DISKoveries

LITERACY FOR SPECIAL NEEDS
The Impact of New Technologies

By Joan Tanenhaus

The concept of literacy, in current times, goes well beyond the simple teaching of reading and writing. We need to consider the foundations that are built in early preschool the need to combine traditional literacy with digital media literacy and the continual integration of listening, speaking, reading and writing, along with skills needed to interact with others and with the environment. Literacy becomes even more complex when we teach learners with special needs, especially those with communication disorders. Following is a wide range of new technology products (hardware, software, Internet resources and testing material) that can enhance the teaching and learning of literacy.

Sparkup Magical Book Reader (Sparkup: www.sparkup.com) This clever and well-designed book reader can be used to read aloud any picture book. It is based on camera technology - place the back cover of a picture book between the back cover clip-on and center it. When you press the start button, the built-in camera scans the picture and then re-

Sparkup Magical Book Reader (www.sparkup.com)

cords your voice reading the page. While recording, you can even personalize the book by talking to the child, asking questions, making comments, etc. When the child returns to hear the book later, it will be read back in the reader's voice and will read each page as the pages are turned. If the child skips pages, so will Sparkup. Beginning readers can record their own voices reading the story and then listen to their stories read aloud. For children with special needs, Sparkup is an easy-to-use device that provides accessibil-
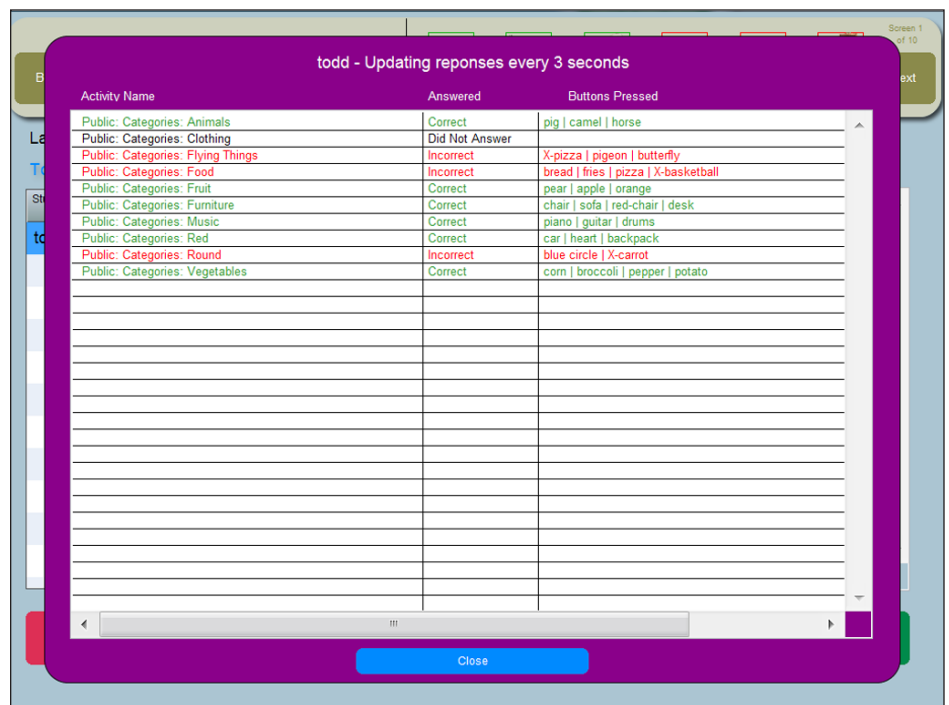
ity to books that cannot be read independently. Good for both home and at school, the auditory-verbal stimulation encourages attention and focus. Sparkup can provide a positive experience with books and a feeling of confidence and independence. Within the classroom, independent book reading experiences can be individualized and customized to each child's needs. Sparkup contains up to four hours of audio and runs on three AA type batteries, with a usage time of up to 30 hours of playback. Stories can

be backed up to your computer, using the included USB cable. In the future, teachers and parents will also be able to download pre-recorded books from the Sparkup website. Currently, it is difficult for Sparkup to read books with text-only pages, like chapter books. See the website for more information and video tutorials about Sparkup.

Classroom Connect (Judy Lynn Software: www.judylynn.com and at the App Store, Goggle Play and Kindle Fire Store) This new program from Judy Lynn Software introduces innovative technology and unique digital applications to literacy and special needs. Designed for early language and early literacy learning, this combination software program/app lets teachers transmit lessons and quizzes from their device (Windows or Mac computer or iPad) to an unlimited number of students' devices (tablets or computers) and monitor students' responses in real time. Students log in from anywhere there is Internet access (home or school) and then the teacher can send individualized lessons or quizzes and receive and monitor the students' responses, also in real time. The app comes with a variety of sample lessons and a library of over 400 pictures, and teachers can also create their own customized lessons and quizzes and upload additional graphics from the Internet or from their own graphics collections. Examples of lesson types include "information screen" (i.e., Food is what people and animals eat - six pictures of food items) and "question screen" (i.e., Choose the objects that are food - six pictures of food and non-food items; Choose the picture that is UNDER the dog; Which clock shows 5:00; 6+1 = ; etc.). Screens are transmitted either as Lessons (one page at a time) or as a Quiz (groups of pages with arrows to advance and go back). A Help button is present on all screens and it notifies the teacher that the student indicted help is needed. Accessibility options located on the student app allow students to use single switch auto scanning and two-switch step scan-

Classroom Connect Student (www.judylynn.com)
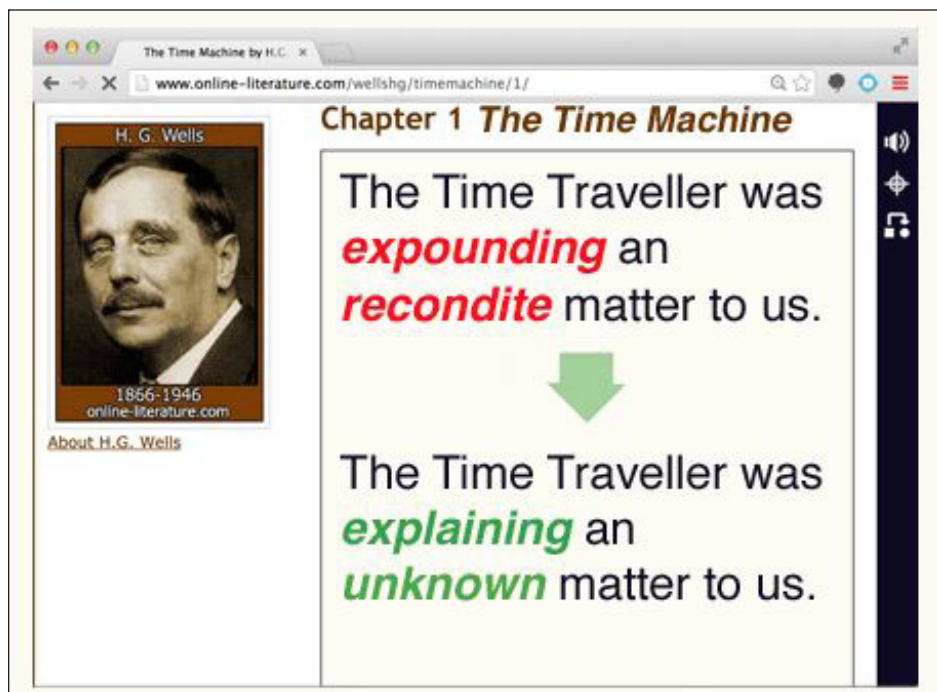

Classroom Connect Teacher (www.judylynn.com)

ning. (Switch interface required.) Text-to-speech and switch access is available on the Mac and Windows versions, but currently not on the tablets. Data sent to the teacher includes the name of the activ- ity, the students' responses and buttons pressed. This information is collected and saved from the last 100 sessions and can be emailed or printed to keep for future use. Customized lessons can be

shared with other teachers. An on-screen comprehensive User Guide is provided within the app. Classroom Connect has a free student app and a free teacher's app (lite) that let you use the program with some of the sample lessons - download on two different devices, transmit lessons, do the activities and watch the data appear. With the free version, you won't be able to create your own lessons, but you will be able try the program with some of the ready-made samples and experience the new technology and see how easy and user friendly it is to use.
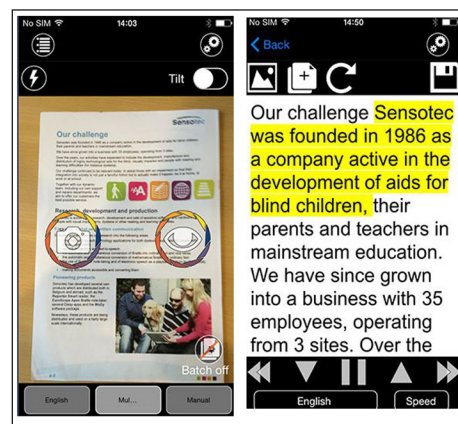
Snap&Read Universal for Chrome (www.donjohnston.com) This, too, is a new state-of-the-art program (Chrome extension) that works along with the Chrome browser on Chromebooks and on Macintosh and Windows computers using Chrome. It provides a reading accommodation that allows students to read text aloud directly from email, websites, PDFs in a browser, images containing text and Google Drive and also provides dynamic text leveling to assist comprehension of the passage when needed. To read text aloud, users click a speaker icon and then click again where they want to start reading. Snap&Read will then read the text, with highlighting, until the student clicks again to stop the speech. There are options for text color, word highlight color, language (US English, UK English, Spanish, French Italian, German, Japanese, Chinese and Korean), volume, speed and pitch. Inaccessible text that cannot be selected, as in a photo, can still be read aloud by clicking a designated icon and making a box around the text. Snap&Read will then automatically convert the text and read it aloud. Text leveling, the other function of Snap&Read, simplifies the text so that it is easier to understand, while retaining the original meaning. Options allow you to adjust the complexity level you desire. As with reading text aloud, users just select the passage they need simplified

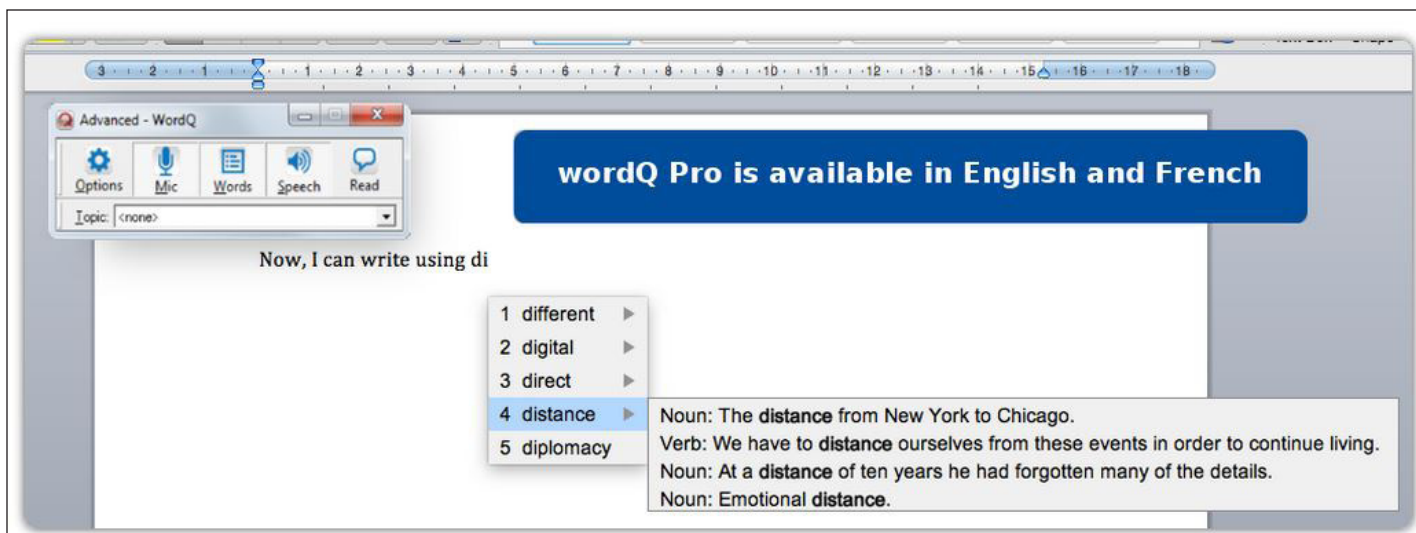Snap&Read Universal for Chrome (www.donjohnston.com)

and then click the text simplifier icon. The simplified vocabulary will appear in italics and the user is able to toggle between the simplified text and the original with a click. Reading PDF from the desktop can be accomplished by changing the Chrome extension settings, restarting and then dragging the PDFs into the browser. The Snap&Read Universal resources section of the website (http://donjohnston.com/snap-read-resources) explains how to do this. The website also contains a series of Show-Me-How video tutorials that show how to use other program features.

KNFB Reader (www.knfbreader.com) Another unique digital application! This is an iOS print-to-speech application that works with the iPhone, the iPad and the iPodTouch. The app enables the camera to take pictures of printed material, rapidly convert the images to text and read the text aloud using high quality text-to-speech technology. Designed for those who are blind or visually impaired, it is also helpful for those with reading disabilities. KNFB can be used to read mail,

KNFB Reader (www.knfbreader.com)

receipts, class handouts, menus, business cards, boxes and many other types of documents. It is not designed to be used with handwriting or scrolling text. To begin, users hold the phone or iPad about 8-10 inches above the page and press the Field of View report button, which tells the user what edges of the page are visible. That helps you to adjust your distance and angle to get the best picture of your document. Then, the Take Picture button is pressed and the image is pro-

WordQ and SpeakQ4 Pro (www.goQsoftware.com)

cessed for text. If any is found, the text is displayed and read aloud (formatting is lost, such as paragraphs, etc.). You can pause and resume reading, read word by word and go to next (or previous) sentence, using navigation arrows. There are many settings that allow the user to change font size and type, control speed of reading, text and background color, distance between lines, highlighting and highlight text and background color. You can also save documents, add pages, use Batch mode to process multipage documents, import PDF documents, open files from Dropbox and use airplane mode (allowing the app to be used during flight). There is a quick start guide, a manual and many options for individualizing the reading. There are several YouTube videos that demonstrate use and features of KNFB, and they are helpful in understanding the use and function of this excellent app. I recommend checking them out, for example: https://www.youtube.com/watch?v=6SXTC85Nuy0.

Here are a few more examples of how technology is changing the learning and teaching of literacy: TLDR (available from the Chrome Web Store) TLDR stands for Too Long Didn't Read. This is a free Chrome extension that creates a summary of any Web article without leaving the original page. Newsela (www.Newsela.
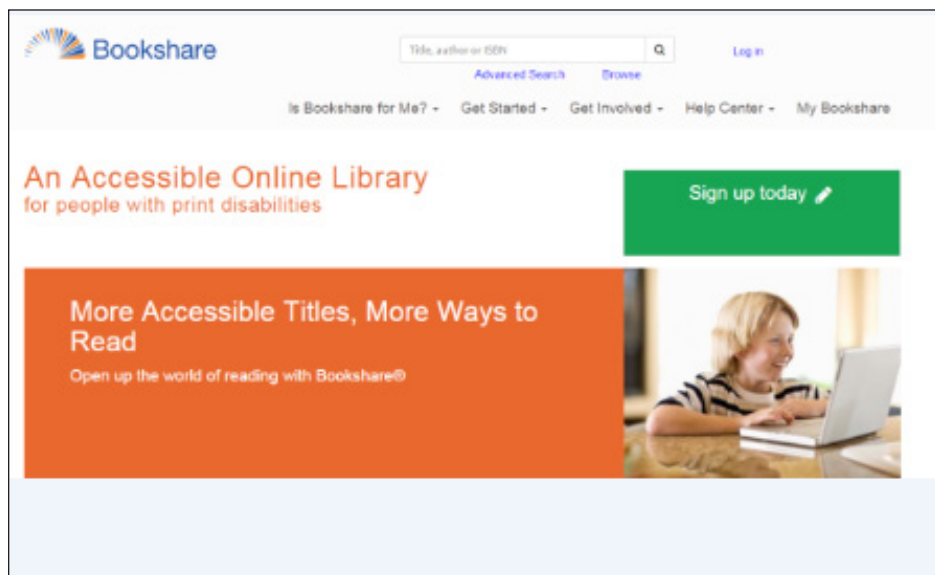
com) This free website lets you select a topic and an article will appear. Users are able to a select grade level (4-12) in order to adjust the reading level of the article. Newsela makes it easy for an entire class to read the same content, but at a level that's just right for each student.

WordQ and SpeakQ4 Pro (www.goQsoftware.com) WordQ and WordQ Pro are powerful technology tools for literacy, with special focus on writing skills and assisted reading. The WordQ family of software is an intuitive literacy tool that has been assisting students with special needs for many years and continues to change and improve with new features. All WordQ programs provide speech feedback (talking word processor), word prediction and assisted reading and work along with any software, such as Microsoft Word, Pages, email, Web browsers, Facebook, Twitter and instant messaging. The original WordQ versions have dictionaries for Starter, Basic, Intermediate and Advanced users (k-12) and the new Pro version (available in English and French for PC and Mac) has the additional Pro dictionary that is appropriate for grades 11+ through college/university. There is also a new Exam Mode that can be turned on for a selected period of time (i.e.,1-6 hours). When using Exam Mode, options menu,

abbreviation-expansions, pronunciation exceptions, synonyms, predictive phrases and next word prediction are turned off, and other features, such as word usage examples, single words added by user and topic words, are optional. Another new feature is the topic word extractor that quickly and easily extracts new words from any source placed on the clipboard. For example, copy several paragraphs from an online reading source, select New Topic in options, and WordQ will immediately populate the list with key words that would be needed for either taking notes or writing on the topic. Other new features include improved dictionaries with improved prediction, a simplified speech pronunciation editor and online registration. When using SpeakQ Pro, speech recognition is added to the program and can be used to write everything from single words to entire paragraphs or used only when needed to help with spelling or word selection. It can be trained to understand the speaker's voice, with no reading required. It allows you to mix typing and speaking as individually preferred and as needed. You can try WordQ+SpeakQ Pro free, for 30 days, by going to www.goQsoftware.com and downloading it. All the writing and dictating features of the full program are available, so you can see how

WordQ+SpeakQ work separately and together to improve writing skills. Visit the website to also view videos and tutorials on the use of these two very valuable programs for individuals with reading, writing and spelling difficulties. If you are an iPad user, iWordQ and the new iWordQ Pro are available for iPads from the Apple iTunes App Store in several different languages. There is also a new WordQ for Chrome, available for Chromebooks, PCs and Macs, and available on the Chrome Web Store in six versions.
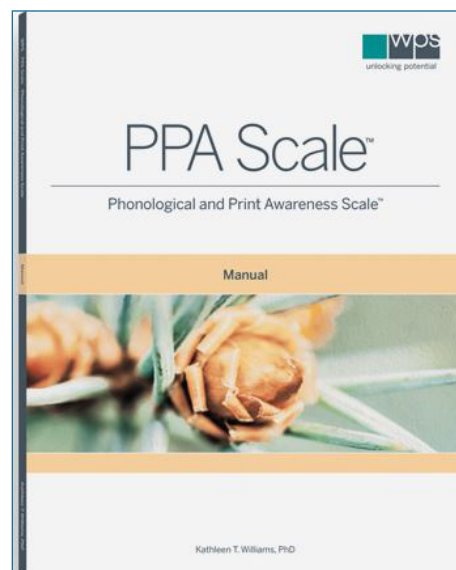
Bookshare (www.bookshare.org) is the world's largest accessible online digital library for people with print disabilities. It strives to increase access to print materials so that individuals with print disabilities have the same ease-of-access to print material as people without disabilities. It is supported by the U.S. Department of Education, Office of Special Education Programs, has over 300,000 books and serves more than 300,000 members. Within the U.S., Bookshare operates under an exception in copyright law that allows them to make accessible digital books legally available to any person with a qualifying disability. Digital books are added to the library by volunteers who scan and upload the books to the site and by publishers who send digital versions of their books to the collection. Bookshare helps users read copyright books on tablets, smartphones, computers and other hardware devices, such as braille readers and MP3 players. Readers can adjust font size, have words highlighted and use voice options, including high quality text-to-speech with adjustable speed and choice of voices. They can also create physical braille or large print output. Bookshare® offers accessible ebooks to people with qualified print disabilities anywhere in the world. Agencies and schools that serve children and adults with print disabilities can also become members of BookShare. For more information on becoming a Book-Share member, contact www.Bookshare. org.

Bookshare (www.bookshare.org)

Phonological and Print Awareness Scale (PPA Scale) by Kathleen T. Williams, PhD, (www.wpspublish.com) This evaluation scale is designed to measure early literacy skills, including phonological awareness (the ability to recognize and manipulate the individual sound structures of a whole word without any reliance on print) and print awareness (the understanding of the elements of print, including alphabet knowledge and concepts about print), in children ages 3 years, 6 months to 8 years, 11 months and allows examiners to track the development of these skills over time. Administration time is about 10-15 minutes, with the examiner reading items from an easel stimulus book and with the child providing nonverbal responses requiring them to point to the correct picture. The Evaluation Kit includes forms , response sheets and print easels for three parallel forms (A,B, and C), as well as a print manual and a print book - Building Early Literacy Skills and Phonological and Print Awareness Activities. An on-line activation code is included to print out response sheets to record answers offline during the evaluation and to later enter the answers online. The PPA Scale has 69 items representing six tasks (Rhyming, Print Knowledge, Initial Sound

PPA Scale (www.wpspublish.com)

Matching, Final Sound Matching, Sound-Symbol and Phonemic Awareness). The author indicates, based on early literacy research, that the items were written "to provide a narrow focus on phonological and print awareness skills, without placing demands on other cognitive abilities (e.g., memory)." In addition, stimulus pictures were reviewed for fairness for use with both males and females of differing ethnic backgrounds. The included resource "Building Early Literacy Skills" offers age-appropriate intervention strat-

egies to improve the skills measured by the PPA Scale. See the website for further information about standardization and technical properties.

SIGN LANGUAGE RESOURCES

Learn & Master Sign Language (www.LearnAndMaster.com) This is a comprehensive course on 25 DVDs that teaches the learner to understand and use American Sign Language through step-by-step lessons. Starting with basics, such as gesturing, fingerspelling and learning greetings, and progressing to advanced concepts, there are over 49 hours of instruction that also include ad-

vanced techniques, everyday expression, cultural knowledge and more. Topics covered include: The Basics of ASL, ASL Grammar, Sign Language for Daily Activities, Expansion Techniques, Deaf Culture, Fingerspelling and Classifiers. Professional instructors, Dr. Byron Bridges and Stacey Webb, designed and teach the lessons with video demonstrations, quizzes, vocabulary video index, fingerspelling practice at three different speeds, a section in each lesson on varying numbers, narrative practice, dialogue practice and tips. There is also a detailed Lesson Book that follows the sessions with activities. Questions can be posted online and can

be discussed with the Student Support Discussion Board. Visit the website to see a video introduction to the series and more information.

APPS TO ENHANCE LANGUAGE AND LITERACY

* means a lite or free version is available
A means an Android version is also available

Hamaguchi Apps For Speech, Language & Auditory Development (www.hamaguchiapps.com)
This company produces an impressive collection of well-designed and comprehensive apps created specifically to provide additional practice in areas of speech, language, auditory development and listening skills. They produce lite versions of most of their apps so you can try them. Also, video demonstrations are available on their website and on You Tube.

Listening Power Preschool HD	*	Designed to practice listening skills for preschoolers, with activities that are on 3 levels, with 2-4 picture choices and 50 questions per level. Correct responses animate. Activities include Listening for Descriptions; Directions; Grammar & Meaning; Stories with Pictures; and Stories without Pictures. Data is kept and scores are reported for each activity. Missed items can be repeated during the next session. Nice feature is the "Manually Show Choices" that lets the child guess what the correct response may be, before showing options. Auto advance increases level after a given number of correct responses.
Listening Power Grades 4-8+	*	The second app in the Listening Power series is appropriate for grades 4 and up and age appropriate for older students and adults with developmental disabilities. There are five activities, each with 3 levels and options for 2,3 or 4 choices. App addresses language processing (meaning and content) and auditory processing (way content is presented acoustically). There are 5 activities: Listening for Grammar (identify sentence that is grammatically correct); Listening for Fast Sentences (which spoken sentence matches the sentence spoken fast); Listening for Meaning (sentence with target vocabulary is spoken and student identifies a sentence that verifies auditory comprehension); Listening for Missing Sounds (student listens to sentence that is missing sounds and identifies what was said); and Listening for Stories (story followed by questions - can introduce background noise and/or visual distractions). Suggestions are provided on using this app for reading comprehension, expressive language, notetaking and writing practice. Data and progress tracking is available. Well done and very comprehensive app with a wide range of activities that will enhance listening skills, language and literacy for ages 8 and older.
		Listening Power will be available in other versions - Grades K-3 version coming next. They will be reviewed in the next DISKoveries

VIRTUAL SPEECH CENTER (www.virtualspeechcenter.com) This company has published a large group of excellent, well designed, and motivating apps for speech-language pathology and special education, for children and adults and for home and school use. All have many built-in options such as use with single or multiple students, data collection, ability to email audio recording features ans more.

Question Hunt		Designed to help children practice answering yes/no and WH questions, this app is designed around different themes (i.e., beach, park, store, airport, etc.) and includes both receptive tasks (pick answer from multiple choice questions after they are spoken aloud) and expressive tasks (answer verbally). There are 60 yes/no and 360 WH questions that can be practiced within types (i.e. where questions, who questions, etc.) or with any combinations (when and where) or all at the same session.
Problem Solve It		This app was designed to help adults with cognitive impairments with situations and problems that are functional in nature and relate to social communication, financial issues, management of heath, education and personal thinking. The problems are presented with a written paragraph that is spoken aloud and ends with a question that encourages analysis, recall of information and problem solving. Question areas include "what would you do questions," math problems, problem solving based on case scenario, stating the reason of the problem, answering open ended "if" questions and more. Excellent and motivating higher level reasoning and thinking app that is also great for working on language and communication skills.
Auditory Reasoning		For students ages 6-up with central auditory processing, autism, receptive langue disorders and related language problems. All the tasks in this app are presented orally so students can work solely on auditory skills and processing. Activities include: which does not belong, associations, completing the series, identifying true/false statements, identifying fact/opinion, auditory resequencing, meanings in context, analogies, riddles, paraphrasing and drawing conclusions. All tasks contain 2-4 levels of difficulty, 20 activities each level and can be practiced with background noise, if desired.
Main Street Memory		Designed for both children and adults who need practice processing and recalling brief, complex auditory instructions. Set in a real life context - three different stores- so that users can see clearly how limitations and gains in these skills directly affect their lives. App also helps see the functional outcomes for community living tasks and vocational readiness. Options include ability to control length and complexity of direction, amount and type of background noise, and delay the presentation of stuimuli. Tasks include following directions with one, two or three items, without or with modifiers, in order or not. Items are displayed, customer places order, and user selects the items. When there is delay of presentation of stimuli, pictures of items are not shown until request is spoken, followed by delay, and then items appear. Record keeping, session report, email results and reward game are options.
Sequencing Post Office		For children ages 3 and up, there are 65 sequencing tasks that can be used as 2-step, 3-step and 4-step tasks. Use with single or multiple students, track correct and incorrect responses and email results.
Quick Artic Free	*	Free app with 566 images with ten most common phonemes in all positions of words. Scoring keeps track of correct and incorrect answers and automatically calculates the score. Good for quick articulation screening. Works on iPhone and iPad

SMARTY EARS (www.smartyearsapps.com)
This company has been a leader in creating high quality and a large variety of apps for speech-language pathologists. Excellent video tutorials on all apps. All apps have Report Cards for each session, full data collection, easy report writing and progress monitoring. Well done and very comprehensive apps. See website for videos and tutorials of all apps.

Prep Positions		With 15 levels, this app was created to encourage preposition use. Children are shown a picture and the task is to select the correct written preposition and place it in the sentence. Level 1 is for early readers (3rd grade) and includes: at, up, down, on and by. Level 15, for older students, includes: because of, close to, depending on, and up to. Many options are available to customize the app, including audio reward, prompts to play, background and others. Prepositions and sentences included in each level can also be selected or de-selected, according to individual needs. Multiple students can play together, each with different levels/goals.
Yes No Barn		Designed to teach and reinforce comprehension and sentence structure, this single or multi-layer app focuses on answering a wide range of yes/no questions, including basic questions, look and answer questions (look at picture to get information to answer the question), fact-based questions, variable answer question (no picture, but may require player to look around the room, at themselves or simply know the answer), compare questions (looking at and answering questions about two picture scenes). All questions are spoken aloud; there is immediate feedback, as well as data collection for each player.
Smarty Spell		Designed specifically to help students practice spelling skills, the words are separated by grade (K-6) or by theme (animals, numbers, colors, etc.). Customized word lists can also be created. Up to 5 students can play at one time with individual data taken for each. The parent/teacher can see how many times it took for student to spell the word correctly and how many times they have practiced each word. Visual hints can be turned on in settings so Smarty Spell will automatically put the first letter in place if there is an error. If the word is misspelled again, visual hints will continue to add the next letters until the word is spelled correctly. Words can be read aloud, font size can be changed, letters can be spelled as used, control of spelling order (left to right or any order).
Auditory Memory Club		With single- or multi-player modes, four activities designed to help attention, listening and recall of information. Tasks include: I Say You Do (auditory command followed by pause and then student completes the task - pause can be lengthened or shortened as needed. One-step increases to multiple steps.); What Was That (identify sound by pointing to picture); Remember for Amber (recall a series of words); and Let's Put In Order (recall a series in the correct order). Play in Spanish, English and Portuguese.
Articulate It! Pro		With about 1,000 built-in words - and the ability to add more - practice articulation at the word, phrase and sentence level. Can work on phonemes or phonological processes. There are flash cards, a matching game, a story game, homework sheets - and since the latest update, a new activity called "Guess What" (question and answer cards), along with new audio instructions.
Expressive		Easy-to-use AAC program for children and adults, using over 10,000 built-in images from the Smarty Symbols library. New update added many new features, including ability to add your own images, change background colors, lock feature, search button, male and female text-to-speech options, verb agreement support, landscape/portrait mode and more.

iSpeak4U (www.iSpeak4U.com)		
HandySpeech	A	Created by Eric Zeiberg, a 12-year-old who was inspired by his sister who has speech disabilities and is autistic, this app translates handwritten text into spoken language. Users write or print their message on the tablet screen, using a finger or a stylus, and the message gets converted into text and is spoken aloud in male or female voice. Words and phrases can be saved and then selected to be spoken at a later time. It speaks a large group of languages. Handwriting patterns are learned and common spelling errors are automatically corrected. User dictionary can be created and enabled.

SPLINGO (www.speechandlanguagestore.com)
Series of apps designed to help children listen and understand spoken language. All star the animated alien character, Splingo.

Splingo's Language Universe		Targets the understanding of concepts such as size, color, shape and positional words within different types of sentences of varying lengths. There are four levels - Level 1: main word (i.e. find the apple) suitable for children at developmental level of about 18 months; Level 2: main words (i.e. put the soap in the bag) - developmental level 2-3 years; Level 3: main words (put the little fork next to the school) - developmental level 3-4 years; and Level 4: main words (give the cat the little old car) with increased number of targets to choose from) - developmental level 4 years. The recent update of this program includes the addition of pause, record and repeat buttons; more actions; updates to animations; arrows for object placement and changes in orientation, and other features, bringing it in line with their other apps.
Pronouns With Splingo		Listen to Splingo's directions and drag and drop the objects to the correct place. 15 different pronouns within increasingly complex sentences, in 5 different scenes and with different objects. Children can't put the objects in the wrong place - they only stay in correct locations. Pause button lets you pause the activity to talk about pictures.
Actions With Splingo		Two animated pictures are shown, and children are asked questions such as "Who is verb+ing?" If correct answer is chosen, the picture is enlarged and the sentence and animation are repeated until new picture is chosen. An incorrect answer is followed by "mm-mm," and the child can pick again. Children can speak and record the sentences. Pause button lets you pause the activity to talk about pictures. Teacher can select the specific verbs to work on.
Categories with Splingo		Select two categories or sub-categories to sort: animals, transport (land, air, sea), clothing (warm and cold weather), food (vegetables, fruit, sweet), toys, instruments, furniture, body parts, sports, drinks. Sort the objects that appear below by dragging to the correct category picture. No wrong answers because objects only stay on the right picture.
Receptive Language Assessment with Splingo		Assesses a variety of word/sentence types at four increasing levels of complexity. Activity lets students trial items to allow them to become familiar with format, Other options let users include/exclude reward system and written sentences to accompany verbal directions. Automatically generates report, which can be emailed or printed.

For more information about the following apps, see above article on Literacy for Special Needs
CLASSROOM CONNECT (www.judylynn.com)
KNFB (www.knfbreader.com)
iWordQ & iWordQ Pro (www.goQsoftware.com)

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

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