pros and cons and response to a picture.

Grade 5 types of writing include those, plus letter of request, factual speech, reviews and editorials. Grade 6 includes more detailed activities for factual recount, narrative, poem, procedural recount, letter of opinion, information report, description, opinion, explanation, discussion and school research projects. Like other Enhanced eBooks by this company, these files can be used on the whiteboard, on the computer or printed out and distributed to the class for individual classroom or homework.

Rourke eBooks (Rourke Educational Media: www.rourkepublishing.com) This company has a large collection of colorful and educational interactive eBooks in a variety of subject areas, like science, social studies, fiction, high interest adventures in reading and much more. They work wonderfully on the SmartBoard, as well as the computer. All stories are read aloud, with words individually highlighted. The reading pace is excellent for assisting comprehension, and stories have simple and repetitive lines with both beautiful illustrations and real pictures. You can pause the story at any time for extended conversations and learning time. Pages can be shown individually or two pages at a time (the way a book looks), and you can move forward or backward for review. Some of the stories conclude with a picture glossary that helps summarize the important facts, and each includes the F&P Level. Here are some examples of the wide range of topics and stories: **When I Hatch, What Will I Be:** Each page describes the animal (I am an egg in the sand by the sea... When I hatch, what will I be?), followed by an illustrated page, the answer (a sea turtle) and then a picture of the real animal. F&P Level B. **I Listen:** Each page repeats the phrase When my teacher ..., I listen. The whole book reinforces the importance of listening to the teacher (illustrated with pictures of young children). F&P Level C. **Pink Tree, Green Tree – A Book about the Seasons:** This book presents the four seasons in a simple, fun, rhyming way with a story that reads aloud and pictures that show how the seasons change. Along with other illustrations of the seasons, the tree is always shown how it looks in each of the seasons. Fun, and a well-done presentation of how the seasons differ from each other. **Help Me Find Something:** This story is excellent way to reinforce spatial concepts and “where” words, such as in, out, left/right, on, beside, near, next to, between, inside and under. Each page names something that needs to be found, followed by the picture and words describing where it is. F & P Level C. **Animals Under The Sea:**

This book is a more advanced level and has many additional features. It introduces students to many animals that live in the five major oceans, such as coral, whales and dolphins, starfish, sharks, tropical fish, seahorse and sea turtles. The page is read aloud with general information and then the different pictures are highlighted and named. More difficult vocabulary is highlighted in yellow. Students can click the word and see and hear the definition read aloud. Reviews at the end contain a Word Match, where the students can drag the name to the correct animal, multiple choice questions and a glossary of all words that were defined within the story. F & P Level H. **Different Places, Different Words:** This story, F&P Level L, describes how people use different names for the same thing in different regions (i.e., pop/soda, hot dogs/franks, jimmies/sprinkles, etc.). More difficult vocabulary is highlighted, and students can click to see and hear the definitions. At the end, there is a Table of Contents and a Glossary of the new/difficult words. Rourke eBooks are excellent to introduce, teach and reinforce concepts on both the interactive whiteboard or on the computer. Hard copies of the books are also available for follow-up and carry-over. Check the website for more titles and watch DISK-overies for reviews of new ones, as they are published.

AlphaTales Interactive eStorybooks (Scholastic: www.scholastic.com) This is a wonderful and delightful collection of 26 animal eBooks that are read aloud – one for each letter of the alphabet. Designed to build phonemic awareness and letter recognition, each of the 26 alliterative storybooks centers on an animal with the designated letter. In addition, each eBook has other activities, including a rhyming cheer, a picture search and a writing activity. They all are designed to be used with an interactive whiteboard. The included Teaching Guide has a step-by-step routine for systematic instruction with quick assessments, as well as reproducible mini-book versions of the eStorybooks, and reproducible letter-writing practice pages. The CD also includes PDF files of all the mini-books and the letter writing practice sheets.

Newmark Interactive Nursery Rhymes and Songs Theme Set (Newmark Learning: www.newmarklearning.com) Designed to help build foundational reading skills, this new set of eBooks from Newmark Learning is for PreK-K and contains 12 CD-ROMs with 48 eBook nursery rhymes and songs in 12 popular themes (Farm, Baking, Let's Play, Family, etc.). They can be used on computers (Mac and Windows) or on SmartBoards.

Each nursery rhyme and song is presented, read aloud or sung as text is highlighted, and followed by four activity pages that are also read aloud. These include Word Match, Find It, Sound Match and Word Scramble and introduce and teach concepts about print, phonemic awareness, sight words and vocabulary. Included also are a set of reproducible activity books – one for each theme – with 240 interactive literacy activities. There is also a comprehensive Teacher's Guide with excellent activities and suggestions on how to enhance the learning and establish a Home/School Connection. Programs are correlated to Common Core Standards.

Newmark Interactive Folktales: Jump Into Genre Leveled Books: (Newmark Learning: www.newmarklearning.com) The use of folktales in early education is a great way to appeal to children while also communicating focused messages and helping them understand different ways to deal with life situations. They are also a way of preserving culture and tradition, increasing multicultural and global awareness and fostering imaginations. This new collection of multi-genre eBooks and folktales contains 12 CD-ROMs that play on any computer or whiteboard. Each has a folktale belonging to one of six genres: Fables, Myths & Legends, Trickster Tales, Fairy Tales, Pourquoi Tales and Tall Tales. The Grade 2 set, for reading levels J-M, includes The Lion and The Mouse, Paul Bunyan, Why the Sky is Far Away, Medusa, Rapunzel and more. The Grade 3 set, for reading levels N-P, has Pandora, Kanchil and the Crocodiles, The Ugly Duckling, How Rabbit Lost His Tail, Pecos Bill and more. Each of the 12 16-page eBooks is read aloud with highlighting, and includes music and sound effects. Three activities follow each tale to teach and reinforce comprehension, vocabulary and genre understanding. Included also are mini-books of each of the stories and a Teacher's guide.

Daily Summer Activities Series (Evan-Moor Educational Publishers: www.evan-moor.com) This series is a great idea – it's filled with daily lessons to help the transition from one grade to another and to practice and maintain skills during the summer. There is practice in many areas of learning, and it is available in eight different versions. The series is available as an eBook, so it gets downloaded and used at the computer. Using the built-in Typewriter Tool, answers and writing gets inserted directly into the PDF file. It can also be used on the whiteboard during summer sessions or at the beginning of the new school year for review. **Moving from K- 1st Grade** includes Language Arts practice (be-



Daily Summer Activities (Evan-Moor Educational Publishers: www.evan-moor.com)

ginning and ending sounds, short vowels, short stories for comprehension, spelling words) and Math practice (counting by 1-5-10, reading numbers, addition and subtraction facts to 9, pennies and nickels.) **Moving from 1st to 2nd Grade** has Language Arts practice (fiction and nonfiction story for comprehension, work on capitalization-punctuation, handwriting, creative writing, spelling), Math (addition and subtraction, word problems, counting, two-digit addition and subtraction without borrowing and carrying) Language skills (alphabetical order, contractions, nouns and verbs, synonyms and antonym, and vowel sounds) and Beginning Geography (map symbols, reading simple maps). Other volumes, one for each transition through 8th grade, include more complex learning activities in these same areas, as well as cursive handwriting practice, creative writing activities, practices cards for multiplication and division facts, sentence editing activities, critical thinking activity and keeping a reading log. Each of the books includes two pages a day for 10 weeks. There is an answer key at the end of each book.

Read & Understand with Leveled Texts (Evan-Moor Educational Publishers: www.evan-moor.com) Another eBook series, this one is for reading comprehension and comes in seven different levels, one for each grade, K through 6. They can be used on the computer or the whiteboard, using the typewriter tool to enter words and answers directly into the file. Each grade has 25 stories with assigned reading levels, reproducible activity pages for practicing compre-

hension, vocabulary and other reading skills. The reading selections cover a variety of engaging fiction and nonfiction topics. Picture dictionaries and word lists help introduce new words. All activities correlate to state standards.

The Kindergarten book is best used by reproducing each story and making booklets for individual students. These booklets can be used to read to the group, have small groups read together or have individual students read independently. In addition, the printed books can be brought home for carry-over. The stories support Guided Reading levels A, B and C, with text ranging from simple words that name pictures (for pre-readers) to short sentences (for emergent readers). Many of the pages have cut and glue activities, circle the picture, draw lines between related pictures, and drawing. The story can be projected onto the whiteboard to introduce and review it. The **Grade 1** book has guided reading, levels C-H, with 25 stories and follow-up activities that strengthen comprehension and vocabulary skills. These stories can also be printed out and turned into mini-books and include numerous activities. **Grade 2** has 25 stories on Lexile Levels 330-480, with follow-up comprehension activities. Although it still has some glue and paste activities, most of the stories and activities can be reviewed or completed on the whiteboard or computer, using the typewriter tool. Other pages cover

reading skills. **Grade 3** has 21 stories on Lexile levels 480-710, including fairy tales, folk tales, realistic fiction, nonfiction and poetry. Five pages of reproducible activities follow each. The comparing texts section guides students in making text-to-text connections related to two different texts already read and discussed. The students are presented with questions that show similarities and differences in theme, plot and characters from two different stories. **Grade 4** has 21 stories on Lexile levels 570-860, including fiction, realistic fiction, nonfiction, folk tales and poetry. Some new skills stressed in follow-up activities also include prediction, summarizing, organizing, applying related knowledge, characters/setting, personification, imagery, root words and writing personal narratives. There is also a comparing texts section. **Grade 5**, Lexile levels 720-970, includes 21 stories of fiction, realistic fiction, science fiction and nonfiction, biographies and folk tales. Some new skills stressed, in addition to others from previous grades, include similes/metaphors, parts of speech, alphabetical order, exaggeration, point of view, genre study and spelling. Grade 6, Lexile Levels 800-1100, has 21 stories that include fiction, realistic fiction, historical fiction, nonfiction, biographies and folk tales. This is an excellent group of ebooks that can be projected on an interactive whiteboard and can be printed out for individual and group use. It contains helpful teaching suggestions and provides a really excellent se-

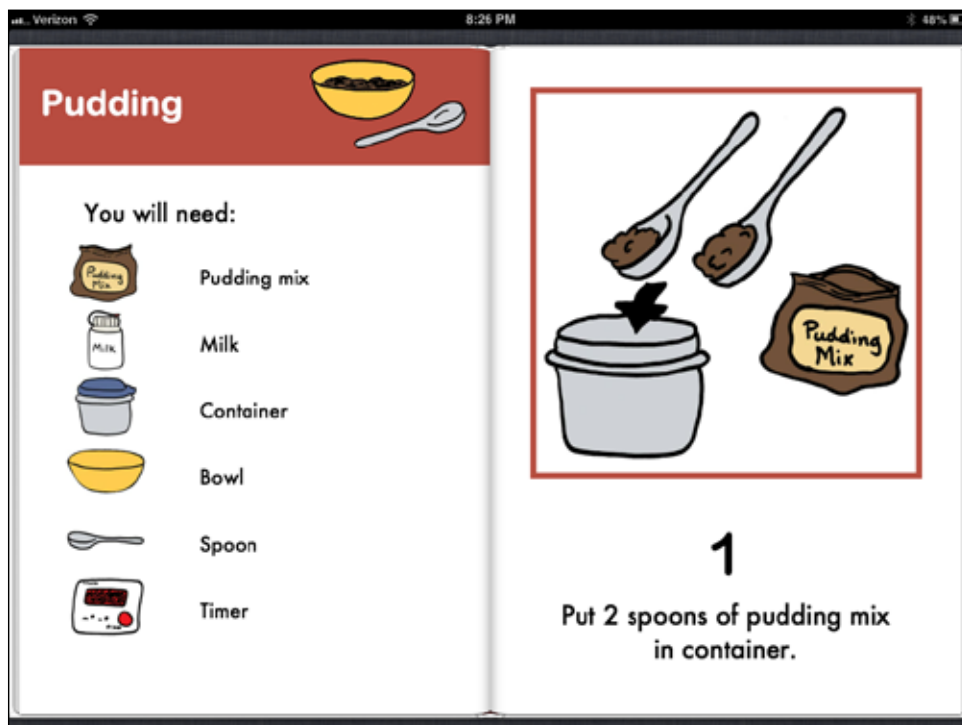
lection of reading material that is interesting and highly motivating to students, with fun and challenging follow-up activities that address major skill areas for each grade.

Daily Reading Comprehension Grades 1-8 eBooks (Evan-Moor: www.evan-moor.com)

Correlated to State and Common Core Standards, each of these books contain 150 fiction and nonfiction passages and 30 weekly units with lesson plans and reproducible student pages. The pages of the eBook can be projected onto an interactive whiteboard or individual pages can be printed out for individual work. They can also be used on a computer using the built-in Typewriter Tool that lets students type in their answers in the appropriate spaces. Each week of the 30-week plan includes a focus on comprehension strategies and skills. For Grade 1, comprehension skills include main idea and details, who-what-where-when, compare-contrast, sequence, prediction and others. Language development skills include phonics, sight words and word meanings. For Grade 2, comprehension strategies include making connections, visualization, organization, determining important information, asking questions and monitoring comprehension. Comprehension skills include main idea and details, sequence, cause and effect, fact and opinion, compare and contrast, making inferences, prediction, character and setting, fantasy and reality, author's purpose, nonfiction text features and visual information. Grade 3 and up have similar structure with additional skills and strategies, such as theme, character and setting, nonfiction text features, evaluate evidence. Other comprehension skills and strategies continue from first to eighth grade, with increasing complexity and detail.

Writing Fabulous Sentences & Paragraphs, Grades 4-6 eBook (Evan-Moor: www.evan-moor.com)

This eBook contains guided lessons on how to improve sentences and paragraphs, all correlated to State and Common Core State Standards. Scaffolded lessons and activities progress from single sentences to paragraphs and then to multiple paragraphs. The material in the book can be used on an interactive whiteboard, on a computer with the Typewriter Tool or printed out as individual pages. Specific lessons and activities include practice in combining sentences, constructing super sentences and using figurative language. There is practice in recognizing the main ideas, topic sentences, support details and unnecessary information within paragraphs. Activities are also provided on how to organize information within paragraphs, as well



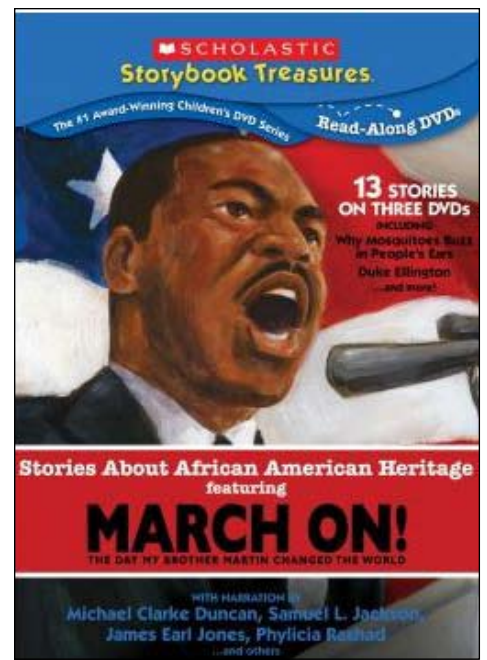
Attainment's Picture Directions (Attainment: www.attainmentcompany.com)

as writing narrative, descriptive, persuasive, compare and contrast, how-to and definition paragraph forms. There are excellent activities on organizing details into paragraphs, as well as finding sentences within a paragraph that don't belong.

Attainment's Picture Directions eBooks (Attainment: www.attainmentcompany.com) These new eBooks are downloaded directly to your iPad and available for reading through iBooks. Text is read aloud as each word is highlighted. The goal is to help students follow picture directions in sequence in order to complete activities independently. In addition, the use of the written words paired with the illustrations may be helpful in the learning of sight words. Three eBook volumes are available, each with checklists of needed items and step-by-step directions: **Picture Directions 1: Cooking** contains a checklist of needed items and step-by-step directions. Some of the 15 cooking activities are Orange Drink, Chocolate Milk, Peanut butter Sandwich, Cereal and Pudding. **Picture Directions 2: Arts and Crafts** has 19 activities, such as Greeting Card, Fan, Playdough and more. **Picture Directions 3: Life Skills, Play Skills and Discovery** includes seven Life Skills, including Folding Washcloths, Photo Album, Sending a Letter and others; five Play Skills, including Potato Head, Lego Car and Dressing a Doll; and four Discovery activities, such as Disk Garden, Bird Feeder and Planting a Seed. Following these picture directions helps teach the idea of sequencing, recognizing numbers, using left-to-right and top-to-bottom progression and reading skills. Additional follow-up activities can be used to reinforce concepts. Activities in the books are divided into two areas – fine motor and cognitive. Each of the activities is then rated as Beginning, Intermediate or More Advanced, depending on fine motor skills and cognitive skills that are required. This is a helpful guide in selecting activities that utilize the child's strengths to build more independence. A PDF Instructor's Guide can also be downloaded and contains many teaching tips for each activity. (Picture Directions is also available as a spiral-bound book, in color or in black and white. Included with the book is a CD that includes a PDF of the book so that pages can be printed out.)

Scholastic Storybook Treasures (Scholastic: newkideo.com) eBooks at their finest! These award-winning children's videos are based upon favorite classic children's literature and can be viewed as books on the computer, on a SmartBoard or on a TV or DVD player. All stories are read aloud with

story illustrations and Read Along text (optional), which highlights the words as they are read and are excellent ways to promote early literacy. Some new and outstanding Scholastic Storybook Treasures include the following: **Stories About African American Heritage** contains 13 stories on three DVDs: *March On!* Contains the personal stirring account of the day Martin Luther King Jr. delivered his "I Have A Dream" speech, along with a biography of Dr. King, a story about Rosa Parks, and Henry's Freedom Box, the true story of a young slave who mails himself to freedom. There are also interviews with the authors of the books. The second DVD included is Duke Ellington, with stories about Duke Ellington, Ella Fitzgerald and John Henry, along with a poetic tribute about growing up amidst many of the great figures in African American history. The third volume, *Why Mosquitoes Buzz in People's Ears*, contains five African folk tales. This collection supports history, friendship, music, appreciation and self-confidence. Another fun collection, for younger children, is **Max's Chocolate Chicken**, with 3 DVDs also, including *Chicken Little* and *The Red Hen*. There are a total of 12 stories on these DVDs that support feelings, friendship and problem solving. Some of the stories are *The Great White Man-Eating Shark*, *Dooby Dooby Moo*, *Max's Christmas* (in English and in Spanish), *Otto Runs for President* and *Bread Comes to Life*. Some fun single DVDs from Scholastic include **Stone Soup and other stories from the Asian Tradition** (including *The Five Chinese Brothers*, *Lon Po Po* and *The Stonecutter*) with interviews with *Stone Soup* author. This DVD has themes that support generosity, community and caution. **Bink & Gollie**, from the author of *Because of Winn-Dixie*, contains other stories too: *A Sick Day for Amos McGee*, *The Other Side* and *Cat and Canary*, as well as interviews with all the authors. These stories are about friendship, tolerance and respect. Some more fun books from Mo Willems are here. **Don't Let the Pigeon Stay Up Late ... and more stories by Mo Willems** contains the title story about the pigeon who just won't go to bed, along with *Knuffle Bunny Free* (a trip to Holland to visit grandparents, but *Knuffle Bunny* has different plans); and *Edwina, The Dinosaur Who Didn't Know She Was Extinct*. *Children Make Terrible Pets ... and more stories about family* is a collection of four fun stories: **Children Make Terrible Pets** (a bear brings a little boy home); *All The World* (a circle of family and friends through the day); *Crow Call* (a father away at war and his daughter reconnect) and *Elizabeth's Doll* (a new baby brother arrives).



Scholastic Storybook Treasures (www.newkideo.com)

HELPING STRUGGLING READERS AND WRITERS

Clicker 6 (Crick Software: www.cricksoft.com) Clicker is a comprehensive literacy tool for learners of all abilities and is helpful for developing both reading and writing skills. Clicker is a talking word processor with word prediction. Children can type in their writing assignments (letters, sentences, paragraphs, more complex documents, etc.) and hear letters, words and sentences read aloud as they are writing. Individual words, the entire document or highlighted selections can also be read aloud. You can also use Clicker 6 for assisted reading activities. Just copy and paste the reading assignment into Clicker, highlight and select the Read option to hear the entire passage read aloud. You can select different voices and also select a slower speed to help with auditory comprehension. Other features include the ability to automatically capitalize the first letter of sentences, automatically capitalize proper nouns and check spelling as you type. The Word Predictor list displays six predicted words, predicts the next word before any letters are typed and can be selected either with the number keys or the numeric keypad. In addition, Clicker 6 gives you the option of creating grids and word banks that struggling writers can use to assist them in writing more independently. Clicker Grids provide instant point-and-click access to words, phrases and pictures, all supported with speech. They are easily created and saved and then edited, if necessary, for future activities. You can create subject-specific word banks for specific

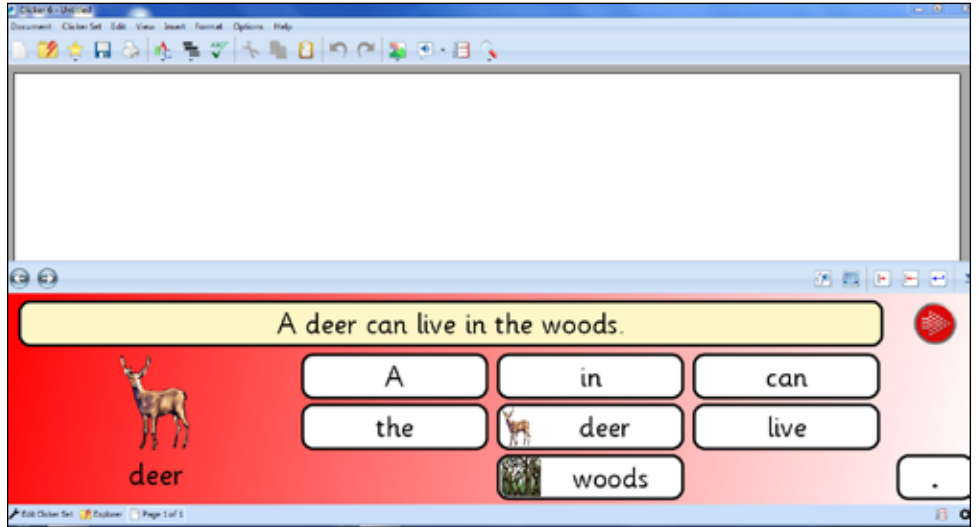
curriculum areas and expand a student's use of more complex words. Grids can even be customized for different users. Picture banks can also be used to support curriculum, using pictures from the Crick Library or your own digital photos. Symbols are also available separately. Another unique feature of this program is the "Click & Edit Books," which allows students the opportunity to create presentations containing pictures, text and sound. They can write in the text area, draw a picture (or use Clicker Paint, which is now fully integrated into Clicker) or add a photo, narrate their story with their own voice and play for the class or print out the picture. They can add additional pages, as well. Many free resources are available and include hundreds of ready-made Clicker Sets for elementary curriculum topics. If you visit the website, you will be able to see handouts, videos and webinars that will help you create motivating and creative templates. There is a series of 90-second videos to help you create a wide range of activities, using words, pictures, drawing tools, etc. In some, you just click the pictures you want, tell the computer what you want to do (i.e. match picture to word) and Clicker creates the activity for you. Clicker is fully switch accessible and offer high contrast color options for users with low vision. In addition, Clicker 6 has a Mouse Dwell option, which is helpful for those using joysticks, trackballs and eye-control devices.

ClozePro Version 2 (Crick Software: www.cricksoft.com) Cloze activities (fill in the blank with word banks) are an excellent way to improve vocabulary and reading comprehension, as well as creating an assessment tool evaluating student progress in any subject area. With ClozePro, you can create a cloze activity from any text in just seconds. You just type or paste in the text you want to use, choose the words you want to remove and you are ready to go. The text you removed is placed automatically into a grid creating a word bank. You can also have a pop-up window that appears when you click on the gap (good for older students). You can even hide the grid completely so that the student uses the keyboard to type into the gaps. Work can be done on the computer, at the whiteboard or worksheets can be printed. You can remove whole words, phrases, parts of words or even individual letters, depending on what your goals are. You can even have pictures in the blanks, from the Crick Picture Library 2 with over 1800 graphics. All text can be read aloud with male or female voices from Acapela. While an activity is being completed, a report is automatically gen-

erated. ClozePro is switch accessible. Crick Software also has ready-made ClozePro activities available online for downloading. It supports learners of all ages and abilities. For more detailed information about ClozePro, see the Crick Soft website (www.cricksoft.com) ClozePro Version 2 is both Windows and Mac compatible. The current System Requirements can be found at <http://www.cricksoft.com/us/products/tools/clozeopro/system.aspx>.

IPAD ACCESSORIES FOR WRITING/TYPING

TacType Keyboard (RedTree Gear: www.redtreegear.com) Because you can't rest your fingers on the keys of the virtual keyboard on the iPad, you are prevented from touch typing, which makes typing faster and more accurate. The TacType Keyboard, an overlay for the iPad's built-in virtual keyboard in landscape mode, makes touch typing possible. It is a plastic frame with clear rounded capacitive "domes" above each key. When you touch the key, there is a physical response and you can hear the click, too. It



Clicker 6 (Crick Software: www.cricksoft.com)



TacType Keyboard (RedTree Gear: www.redtreegear.com)

stays in place using a sticky backing, yet it can be applied and removed repeatedly with no difficulty. The TacType is thin enough so that you can close the Apple Smart Cover without removing it. It is available in white or black and supports the default US English keyboard. For those with fine motor problems, it offers tactile and positioning cues and allows fingers to rest on the keyboard without initiating keystrokes. For stylus users, the raised plastic keys can work like a keyguard to help with targeting. (TacType was originally called iKeyboard).

Wacom Bamboo Stylus (Wacom: www.wacom.com) The Bamboo Stylus series is great for writing on tablets and mobile devices with capacitive touch screens. With simple shapes, satin textured metal bodies and a narrower tip than others, they are great for writing and drawing. The Bamboo Pocket can be expanded to full size or used in its shorter form. It comes with two nibs – one firm and one soft – for different effects in writing, drawing and painting. With interchangeable color rings, you can also “personalize” the stylus. A strap with headphone

jack is included so you can connect the stylus to your headphone jack so that you don't have to worry about losing it. The Bamboo Stylus Solo has a tip that is 25 percent narrower in diameter than most popular styli, bringing a more precise way to take notes or to sketch. Both are good for handwriting notes, highlighting text, editing documents, drawing, sketching and more. Try some of these apps for even more success: Bamboo Paper, Penultimate for note taking and Autodesk Sketch Book Mobile for sketching.

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	
Inspiration Software (www.inspiration.com)		
Inspiration Maps	*	Students create diagrams, maps and organizers – great for brainstorming ideas, analyzing information, organizing writing, taking notes and studying for exams. 30 templates are included. Diagrams convert to outlines with a tap, contains detailed help and tips for creating and managing documents and diagrams. Available also in UK English, French and Spanish. A must for older visual learners. Great for learning to outline.
TextHelp (www.texthelp.com)		
iReadWrite		Text to speech with highlighting, word prediction(double tap or swipe to insert), phonetic spell checker, homophone and confusables checker, built-in dictionary reads definition aloud (long tap) and Picture Dictionary. Choice of voice and fonts, documents can be imported and shared. User Guide on the website. Excellent comprehensive talking word processor with word prediction and many more features.
Quillsoft Ltd. (www.goQsoftware.com)		
iWordQ US		Assisted reading and writing application – Writing mode: talking word processor, word prediction, usage examples, abbreviation-expansion, speech feedback, spell-check, dictionary, select WP position, font size. Speech recognition with an iPad 3, 4, mini. Reading mode reads highlighted sentences, paragraph, etc. Print, email, send as attachment or send as IM. Also available in Canadian English, UK English, French Canadian and European French. Another great talking word processor with additional word recognition features.
Don Johnston Inc. (www.donjohnston.com)		
Co: Writer		Another great talking word processor and word prediction software for the iPad – based on the excellent tools from Don Johnston, dating back to the Apple II. Speaks letters, words, sentences and entire document; grammar-smart word prediction. Contains main dictionary (core, basic, beginning, intermediate, advanced) as well as Topic Dictionaries and can access unlimited topic-specific dictionaries that are activated based on the writing task. Flexspell technology handles a wide range of spelling mistakes (phonetic spelling, inventive spelling, spelling errors, etc. Can automatically add names from contacts to personal dictionary. Separate versions for British English and Canadian English.

Crick Software (www.cricksoft.com)		Excellent products that all work together to enhance reading, spelling, vocabulary, writing skills! Apps for iPad, software for computer.
Clicker Sentences		Create sentence building activities – enter sentence to produce a grid with all the words – students tap each word to create the sentence in their document. Full speech support. Can also display the completed sentence as a model on screen or as a pop-up. Picture can be added to sentence. Set up sequence of sentences to make a paragraph on topic. Great for young students just learning or for older who can benefit from using scrambled sentences to work on linguistic and word order skills. Print out, use free LearningGrids sentence sets.
Clicker Docs		“Elementary school word processor with lower case on-screen keyboard and built-in word processor. Word Banks easily created and can be available to provide reading and vocabulary support. Choose font, voice, speed of speech, speak letters, words and/or sentences, number of words to display on word processor, spell checker, high-contrast color schemes, word bank grid. Access LearningGrids to see word banks created by Crick- new resources added frequently. Clicker Docs and Clicker 6 are able to “talk” to each other so work from one is available on the other.”
Write ONLINE App		Talking word processor and word prediction for secondary school students – word predictor suggests age-appropriate vocabulary based on context of writing. Can be programmed with speech-supported Wordbars to provide vocabulary support for any subject or topic. Options include: font and size selections, background color, choice of voices and speech speed, speak letters, words, and/or sentences, spell checker, word count. Can email or print documents.
Richard Dressler (www.totaltechware.com)		
iRecognize	*	Great app to create exercises to improve comprehension of vocabulary, recall of names, listening skills and more. Included LARK pictures can be used or your own photos, imported pictures. Create custom text and recorded audio label. Report for each session is generated. Good to use to practice the recall of names and faces, or to target a specific skill you are working on (sight words, spelling, vocabulary, familiar places, matching skills, etc.) User guide is available.
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
Bryon Barton Collection	A	Four apps in one – contains four popular transportation-themed stories – Planes, Boats, Trains and Truck. Users can interact with objects on every page, creating their own transportation adventure, Excellent interactive books for ages 2-5.
Just Me & My Cousin - Little Critter	A	Little Critter visits his cousin - learns it's not always easy or fun, but his cousin saves the day. Great fun for ages 2-5.
I Had Trouble in Getting to Solla Sollew	A	45th Dr. Seuss book app from Oceanhouse – the story's hero is discouraged by all the things that are going wrong. He decides to leave his troubles behind and heads to Solla Sollew – he quickly learns that trying to get away from your troubles can lead to even bigger ones. Recommended for ages 3-9. All the features of Oceanhouse books – professional narration, words are highlighted, audoplay mode or read page by page, record your own voice and share.
	*	Oceanhouse has many free apps to try.

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Technology Trends: iPad Use and Autism

Best Practices for Fostering Social Communication in Early Childhood Special Education Settings

The Rise of eLearning in Autism Intervention Using the iPad

The iPad has become a real game changer in the world of special education in terms of true assistive technology integration and fostering self-regulation in children with autism and other special needs. Special educators have long been concerned about bridging the gap between readiness to learn and actual performance, which is crucial for social communication development. With the IDEA revisions of 2004, which federally mandated a behavior intervention plan as part of each student's IEP, there is increasing interest in methodically documenting and facilitating social communication development for children with challenging behaviors, particularly autism. Social skills development can be a slow, splintered and challenging process for young children with ASD. Service providers need to integrate social communication goals into treatment for more developmentally appropriate,

multi-sensory and functional "teachable moments." Research shows that children with autism appear to develop splintered acquisition of language skills and demonstrate "situation specific performance." These children also tend to be visual learners. A unified, methodical team approach is needed to collaborate on starting points for remediation and best practices in eLearning regarding intervention using an iPad. Children with autism can greatly benefit from iOS app-based lesson plans to facilitate self-regulation and language development involving "whole body" learning, emphasizing the visual modality. Why the visual modality?

The Importance of Visual Supports in Autism

There has been a noticeable rise in diagnosis of autism and autism spectrum disorders (ASD), resulting in new guidelines and revisions in the DSM-V (Diagnostic and Statistical

Manual-Fifth Edition), which was published in May 2013. There is increasing interest to find evidence about how to effectively treat children with ASD using technology, particularly iOS apps. Much research has already been done on the benefits of visual supports to treat children with ASD and challenging behaviors. There are now many known and proven benefits and ways to use visual supports for behavior management, starting with augmentative alternative communication (AAC) devices and the Picture Exchange Communication System (PECS), to teach less verbal or nonverbal children to express wants/needs instead of acting out (communicative intent). Recently, there have been a rising number of school-wide initiatives to introduce visual supports, through eLearning, into curriculums and best practices. The implications of how the very nature of eLearning aligns with the visual learning style seen in so many children with autism can no longer be ignored. From TEACCH to PECS, from basic visual



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supports using the old standby “If ... Then Contingent,” to Linda Hodgdon’s Visual Strategies™ Program, it has been determined that many children with autism appear to be visual learners. It has been proposed that the use of the visual modality when implementing IEP goals and lessons greatly facilitates comprehension, self-regulation and generalization of learned skills. Roa and Gagie (2006) compiled a list of why visual supports are so crucial to support success, in both self-contained and mainstreamed/inclusive settings, and self-regulation within familiar and unfamiliar or challenging environments. In my Socially Speaking™ Seminars, I spend time discussing the benefits of using visual supports, and not fading them, for these purposes:

Benefits of Visual Support Integration Into Treatment of Children with ASD:

- They are part of everyone’s communication system (universally understood)
- They can attract and hold a child’s attention (focus and time on task – TOT)
- They enable the child to glean the message and reduce anxiety/fear of the unknown or unexpected (behavior management)
- They make abstract concepts more concrete for the child (orientation to person/place/time)

According to Hodgdon (2000), visual supports, such as visual schedules, transition helpers and rules reminders, when implemented correctly, allow children with autism to more freely navigate and make sense of their environment and those in it. According to Roa and Gagie (2006), “Visual supports help bring in structure, routine and sequence that many children with autism require, in order to carry on their daily activities.” Dalryaple (1989) found that, in addition, visual supports can help children with autism, many of whom have difficulty understanding social communication cues, such as gestures, facial expression, body language and prosody/inflection.

Visual supports thus facilitate better orientation to person/place/time, including transitioning and self-regulation. These areas are often challenging for children with autism, resulting in fluctuating performance, inconsistent carryover of learned skills, situation

specific learning and ritualistic behaviors. It is therefore imperative that some type of visual support be introduced into therapeutic regimens for children with ASD, from the beginning, to “set the stage.” To provide systematic, static cues for the child to decipher, retain and recall, in order to clarify the environment, clarify expectations for how the child needs to perform in said environment and increase comprehension and use of the overall target vocabulary needed to learn about said environment. This will enable the child to develop more age-appropriate behaviors and performance in school, at home and within the confines of the community.

Special education best practices, today, include well-known programs to help these children with autism, who tend to be visual learners and display social communication challenges. The reader is invited to peruse this article’s bibliography for more information. In a nutshell, here is the basic list of reputable programs:

Therapeutic Techniques Implementing Visual Supports

1. PECS (Bondy & Frost)
2. TEACCH (Schopler)
3. Social Stories (Gray)
4. Visual Strategies (Hodgdon)

An in-depth review of these techniques can make for a whole other article, but it is important for readers of this article to know the power of visual supports. Visual supports using one, a combination or all of the above programs provide better mental organization and predictability, increased understanding of expectations, greater awareness and adaptability to changes in routine, and increased ability to make choices and promote independence, all of which can be taught and internalized via eLearning.

So, if eLearning makes use of the visual modality and there are so many mobile technology devices to choose from, why do I specifically recommend the iPad as the ultimate secret weapon in a special educator’s arsenal?

Implications for Developmental Integration of iOS Apps into Treatment

The iPad is a singularly unique tool for today’s special educators to wield when implementing IEP goals for children with ASD, no matter the domain or setting. The underlying features and the intrinsic iOS architecture support learning using multiple intelligences, support principals of Response to Intervention (RTI), and support the framework for Universal Design for Learning (UDL). An iPad is visually accessible, adaptable, socially appealing and has an easy-to-navigate user interface. Its use is predicated on the execution of time-sequenced movements, which facilitates both “muscle memory” and motor planning. Its user interface fosters comprehension of time passing and the If...Then Contingent, which is a cornerstone of self-regulation. The ability to activate/deactivate/transition between apps and the intrinsic reinforcer nature of “whole body learning” using these apps promote learning, episodic memory and attention span, aka time on task (TOT).

The use of an iPad spurs a “teachable moment” or string of them, rife with opportunities – opportunities for children with autism to more naturally and sequentially learn target vocabulary/concepts while simultaneously engaging in the repeated practice of behaviors – desirable behaviors that promote attention, causality and problem solving. These are all part of the umbrella of executive function skills, which many of these children have difficulty with. It results in the social communication challenges so often seen at home or in school, especially when faced with unfamiliar or undesirable tasks.

So iPad integration into eLearning experiences is not just about alternative-augmentative communication (AAC) for non-verbal or verbally limited students. It is also not just about “going green,” i.e. sustainability, or behavior management, i.e. reinforcement. Developmental integration of iOS apps into treatment is about methodically filling, and later tapping into, the child’s episodic memory banks, using the five senses, with emphasis on the visual modality, to teach these children how to learn, and how to actually help themselves. How to recall vocabulary associated with specific events (that is essentially the definition of episodic

memory) and how to adapt and self-regulate, when organic, i.e. biological and/or environmental, triggers cause disorientation to person/place/time.

But like any tool or toy, an understanding of developmental milestones and language development helps the special education service provider know which app to use when. A review of Piaget's Sensorimotor Stages, social communication development stages and play skills development stages are beyond the scope of this article. The reader is invited to peruse Robert Owens Jr.'s Language Development: An Introduction 8th Edition, The Westby Play Scale © 2000 by Dr. Carol Westby, and my iPad app, The Socially Speaking Assessment Protocol For Social Communication © 2012, for further information. What is important for special educators to realize is that:

- There needs to be a universal way to assess which iOS app is actually worth buying
- There needs to be a developmental hierarchy to consider when introducing specific iOS apps into treatment at specific junctures in time.

To that end, I have developed an Assessment Rubric for iOS Apps, which I would like to share at the end of this article (Appendix). I would also like to share my Socially Speaking™ Framework for iOS App Integration, which are suggested guidelines I have created for curriculum development. It is based upon the clinical research I have read, the extensive treatment I have provided to a diverse population of special education students with autism/special needs for twenty years and the informal research I have conducted through myriad conversations with my varied, educated, professional and technologically-inclined seminar audiences around North America these past two years. I have seen that there are a plethora of special education service providers and parents of children with autism and ASD trying to make sense of emerging tech-

Socially Speaking Framework for iOS App Integration for Social Communication Proficiency in Early Childhood Special Education:
Facilitation of Behavior Management: Visual Supports Hierarchy
Photo Apps
Flashcard Apps
Drawing Apps
Social Story Apps
Facilitation of Orientation to Person/Place/Time
Person:
Body Awareness, Theory of Mind and Emotional Attunement: Photo, Flashcard, and Drawing Apps, Farm/Animal Apps
Place:
Self-Regulation: Visual Schedules created from Camera/Photo Apps and Social Story Apps
Spatial Relationships: virtual worksheets created from Drawing Apps and specific iOS apps teaching prepositions
Time:
Language Development and AAC Apps to teach Executive Functioning, pre-literacy concepts and communication skills
Expressing Feelings Apps (labeling feelings, story books, and wh? questions)
Transitioning Tasks Apps (sequencing, turn taking, fast moving games)
Problem Solving Apps (wh? questions, games, categorization, building/puzzle apps)
Multimedia Apps (camera/photo, story and music based) to foster episodic memory

Figure 1

nology trends, new service delivery regulations and new information regarding best practices for assessment and treatment using educational technology.

I have found that it is crucial to keep in mind both play and pre-literacy milestones, and cross reference them with psycho-social milestones, to gain a clearer picture of baseline data and which materials will cognitively and emotionally resonate with a child when implementing IEP goals and specific lesson plans. The way a child interacts with a toy, an app or even the adult engineering the "teachable moment" speaks volumes. It provides a window into the child's "inner

landscape," i.e. Theory of Mind and Executive Functioning, especially when treating a young child with autism. These two metacognitive, neuropsychological processes are often underdeveloped in youngsters with autism and are often at the root of their behavioral issues and reduced self-regulation. Increased Theory of Mind and increased Executive Functioning are required for social communication proficiency, the Socially Speaking Trifecta of Goals my Socially Speaking Social Skills Curriculum © 2010 is based on: Body Awareness, Expressing Feelings, and Problem Solving.

So how do I integrate social communication goals into my other IEP goals while introducing iOS apps at designated intervals in treatment? By following these basic formulas:

Visual Support Apps + Real Time Play = Increased Theory of Mind + Self Regulation

Pre-Literacy Apps + Social Communication Apps = Increased Executive Functioning

Conclusion

At the end of the day, we want children with autism to integrate into family and community life as much as possible, given their individual status. We want to provide intervention, whether concrete or abstract, whether physical or digital, to help these children better orient to person/place/time and transition from being a Me to a We, as needed. Structured teaching provides a predictable environment for children with autism to increase social communication proficiency and decrease the frequency and duration of tantrums, i.e. outbursts, not following directions and stereotypical behaviors (Blubaugh & Kohlmann, 2006; Savner & Myles, 2000). Best practices today involve structured teaching, which can implement both visual supports and eLearning with an iPad.

However, we need to think of the iPad as more than a viable AAC device, a plaything to be used for reinforcement or a live demo of target vocabulary. iOS apps, by the way they operate, go beyond simple social communication and into the realm of Executive Functioning and Theory of Mind. These are two neuro-cognitive processes that are needed for people to transition from being a Me to a We in different settings.

The introduction of visual supports in treatment thus needs to also go beyond PECS, which is often the first line of defense in a special educator's game plan for children with autism. Visual supports, whether via eLearning one's own visual schedule with digital photos or drawings or completing a task in sequence with a specific iOS app, are an integral ingredient in the treatment of young children with autism who exhibit challenging behaviors in different settings. In truth, teaching with an iPad actually capitalizes on the visual strengths and penchant for routine, seen in many children with autism and ASD. Previous research supports the use of visual supports to improve transitions between activities, increase time on task and independent completion of tasks, and increase compliance. It is just a matter of time before current research unequivocally and definitively supports the use of an iPad to do the same.

The TEACCH Program, one of the first documented (since the 70s), researched and implemented visual support approaches used in the special education community, gained such momentum because it empha-

The Socially Speaking™ App Assessment Rubric					
By Penina Rybak MA/CCC-SLP, TSHH © 2012 Socially Speaking LLC, All Rights Reserved					
Score: (25 or higher makes it a worthy purchase)					
Desirable Features	Play Skill	Motor Skills	Language Skills	Social Skills	Cognitive Skills
Dynamic / interactive					
Teaches causality through intrinsic use					
Has sound, motivates & reinforces auditory learners					
User friendly: easy to navigate, is intuitive & flexible					
Easy-to-share results: Exports to PDF; Email end products for provider or child					
Fosters creativity and problem solving					
Targets visual learners: customizes photos					
Encourages carryover of ideas and language concepts					
Promotes solutions for targeted behaviors					
Enhances collaboration and cooperation between providers/peers					

sized individual abilities and interests and provided developmentally appropriate modifications accordingly. It took into consideration characteristics of autism that affect the individual (Mesibov, 2006). In my experience, principals of both PECS and TEACCH can be used to holistically counteract disorientation to person and place. The later-invented Social Story and Visual Strategies programs refined the use of visual supports for specific behavior management involving segmentally counteracting disorientation to place and time. I have used all four therapeutic techniques individually, in tandem or as scaffolded approaches, depending on the child's level of cognition and visual acuity. I recommend that both visual supports and iOS app integration be carefully customized and tailored to each child's individual needs.

Customization is the true benefit of iPad use in treatment of young children with autism who display underdeveloped social communication proficiency. The customizable features of each iOS app, the ability to use iOS apps to generalize an individualized blueprint (drawing, photo, audio-recording, etc.) of that child's Theory of Mind status, and the social stature and ease of portability associated with this learning tool all align with some unexpected results. While the child with autism is engaged in learning in real time and processing visual information more efficiently, given his/her learning style, the activity's (beginning/middle/end) execution provides collectible data for the behaviorist in every special educator to analyze and document backwards chaining, fading, physical prompts and shaping/generalization.

It is therefore imperative that a developmental approach to iPad integration be carefully considered. Best practices do not include a haphazard activation of an iOS app to hit a point home at the end of a lesson or provide a reward or respite between lessons. It is crucial for special educators to treat the iPad as another tool, albeit a versatile, multifaceted one, in the toolbox of instruments for best practices, by truly knowing which app to use when. That's what makes the iPad so unique, but dangerous in the wrong hands or in the hands of someone with the wrong mindset. As Dr. Temple Grandin says, "People are always looking for the single magic bullet that will totally change everything. There is no single magic bullet." The iPad experience for children with autism, in particular, can be as educational, meaningful and magical as an informed educator and/or parent makes it to be. It is up to you, even when the iPad is no longer in your hands.

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