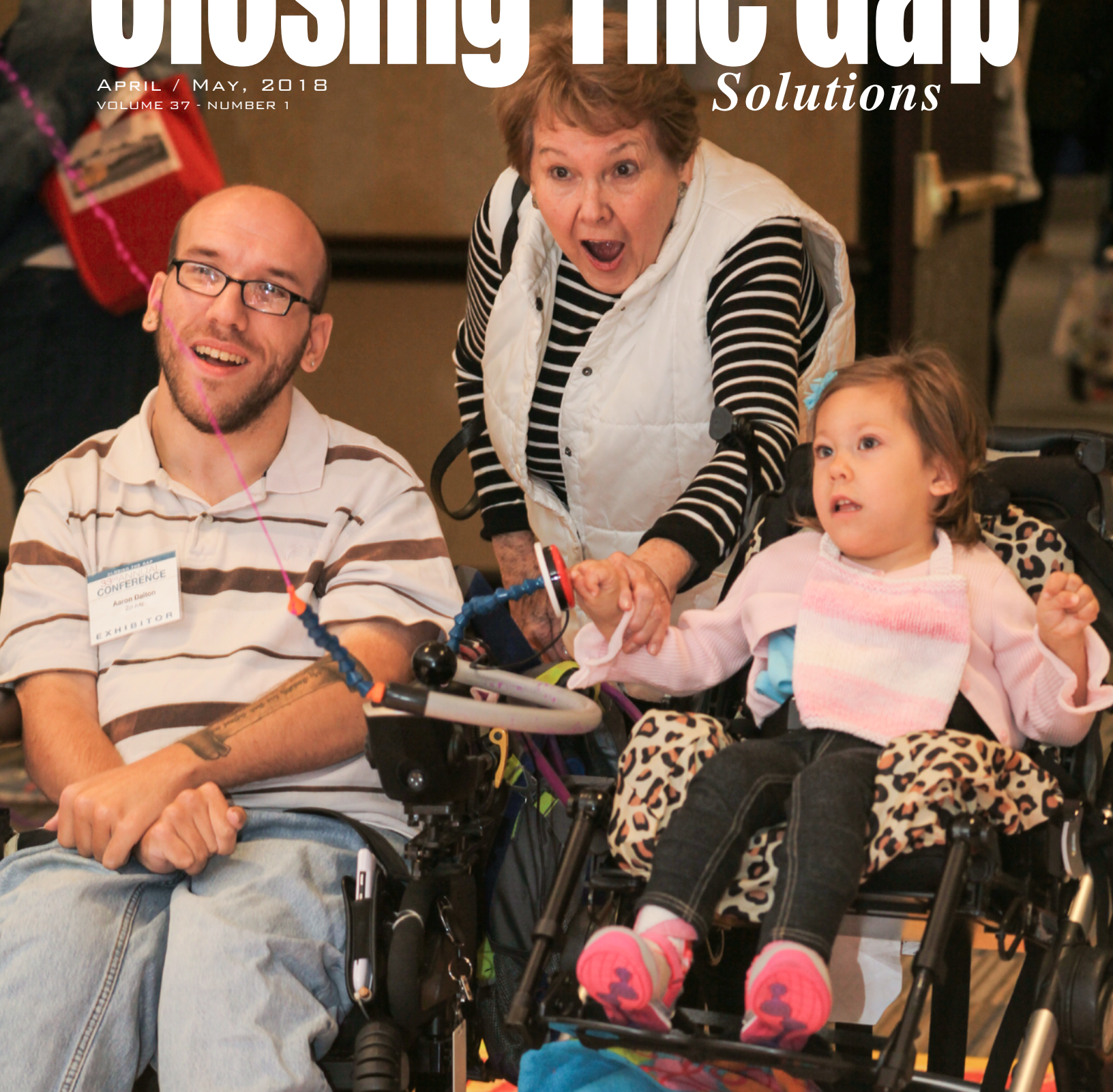


*Assistive Technology Resources for Children and Adults with Disabilities*

# Closing The Gap

APRIL / MAY, 2018  
VOLUME 37 - NUMBER 1

*Solutions*



[www.closingthegap.com](http://www.closingthegap.com)



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April / May, 2018

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In the first image, it is assumed that everyone will benefit from the same supports. They are being treated equally.

In the second image, individuals are given different supports to make it possible for them to have equal access to the game. They are being treated equitably.

In the third image, all three can see the game without any supports or accommodations because the cause of the inequity was addressed. The systemic barrier has been removed.

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# Connecting Core Across Communities

## WHAT IS CORE VOCABULARY?

In the field of Augmentative and Alternative Communication (AAC) the selection of vocabulary is paramount in teaching students with Complex Communication Needs (CCN). Research supports teaching the use of core vocabulary to students with CCN. Core vocabulary is comprised of words most commonly used in expressive communication (Yorkston, Dowden, Honsinger, Marriner, & Smith, 1988). These are primarily verbs (e.g. stop, go, eat, want), adjectives (e.g. more, good, bad, different), prepositions (e.g. in, on, off, out) and pronouns (e.g. me, I, you) (Robillard, Mayer-Crittenden, Minor-Corriveau, & Belanger, 2014; Trembath, Balandin, & Togher, 2007). Core vocabulary is used for a variety of communicative functions (e.g. rejecting, re-

questing, initiating, etc.) and varies little across different languages, various age levels, and individuals with and without disabilities (Beukelman, Jones, & Rowan, 1989; Clendon & Erickson, 2008; Robillard et al., 2014).

## THE PURPOSE OF THE CENTRAL ILLINOIS CORE INITIATIVE

Central Illinois Core Initiative (CICI) was created by two speech language pathologists (SLPs) who live and work in central Illinois. Lisa Bova, now retired, worked for 27 years in Normal, IL, at McLean County Unit District 5 specializing in AAC. She taught the undergraduate and graduate AAC classes at Illinois State University (ISU) from 2011-2017. Annie McWilliams works in Bloomington, IL, at Bloomington Public Schools District 87. She has also

specialized in AAC for 7 years.

Bloomington and Normal are twin cities located in Central Illinois. Students with CCN frequently move between these districts. These students may also receive speech and language services from private agencies, such as Easter Seals or the speech clinic at ISU. Even though these school districts and private agencies were working with the same students, they were inconsistent in contacting and collaborating with each other. Many times, it felt like the right hand was not coordinated with the left hand. There were issues with AAC devices and applications being modified without collaboration, or the two entities were working on different goals and objectives. Lisa and Annie determined there was a need for a joint initiative between these entities, which



**ANNIE MCWILLIAMS, M.S.**, is a speech-language pathologist practicing in Bloomington Public Schools District 87 for seven years. She specializes in Augmentative and Alternative Communication (AAC) with students with complex communication needs grades kindergarten through high school.



**LISA BOVA, M.S.**, is a speech language pathologist, who taught in Illinois and California public schools for 37 years, retiring in 2014. She specialized in Augmentative and Alternative Communication (AAC) providing services for children with complex communication needs for 29 of those years. Lisa taught the undergraduate and graduate level AAC classes at Illinois State University for 7 years. In retirement, Lisa continues to consult on AAC in school districts in the Bloomington/ Normal, Illinois area.



|             |       |               |       |      |        |           |      |       |         |
|-------------|-------|---------------|-------|------|--------|-----------|------|-------|---------|
| Unit 1      |       |               |       |      |        |           |      |       |         |
| Stop        | Go    | Done/finished | Gone  | In   | Help   | Out       | Eat  | Look  | See     |
| Unit 2      |       |               |       |      |        |           |      |       |         |
| More        | Drink | Me/my         | You   | Turn | Put    | Take      | Do   | Want  | Play    |
| Unit 3      |       |               |       |      |        |           |      |       |         |
| Again       | No    | Like          | Open  | On   | Off    | This      | That | Where | Get     |
| Unit 4      |       |               |       |      |        |           |      |       |         |
| Make        | Give  | I             | Ready | Who  | Up     | Down      | Yes  | Not   | Need    |
| Unit 5      |       |               |       |      |        |           |      |       |         |
| Good        | Bad   | Happy         | Sad   | Big  | Little | Come      | Here | There | Can     |
| Unit 6      |       |               |       |      |        |           |      |       |         |
| Hear/listen | Don't | Away          | Sick  | It   | Same   | Different | What | Now   | Problem |
| Unit 7      |       |               |       |      |        |           |      |       |         |
| Is          | wait  | Close         | Have  | Say  | Think  | Know      | He   | She   | Tell    |
| Unit 8      |       |               |       |      |        |           |      |       |         |
| All         | And   | Because       | Heavy | How  | Mad    | Soft      | Some | Tired | Watch   |
| Unit 9      |       |               |       |      |        |           |      |       |         |
| We          | When  | A             | But   | For  | Of     | The       | To   | Us    | Why     |

Figure 1 - CICI Core Word Unit List

could share core vocabulary resources and introduce core vocabulary in a similar manner. With that need being evident, Bloomington District 87, McLean County Unit 5, and the Department of Communication Sciences and Disorders at ISU created CICI.

Three main goals were established at the forefront of creating CICI. The first goal was to promote the teaching of core vocabulary in Central Illinois. The next goal was to offer materials to SLPs and educators in school districts or agencies by creating core vocabulary units. These units would be taught in chronological order, which would promote consistency between schools and agencies. The final goal was to establish a website to share core resources and implementation information across these groups.

## CREATING THE WEBSITE

Once the decision was made to pursue this project, Annie and Lisa became the creators of the website. To recruit members, they prepared a PowerPoint and a web space to share the CICI vision. The largest obstacle with creating a web

space was determining how to publish these materials. The first concern was money, initially, the creators considered speaking to their respective school districts about funding the project but discarded that idea after considering the monetary impact on the districts. In addition, there were concerns about using sites that would have stringent copyright laws. Therefore, the creators presented their problem to their regional Assistive Technology (AT) group. The AT Specialist from Unit 5 offered to talk to their main technology department about assigning a Google account for CICI to use. Unit 5 assigned a Google account and CICI had a home on Google Drive.

## CREATING CONTENT

When entering the CICI Google Drive account, there are two main sites, a creators' site and a member's site. The creators' folder contains information such as core lists, core assignments, a welcome letter and requirements to become a CICI member. The members' folder holds useful information relating to implementation of teaching core vocabulary.

Within the members' folder, the next step was to create CICI's own list of Core Units. Ninety core words were taken from established core lists from: (a) Banajee, DiCarlo, and Stricklin's (2003) Toddler Vocabulary article, (b) Dynamic Learning Maps™ (n. d.) Core Vocabulary List, (c) Gail Van Tatenhove's (n. d.) Core Vocabulary Classroom List, and (d) Carol Zangari's (2013) A Year of Words- Pixons chart. The creators also utilized clinical judgement and input from other SLPs to create nine units each containing 10 words. See Figure 1 for the CICI Core Word Unit List.

The first folder designed in the CICI Members' section was named Core Materials. Annie previously created a variety of therapy activities for core words, such as "stop" and "go," for her educational team. The creators decided to follow Annie's lead and create multiple activities for each core word. The goal of these folders was to provide materials and activity ideas to encourage professionals to embed core vocabulary within therapy sessions and throughout the school day. Each core word would have its own folder and contained 10 sub folders of activities to help teach each word. The sub folders included:

1. an introduction page
2. book lists
3. cooking ideas and recipes
4. crafts
5. daily additional materials and ideas
6. games
7. songs
8. toys
9. videos
10. worksheets.

Recently, a science category was added.

## RECRUITING MEMBERS

Creating folders for each core word was not difficult, but it was time consuming. The realization came quickly that other professionals would be needed to help make the content within the 90 word Core Units. The creators decided to recruit other SLPs, special educators and related personnel to help. These recruits would become future members of CICI. SLPs and educators from McLean County



Unit 5 were introduced to the initiative at first. Subsequently, the initiative was presented to other regional school districts, Easter Seals of Bloomington and Services for Parent Infant and Child Education (SPICE). In total, to date, there are 41 participants from 19 school districts, three private agencies, one university and one hospital. These include SLPs, special educators and occupational therapists. Since uploading materials took time, the creators also added two “assistant managers” to help with uploading and organizing resources.

Each recruit would be required to find resources for two vocabulary words, and then submit PowerPoint slides to the CICI creators. The creators would upload their folders to the site and then give the new member the password for the Google Drive account. These members agreed to create folders to get access to these resource materials. CICI recruits received a letter detailing the requirements. See figure 2 for this letter. The creators selected PowerPoint for this content, as it was a universal program. Each recruit was asked to create 10 slides per core word that represented each sub folder. The Core Materials sub folders needed to include materials for different age levels from early learning to secondary education students or clients, and be fun and easy to teach. Contents of each category could be original materials, such as self-authored books, or published materials. For the songs and videos, Youtube’s website was the prime resource. Recruits used the internet, Amazon and toy stores to find games and toys relevant to their core word. Finally, worksheets were self-made or created using various websites. See Images 1-10 for screen shots of sample items within each folder.

It was most beneficial if recruits created 10 individual PowerPoint presentations, one PowerPoint presentation per activity within a core word folder. When the PowerPoints were turned in, the creators and assistants reviewed and uploaded the slides into the CICI Google Drive account. The password was given to any recruit who created material for two vocabulary

**Welcome CICI Member!**

Here are the requirements needed for each Core Word that you have been assigned.

If possible think about all age levels. There still will be high school students learning Core.

Have fun with this!!! Things can be silly and entertaining...that’s OK.

3-5 YouTube videos (ex. Search Kids “go”, find a video of the Sign for your word, dance videos, etc.)

3-5 Books The book does not need to contain the Core Word but The Core word would be used frequently while talking about the book.

For ex. In HEY Pizza Man, someone is always knocking on the door. You could use this for the Core Word “who”...“who’s there.

Create a homemade book using your word.

3-5 Songs Songs that are about the word or take established songs and change the words.

Example: Help by The Beatles or make up a “help” song to

Row, Row, Row Your Boat

3-5 Games Don’t forget an App that might use your word.

3-5 Toys Don’t forget Dollar Store toys.

1 Craft If your word is applicable. You don’t have to include an art project if you don’t want to do that. Just give examples of how you would incorporate your word.

1 Cooking Activity

If your word is applicable. You don’t have to include a recipe if you don’t want to do that. Just give examples of how you would incorporate your word while cooking.

2 Worksheets Make or find on online

**Cautions:**

Be sure to view the complete video before you add it.

Be aware that you don’t have to use the whole video.

**Resources:**

Pinterest- Lauren S Enders; AAC

Gail Van Tatenhove’s website: [www.vantatenhove.com](http://www.vantatenhove.com)

Minspeak-Intervention Planning session: <http://minspeak.co>,

[Praacticalaac.com](http://Praacticalaac.com)

[www.education.com](http://www.education.com) for sight word worksheets

Reading A-Z

Tobii DynaVox

Google

YouTube

Teacher Pay Teachers- If you buy something, you must recreate it. It’s illegal to share your license.

[AssistiveWare.com](http://AssistiveWare.com)

[SpeechMusings.com](http://SpeechMusings.com)

[Exchange.smarttech.com](http://Exchange.smarttech.com)

[Tarheelreader.org](http://Tarheelreader.org)

Boardmaker Online

Figure 2 - CICI recruits letter:





Files



Image 4

Files

Name ↑

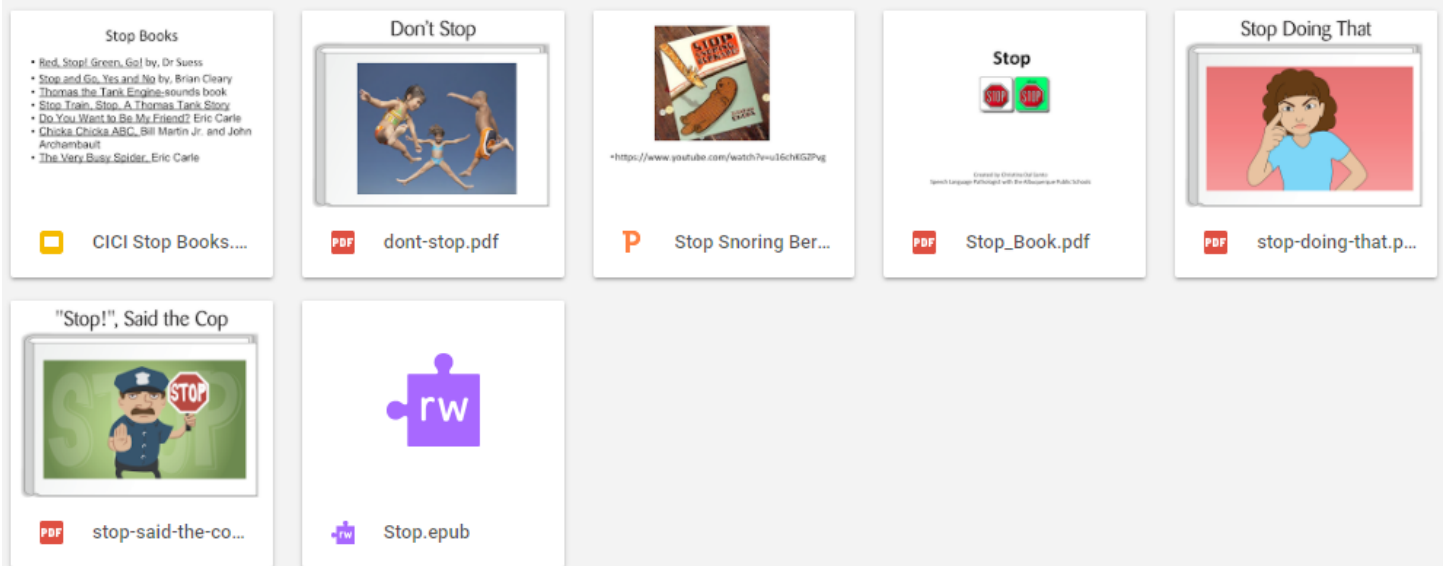


Image 5

Files

**Stop Songs**

- Stop in the Name of Love: <https://www.youtube.com/watch?v=DPY2x0n8>
- Walking, Walking: <https://www.youtube.com/watch?v=PMj0tTzWJ>


**P** CICI Stop Songs....

**Stop Songs**

- Stop in the Name of Love: <https://www.youtube.com/watch?v=DPY2x0n8>
- Walking, Walking: <https://www.youtube.com/watch?v=PMj0tTzWJ>

**Q** CICI Stop Songs....

**Stop**



**P** stop.pptx

Image 6

Files

**Stop Toys**

- Spinning top
- Spinning fans
- Switch toys
- Wind up toys
- Light up toy
- Timers
- Music toys/listening to music

**P** CICI Stop Toys.p...

**Stop Toys**

- Spinning top
- Spinning fans
- Switch toys
- Wind up toys
- Light up toy
- Timers
- Music toys/listening to music

**Q** CICI Stop Toys.p...

Image 7

Files

**Stop Videos**

- ASL stop: <http://www.babysignlanguage.com/dictionary/3/stop/>
- Patty Shukla (dance video): <https://www.youtube.com/watch?v=MWhn0pQ20>
- Stop sign (beaches about a stop sign): <https://www.youtube.com/watch?v=6bKcR1j0e>
- Stop song (dance video): <https://www.youtube.com/watch?v=7F7xHu5Suk7E>

**P** CICI Stop Videos....

**Stop Videos**

- ASL stop: <http://www.babysignlanguage.com/dictionary/3/stop/>
- Patty Shukla (dance video): <https://www.youtube.com/watch?v=MWhn0pQ20>
- Stop sign (beaches about a stop sign): <https://www.youtube.com/watch?v=6bKcR1j0e>
- Stop song (dance video): <https://www.youtube.com/watch?v=7F7xHu5Suk7E>

**Q** CICI Stop Videos....

Image 8



Files

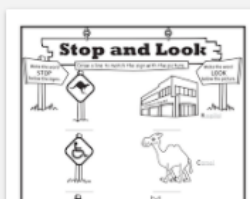
Name ↑



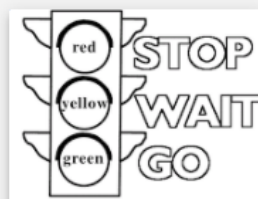
Candy Stop.pdf



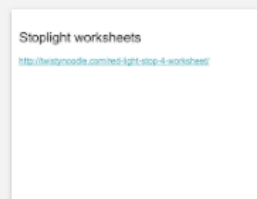
first-sight-stop.p...



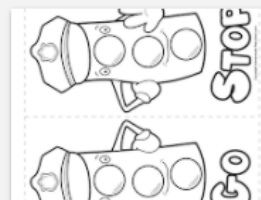
Stop and look.pdf...



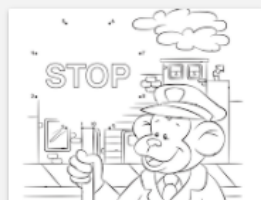
stop2.gif



Stoplight worksh...



traffic light.pdf



traffic-stop-conn...

Image 9

Files

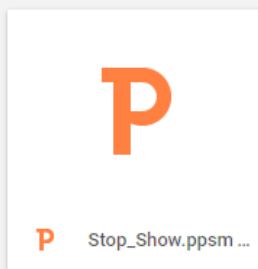
Name ↑



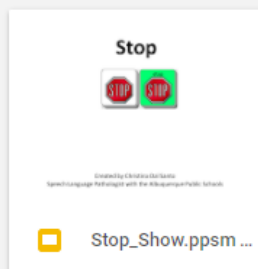
Assistiveware St...



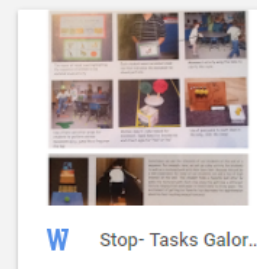
ideas for stop.pd...



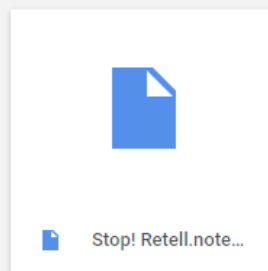
Stop\_Show.ppsm ...



Stop\_Show.ppsm ...



Stop- Tasks Galor...



Stop! Retell.note...

Image 10



BACK TO  
CONTENTS

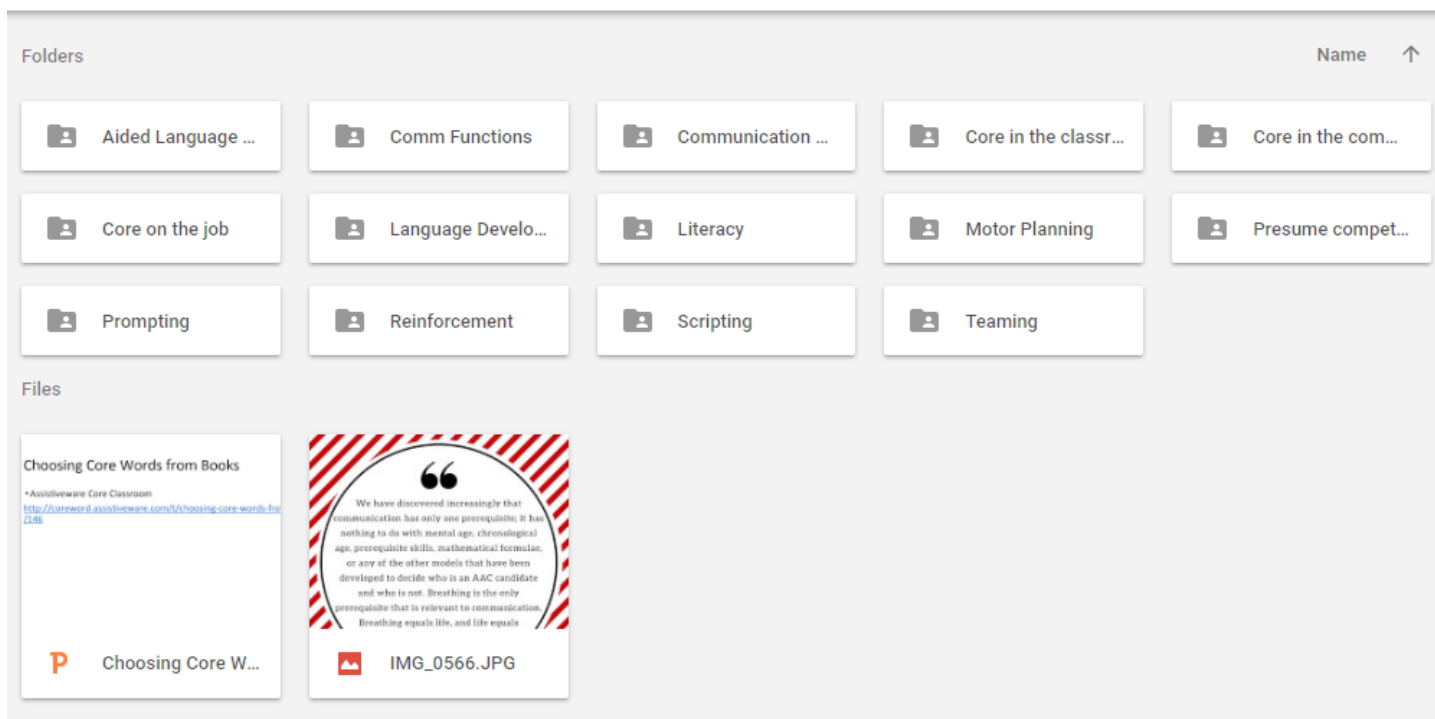


Image 11

### The word of the week was: EAT

Here are some videos to watch at home about EAT:

- I like to eat... apples and bananas: <http://bit.ly/21fqgop>
- Sign Language for eat: <http://bit.ly/1VCvWsN>
- Books you can read from the library (some can be found on YouTube, as well):
- Very Hungry Caterpillar by Eric Carle
- Eating the Alphabet by Lois Ehlert
- Bread is for Eating by David Gershator
- Gobble it up! A Fun Song about Eating by Jim Arnosky
- Let's Eat by Ana Zamorano

Games and activities for teaching and practicing EAT at home:

- Play pretend with dolls, figurines, or puppets feeding them fake food and saying EAT
- Have a pretend birthday party and EAT birthday cake
- Play Hungry Hungry Hippos and talk about how the hippos eat
- Play Pop the Pig and have the pig EAT food

Real life application:

- When you are eating a snack or a meal, talk about how you are EATING. Have your child say EAT when he or she would like to eat more of an item.
- When your child gestures to you to request a food, have him or her say: EAT
- Feed the family pet and talk about how the pet EATS food
- At a restaurant, can talk about the different food on the menu you can choose to EAT

Let us know if you have any questions, comments, or concerns!

-Your educational team

words. These recruits were now CICI members.

### SUPPLEMENTARY CONTENT

After creating the Core Materials folder, the creators realized they could provide members with additional resources and supports for core vocabulary and AAC in general. Subsequently, they created additional folders on the following topics:

- All About Core
- Where Do I start?
- Assessment
- Core Boards
- Core Units
- Data Collection
- Goals and Objectives
- Core Resources
- Video Examples
- AAC in General
- Parent Information
- Incorporating Core into Other Systems.

The resources in these folders were gathered from conferences, database



searches, AAC websites/blogs and social media. This is a fluid process and the folders are still evolving. Most of these folders are self-explanatory, however, the “Where Do I Start?” folder contains information on core foundations, language development, literacy, teaching techniques and so on. See Image 11 for a screen shot of the contents of this folder.

## IMPLEMENTATION

In regards to implementation, CICI is NOT telling its members...

1. The exact order of core words to teach.
2. How many words to teach at once.
3. The criterion to mastery or even if you need to reach mastery before you introduce a new word.
4. How long to teach a word.

However, CICI does have suggestions for when implementing core vocabulary instruction in your classroom and therapy session. These suggestions are:

1. Send a parent letter home with the word(s) of the week or month containing ideas for use of the core word at home. See Figure 3 for a sample parent letter.
2. Provide paraprofessional/support staff training in the form of: role-play, modeling in the classroom, core vocabulary information sheets, or direct training of staff if needed. See Figure 4 for a sample paraprofessional tip sheet.
3. Provide positive reinforcement to staff for teaching core vocabulary throughout the day.
4. Have a framework to follow. For example:
  - Day one could involve introducing the symbol for the word and playing a video to represent the core vocabulary word.
  - Day two could be a reading activity.
  - Day three could have a craft activity.
  - Day four could have a cooking activity.
  - Day five could have toys and games. See Figure 5 for a sample SLP and occupational therapy year schedule for weekly co-treatment plans. See Image 12 for a picture of core vocabulary implementa-

Hi Ladies (my trusty Speech Helpers!)

**Starting on Wednesday, We will be working on “gone” for 2 weeks.**

I will have activities in speech to work on “see” BUT I need your help.

Here are times that they need to practice this word. PLEASE do this with them.

Don't forget to show them on their device or app (Aided Language Stimulation)

At lunch or snack

As a student finishes one food have them say “It gone” or “milk gone”

**Have them do it 3 times.**

In community or at school

“Bus gone”

Bowling

When the pins go down “gone”

Students or staff

When people are absent “Rennels gone”

**Can you work this into other things you teach? Unique Learning, Social skills? Fill these in to give us additional ideas.**

**Unique ideas** \_\_\_\_ Picture walks, \_\_\_\_\_

**Social Skills ideas** \_\_\_\_\_

**News 2 YOU** \_\_\_\_\_

**OTHER** \_\_\_\_\_

Figure 4: Sample Paraprofessional Tip Sheet.

tion in a group lesson.

5. Determine when you want to have review weeks to revisit previously taught core words.

## PROBLEMS ENCOUNTERED

When implementing any new initiative, there can be difficulties and a need for troubleshooting. One of the first problems the creators encountered was that not all members followed the guidelines and provided the correct amount of resources for the core vocabulary words they were assigned. When this happened, the creators would contact the recruit to provide additional resources. At times, Lisa added additional resources to incomplete folders to finish them in a timely manner. Sometimes the members provided the correct amount of resources but did not follow the directions on saving to individual PowerPoint files for each sub folder. This added workload, as the creators had to copy and paste each individual slide into a new PowerPoint file

before being uploaded.

Another issue encountered was the time needed to manage the CICI site. Not only did the creators need to upload materials, but they also needed to make time to revisit folders to ensure the resources were still appropriate and all links worked. Additionally, there was the possibility of members with the password deleting content, modifying folders and sharing the password without consent.

## TIPS FOR IMPLEMENTING YOUR OWN CORE INITIATIVE

In building this initiative, the creators learned many valuable tips. Most importantly, dividing the workload is key. They did this by having creators, assistant managers and members. Within each of these positions, there were various roles and responsibilities. The creators' greatest help was assigning assistant managers to help upload documents. Next, it was important to be consistent in the number of words assigned and to have consistent



### OT/Speech Groups

Before each activity do a gross motor warm up and sign in

1. Stop and Go (August 21<sup>st</sup>- 5 days) Exposure word: Who  
Activity- Movement Cube
2. Eat, Drink, and All Gone (August 28<sup>th</sup>- 5 days) Exposure word: This/That  
Activity- Pretend Cooking/Tea Party- Materials: Puppets, food and drinks, all done basket
3. More and All done (August 5- 4 days) Exposure word: Yes/No  
Activity- Sensory ball (and other sensory activities- bubbles)
4. Review: Stop, go, eat, drink, all gone, more, all done (September 11- 5 days)  
Activity- Pop the Pig/Feed the Woozle
5. Help and Want (September 18- 5 days) Exposure word: Need  
Activity- Play doh (put in different type of containers)
6. In and Out (September 25- 5 days) Exposure word: Up/Down  
Activity- Mr. Potato Head
7. Me, My, and You (October 2<sup>nd</sup>- 5 days) Exposure word: Ready  
Activity- Dress Up
8. Play and Turn (October 10- 4 days) Exposure word: Good  
Activity- Hungry Hippos/Elefun
9. Look and See (October 16- 4 days) Exposure word: Bad  
Activity- Core Word Bingo
10. Review: Me, my, you, play, turn, in, out, look, see (October 23- 4 days)  
Activity- Lisa Drawing SMARTboard activities
11. Put and Take (October 30- 5 days) Exposure word: Happy  
Activity- Ned's Head
12. I and Do (November 6- 5 days) Exposure word: Sad  
Activity- Hand Washing Activity
13. Where, On, and Off (November 3- 5 days) Exposure word: Big  
Activity- 1. Puzzle 2. Block Tower 3. Race Track
14. Review: Put, Take, I, Do, Where, On, Off (November 20- 2 days)  
Activity- Melissa and Doug play pizza
15. Like and Again (November 27- 5 days) Exposure word: Little  
Activity- Bean bag toss throw on core word lily pads
16. Open and Get (Dec 4- 5 days) Exposure word: Come  
Activity- Setting a table from items in a Rubbermaid box
17. Make and Give (December 11- 5 days) Exposure word: Here  
Activity- Make Ornament/snowflake
18. Review: Like, again, open, get, give, make (December 18- 5 days)  
Activity- Decorate sugar cookies
19. This and That (Jan 8- 5 days) Exposure word: What  
Activity- Coloring sheet- this/that choosing color
20. No, Not, and Yes (Jan 16- 4 days) Exposure word: Can  
Activity- Picture scene- put animals that belong (say yes or no if they belong)

Figure 5: Sample SLP and Occupational Therapy Year schedule for Weekly Co-Treatment plans.

expectations for resources from each future member. By being consistent, the participants should have felt the process was fair, as they completed the same amount of work to gain access to the resources. A final recommendation from creators of the website would be to set

aside four calendar days a year to meet to review the website, troubleshoot, discuss changes, and determine next steps.

### **THOUGHTS FROM CICI MEMBERS**

"When I am creating lessons with core vocabulary targets, I often times turn

to the CICI drive because of how it is organized, easily accessible and includes many resources I can quickly access without having to hunt down resources myself each time. I love the idea of collaborative efforts of local colleagues sharing the work we are already doing with one another. This is especially beneficial to professionals who are looking for a place to start or have a low prevalence of students who would require the materials collected within the CICI drive. I enjoy contributing to the CICI drive and have recommended it to several colleagues."

### **NATALIE KARR, SLP, MCLEAN COUNTY UNIT 5, NORMAL, IL**

"CICI has given our family access to quality core Language Resources. As a working mom with a busy family, I find the materials provided invaluable and easy to use. The world of core language has truly become a family experience. It's amazing to witness my son communicating with his siblings, as well as our family and friends."

### **AUDREY HENSLEY, PARENT OF A STUDENT WITH AUTISM IN MCLEAN COUNTY UNIT 5 AND LBS1 IN BLOOMINGTON PUBLIC SCHOOLS DISTRICT 87, BLOOMINGTON, IL**

"I am the Supervising SLP for a special education cooperative with 16 school districts. Our SLPs were thrilled with the opportunity to be a part of CICI. Some of them were actively involved in teaching core words and many of them are just learning about core. CICI has been such a great resource and a smart way to share the work!"

### **JOYCE DACHAUER, SLP SUPERVISOR, TRI COUNTY SPECIAL EDUCATION ASSOCIATION, MCLEAN COUNTY, DEWITT COUNTY AND LOGAN COUNTY, ILLINOIS**

"The supports and resources from CICI help me carry over the core words into the daily academics. It's a great resource which makes planning easier and gives great ideas on ways to further implement





Image 12: A Picture of Core Vocabulary Implementation in a Group Lesson.

core into all academic areas.”

**TIFFANY RICH, LBS1, BLOOMINGTON  
PUBLIC SCHOOLS DISTRICT 87,  
BLOOMINGTON, IL**

“As a certified occupational therapy assistant (COTA), I use CICI in a variety of ways throughout my weekly sessions. Students use CICI resources during both fine and gross motor tasks for writing words and sentences, as they write and talk using core vocabulary words. I utilize CICI to get a variety of ideas for games, crafts and activities to make fine motor skills more fun for my students while embedding core vocabulary within it. In addition, my students also use core vocabulary during their sensory breaks to request and communicate their needs.

CICI has been a great resource for me to learn how to incorporate core vocabulary into my therapy.”

**LISA ELLIS, COTA, BLOOMINGTON  
PUBLIC SCHOOLS DISTRICT 87,  
BLOOMINGTON, IL**

**HOW FAR TO GO?**

At this time, the creators have not discussed how far they want to go with this initiative or when the website will be complete. In regards to content, the plan is to keep adding new core word units to increase the materials folder to include one hundred and fifty core words. One potential issue is who will find resources for these new words? Do the creators and assistants do it? Do current members

complete at least one new core word or should CICI actively recruit new members in other districts and agencies? If current members complete new words, should CICI change the password so they can only gain access after their work is complete? As the creators find other materials appropriate for the support folders, these resources will be added to the site. It is the creators’ vision that support folders, as well as the material folders, will always be open for expansion. Another question the creators have encountered is: can CICI expand outside of the Bloomington-Normal region? At this time, the creators plan to keep CICI in Central Illinois only. The concerns are if the initiative gets too large it will be too much to manage and may take away the collaboration within the



immediate Bloomington-Normal community.

## CICI'S HOPES

The primary hope for CICI is to inspire SLPs and communication teams to teach students with CCN the use of core vocabulary to become functional communicators. CICI hopes to establish consistency in implementation across agencies within our community and increase teamwork and collaboration within these teams. The secondary hope is to inspire others to create such a website in their own regions. Others can create their own site by establishing relationships between school districts and private agencies in the community. By reaching out and developing this relationship, each entity will learn more about the other and work together to create a resource similar to CICI.

## RESOURCES UTILIZED IN THE CREATION OF CICI:

1. Core Vocabulary and the DLM: <https://www.med.unc.edu/ahs/clds/resources/core-vocabulary>
2. Gail Van Tatenhove's website: [www.vantatenhove.com](http://www.vantatenhove.com)
3. Minspeak- Intervention Planning section: <http://minspeak.com>
4. PrAACtical AAC- can search for core vocabulary ideas: [www.praacticalaac.org](http://www.praacticalaac.org)
5. Ahern's FREE core vocabulary learning book: [www.slideshare.net/teech-kidz/core-vocabulary-learning-book](http://www.slideshare.net/teech-kidz/core-vocabulary-learning-book)
6. Lauren S. Enders Pinterest Board <https://www.pinterest.com/lasenders/>
7. Reading A-Z- subscription based website contains a variety of leveled stories containing many core vocabulary words as repeated lines or themes within the stories
8. Assistiveware Core Vocabulary Classroom <http://coreword.assistiveware.com/login>
9. Tobii Dynavox Resources- Getting Started with Core First <https://dynavoxtech.force.com/devices/apex/CoreFirst>

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# DISKoveries

## The Smart Connector, the Smart Keyboard and the Apple Pencil

By Joan Tanenhaus



### THE SMART CONNECTOR, THE SMART KEYBOARD AND THE APPLE PENCIL

The last DISKoveries (February/March issue) contained a review of the 10.5 iPad Pro and iOS 11 and how the two work together to provide new and unique learning for those with special needs. This article will continue the review with information and details about the Smart

Connector, Smart Keyboard and the Apple Pencil and how, with the iPad Pro, they combine to create an even more important learning tool.

### SMART CONNECTOR

If you hold the iPad Pro in landscape position, with the Home button on the right, the Smart Connector is at the middle of the bottom edge. These three cir-

cles are magnetic and when matched with another connector on an accessory, it will provide for almost instant data transfer and bi-directional power to the accessory. Accessories connected this way, like the Apple's Smart Keyboard (see below) and the Logitech's Create Keyboard, are powered by the iPad, which means they never need to be charged and do not need to be paired for Bluetooth either. Currently, these two keyboards and the Logitech Base Charging Dock (see review below) are the only accessories available that use the Smart Connector. As with other innovative products from Apple, we will have to wait and see what creative applications appear in the future using this new technology.

**Logi Base Charging Stand** (Logitech: [www.logitech.com](http://www.logitech.com)) The Logi Base is an aluminum stand and charger for the iPad Pro. When you place the iPad on the stand in, the landscape position with the home button facing right and the charging cable in the Lightning connector on the back of the base, the magnets on the stand align with the iPad Pro's Smart Connector, and charging starts immediately. If you have a Smart Keyboard, it needs to be removed. The base has an anti-slip pad that grips the desk surface and provides stability. The stand supports a 70 degree viewing angle for watching movies, using Face-time, reading, following a recipe, writing





## Smart Connector

with the on-screen keyboard or with the Apple Pencil. If you want to charge your pencil at the same time, you can plug it into the iPad's lightning port (using some of the cables reviewed below). (The Logi Base might not work with all iPad cases, so check compatibility).

### THE SMART KEYBOARD

([www.apple.com](http://www.apple.com))

The Smart Keyboard is a full-sized external keyboard designed for the iPad Pro. It's attached to a Smart Cover, and connects to the iPad Pro with the Smart Connector. It serves not only as a keyboard, but also as a cover and stand. Because it uses the Smart Connector, it doesn't need to be charged or paired, and has no wires or cables. The Smart Connector transfers both data and power between the iPad Pro and the Smart Keyboard. Just unfold it when you want to use it, and fold it up when you are finished. When you unfold it, the onscreen keyboard disappears and when you fold it up, it automatically reappears. The keyboard is lightweight and thin, just a little thicker than the Smart

Cover alone. It's covered with fabric that is coated with a water-resistant finish. There are no gaps between keys to trap crumbs, dust or water.

The Smart Keyboard has four full rows of keys, similar to a standard keyboard. Below these rows are the World key, Control, Option, Command keys, Space Bar and four arrow keys. The arrow keys allow you to move the cursor around and place it where ever you need for editing, adding text, deleting, etc. The World key brings up the Emojis which can be selected by touch, or other keyboards you use. An onscreen shortcut bar is also always in view and lets you use word prediction, and features such as Bold, Italics, Underline, Cross Out, Bullets, etc., also chosen by touch. To use Speech Recognition and the microphone when using the Smart Keyboard, press and hold the down arrow key on the right of the shortcut bar. The onscreen keyboard will appear and you can press the microphone for speech recognition. If you are using Notes, you can also use the Apple pencil with that menu.

The Smart Keyboard lets you do many

other things, using keyboard shortcuts. There are system shortcuts and then additional shortcuts specific to the app you are using. Command + H returns you to your Home screen. Command Tab will take you to the App Switcher. If you hold down the Command key and keep tapping the Tab key, you can highlight different apps. Command + Space will take you to Spotlight Search. Use Command with an arrow key to jump to the top, bottom of any page or to the beginning or end of any row of text. Option and left / right arrow key jumps forward or backward by a whole word. Press and hold the Command key and you will see a complete list of supported shortcuts for the app you are using. Many other shortcuts that you use with Mac or Windows computers are available with the Smart Keyboard and for any Bluetooth keyboard- like, cut, copy, paste, find, save, etc. For a complete list of system shortcuts, check <https://support.apple.com/en-us/HT201236>. You can also create your own keyboard shortcuts on the iPad. Go to Settings→General→Accessibility→Keyboard→Text Replace-



Logi Base Charging Stand (Logitech: [www.logitech.com](http://www.logitech.com))

ment. You can add a keyboard replacement for a word, your name, a complete phrase.

iOS 11 also has several accessibility features for hardware keyboards that can be used with the Smart Keyboard. These include: **Sticky Keys** (with Sticky Keys turned on, modifier keys can be used without having to hold the key down. You type them as consecutive keys, instead of simultaneous ones. This is helpful for someone who might be unable to physically press two keys at the same time.) **Key Repeat** (by disabling Key Repeat, you can prevent characters from being entered multiple times with a single press.) **Slow Keys** (this adjusts the amount of time between when a key is pressed and when it is activated.) Key Repeat and Slow Keys are especially helpful for someone who might have a tremor or motor difficulties related to striking and releasing a key.

Students with reading and writing difficulties often benefit from the use of a talking word processor as they are writing. Apps for this kind of program can be used with the Smart Keyboard and provide auditory feedback by speaking the letters, words, sentences or any and all of these as the student is typing. They also read the word prediction choices and can be used to read entire documents aloud. This auditory feedback assists with reading, spelling and with word order difficulties, as well as expressive writing disorders and dyslexia. Some of these apps are: **iWordQ** ([goqsoftware.com](http://goqsoftware.com)), **Clicker Docs** ([cricksoft.com](http://cricksoft.com)), **WriteOnline** ([cricksoft.com](http://cricksoft.com)), **CoWriter** ([donjohnston.com](http://donjohnston.com)) and **Predictable** ([therapy-box.co.uk](http://therapy-box.co.uk)).

### THE APPLE PENCIL ([www.apple.com](http://www.apple.com))

The Apple Pencil is a seven-inch Bluetooth digital stylus that works only with the iPad Pro series of Apple tablets. One end of the pencil is the writing tip and the other end has a magnetic removable cap with a lightning connector underneath for charging. The Apple Pencil charges quickly, 15 seconds gives you about 30 minutes of use and a full charge usually takes about 15 minutes.

Combined with the right apps, the Apple Pencil features pressure sensitivity and angle detection. Press harder to draw thicker lines, use a lighter touch to draw a very light, thin line or adjust pressure for anything in between. There are also two tilt sensors in the tip of the pencil that calculate the angle of your hand and transmit that information to the multi-touch display so that you can create different degrees of shading, just as you would with a conventional pencil.





Smart Keyboard ([www.apple.com](http://www.apple.com))

With the new ProMotion technology, latency (the slight delay between when you begin writing and the time it appears on screen) is hardly noticeable. This quick response leads to smooth and natural writing. It makes notetaking and writing within apps a very natural and comfortable experience.

While using the Apple Pencil, you can rest your hand on the iPad screen without any interference. You don't have to wor-

ry about hand placement, you can just write like it's a piece of paper. This is due to Apple's new Palm Rejection Technology which can detect the difference between the pencil and your hand. In addition, this new technology still allows you to use multi-touch gestures, like swiping and tapping while using the Pencil. For example, in Sketch mode in Notes, you can touch the screen with two fingers and you'll get a ruler that you can use to draw

straight lines with the pencil.

The Apple Pencil is an impressive art tool and supported by many specialized art apps. This article will not be reviewing this aspect of the Apple Pencil. If you are interested in the Apple Pencil as a drawing/ painting/ art tool, check out this link for more detailed information: <https://www.imore.com/best-apps-drawing-ipad-pro-apple-pencil>

The Apple Pencil has many applica-





Apple Pencil ([www.apple.com](http://www.apple.com))

tions for individuals with special needs. These include its use in the areas of notetaking, organization of notes and information, scheduling/calendar applications, annotating text files, PDFs, photos, filling out and signing forms as well as stylus applications for programs not optimized for the Apple Pencil.

Here some of the many things you can do with the Apple Pencil and apps on the iPad Pro:

## APPS FOR NOTETAKING AND TASK MANAGEMENT

**Notes** is the app that comes on every iPad and iPhone and it's excellent to use for a first notetaking experiences. Notes doesn't give you the complex organization needed in college for notetaking, but it's a great starter for younger students who are just beginning to write and take notes. In addition, since most writers will use a combination of inputs such as screen keyboard, external keyboard, Apple Pencil and speech recognition, Notes' ability to use all these makes it ideal. Its excellent Apple Pencil support also makes it a good first experience with

handwritten notes. Notes also features the ability to search your handwritten notes using Spotlight, making it easy to find something you have written. Start with a new Note and write a to do list, the day's schedule, practice spelling words or write a short sentence. Try scanning a worksheet into Notes and then have the student fill in the blank spaces with the answers. For easy access, put Notes in the Control Center so it can be used even if your iPad is locked. Just tap the locked screen with your Apple Pencil and a new note will open. Notes also lets you set a password and use it to secure any individual notes. All your notes can always be accessed from all your devices, iPhones, other iPads, Mac and Windows computers as well.

**Microsoft OneNote** ([www.onenote.com](http://www.onenote.com)) **Microsoft OneNote** is a free app that lets users take handwritten notes and convert them to typed text anytime. Students can organize their notes into separate notebooks (one for each subject, if they want), providing an excellent way of organizing written documents. They can take quick notes, write outlines, write

down thoughts and ideas, make lists, track a project and draw or sketch. They can divide notebooks into sections, use tabs and pages. They can also record a video or just use audio and embed these in their notes. One of the other outstanding features is the ability to search your audio or video recordings for specific words or phrases. Fully integrated with Microsoft Office, users can export to a Word document, Excel spreadsheet, PowerPoint and even to WordPress. Notes taken on the iPad will update on the phone or any other platform used. OneNote also has password protection features. Notebooks or individual sections or tabs can be protected with passwords, notebooks can be shared but certain pages kept private if desired. This is a very comprehensive and full-featured app for notetaking, with the Apple Pencil and with typing and speech recognition.

**Notes Plus** ([www.writeon.cool](http://www.writeon.cool)) is another handwriting and note taking app. It converts handwriting to text, and back again if you need, with support for 52 languages. Background audio recording will automatically link to your





Plus Ergo ([www.plusergogrips.com](http://www.plusergogrips.com)) (See Assistive Technology Solutions, page 22)

pages, letting users hear the recording that matches to their notes. This is a great assist to notetaking. You can also insert images from photos, the internet or from the camera and import PDF and Doc files to annotate. Notes can be exported as PDFs or images to Dropbox, Google Drive and others, with automatic backup to Dropbox. Notes Plus offers email support with responses within 24 hours.

**MyScript Nebo** (MyScript: [myscript.com](http://myscript.com)) was an app developed specifically for the Apple Pencil and has excellent handwriting recognition and many unique features. The Interactive Ink feature automatically translates your handwritten letters into typed characters, as you write. You can search and find handwritten ink and text in your notes, even in your diagrams. You can

draw diagrams, do math equations, and use gestures to edit your written work. As you write, you can create heading by underlining with double line, highlight by drawing a box around words, and start a list by putting in a bullet point. Notes can be exported as text, PDF, HTML or Word files.

**Notability** ([gingerlabs.com](http://gingerlabs.com)) can be used for creating word-processing documents for individual class lectures, to-do lists, daily log, etc. with typing or the Apple Pencil. It has the ability to record live audio while you are taking notes. You can go back later to your notes and tap a word and the app will start playing what was being said at the exact time you typed that word. You can add images from the internet and your photo library, download PDFs and annotate them and fill out

forms. Audio notes can be shared and PDFs can be printed, shared via email or saved to Dropbox, iDisk or other services.

**MyScript Stylus** (MyScript: [myscript.com](http://myscript.com)) is a free app that provides a handwriting alternative to onscreen keyboards for all apps. The app adds an auto-scrolling input panel under the other app that lets you write using fingertip, stylus or Apple Pencil with any application including email, text documents, calendars and web browser. As you are writing, your handwriting is converted into digital text in real time. The input panel lets you correct and edit what you have written, overwrite, join or split words, insert space and erase using natural and intuitive gestures.

The apps that are right for an individual user will depend on their specific needs. Many have Lite versions so you can download and try them out before you decide which one is right for you. Check video reviews on YouTube for detailed information and explanations of the app's potential to address your goals and interests.

## APPS FOR ANNOTATING

**iAnnotate 4** (Branchfire: [iannotate.com](http://iannotate.com)) is an enhanced app for the iPad Pro and Apple Pencil. With automatic Apple Pencil detection, iAnnotate works with file types PDF, DOC, XLS, PPT, Image and Web. It has a web capture tab to navigate to the desired URL. Then, it captures the page and converts it to a PDF which can be annotated using the Apple Pencil. This app can also be used to annotate photos, lecture slides, class tests and to create blank PDFs from scratch. It allows users to open as many documents as needed and then look through the tabs to switch between them. Other features include a two document view feature, the ability to add, delete, rotate and rearrange pages in your document, a Quick Delete and also the ability to forward a summary of your annotations as an email or a new PDF.

**PDF Expert Pro** (Readdle: [pdfexpert.com](http://pdfexpert.com)) is an app in which you can mark information from books, journals or documents with annotation tools (highlight, underline, strikethrough, etc.). You can

work with PDF forms created in Adobe Acrobat and fill out any PDF forms with interactive fields such as text fields, checkboxes and radio buttons. It lets you create and use e-signature to sign documents, make handwritten notes or highlight text, and to protect your files with a password. You can connect to Dropbox, iCloud, One Drive, Google Drive, etc. and work with files right in the cloud storage and all edits will be saved there without downloading the documents. With the Pro version, you can edit or modify PDF text, images, add links, redact sensitive data and much more.

## APPS FOR TIME/TASK MANAGEMENT

It's been difficult, to date, to find any time management apps that support handwriting and/or the Apple Pencil. The following app is one that works very well in organizing, scheduling and managing information related to school work for high school and college students on the iPad Pro. You can enter information using the on-screen keyboard and use the Apple Pencil as a Precision Pointing tool and as a stylus to swipe, type, point, select buttons, etc. You can also try MyScript Stylus (reviewed above) with it.

**iStudiez** ([iStudentpro.com](http://iStudentpro.com)) is an app that lets high school and college students enter all their school information into the calendar, including homework and assignments, special projects, class schedule, exams, instructor information (name, email, office hours, etc.) and much more. There is two-way integration with the iOS Calendar app so students can look at the daily and weekly calendars and see what they have to do each day. Having all this information together in one app makes it easier to stay organized and to follow through on all kinds of tasks.

**Here are some other things to do with the Apple Pencil to enhance teaching and learning:**

1. **Turn a class worksheet into one on the iPad:** Take a picture of a class

worksheet. Go to Photos and find your picture. Press Edit on the upper right corner. Then select the circle with three dots on the bottom right and then choose Markup. Select pencil, color and have your students start filling in the blanks on the iPad Pro with the Apple Pencil.

2. **Markup anything on your iPad:** Take a screenshot and follow the above directions to Markup. Using Assistive Touch, you can set up a Screenshot shortcut, press anytime you want to take a screenshot.
3. **Markup your photos:** Get to your photo and follow the above directions to Markup.
4. **Precision Pointing:** When an app is not designed to work with the Apple Pencil, it still can be used for Precision Pointing. For example, the Apple Pencil will work for scrolling, swiping, tapping small buttons as well as

typing with the on-screen keyboard. There is also an on-screen keyboard available from the App Store called Swype ([www.swype.com](http://www.swype.com)) that allows the users to slide their finger or the Apple Pencil across the keyboard, passing over other letters, with a single, continuous movement, without lifting. This works very well with the Apple Pencil, speeding up typing and reducing the motor task required in lifting and tapping each individual letter.

5. **Other Fun Things to Do:** Some other apps for fun things to do with the Apple include: Pencil **Puzzazz Crossword & Puzzle** ([puzzazz.com](http://puzzazz.com)), **Kaleidoscope Drawing Pad** (Bejoy Mobile), **Draw and Play** (Bini Bambini), **Color Pad Free** (DataInvent Systems) For further information about all Apps reviewed and others, visit the Apple Store,



Ztylus Apple Pencil Case ([www.Ztylus.com](http://www.Ztylus.com))



Ztylus Slim Apple Pencil Case ([www.Ztylus.com](http://www.Ztylus.com))

option for users of the Apple Pencil who find it too thin to grip for writing.

**Ztylus Apple Pencil Case** ([www.Ztylus.com](http://www.Ztylus.com)) is a well-designed and well-made full body case for the Apple Pencil, offering a better and wider grip for some. It has other features such as a built-in clip, which prevents the pencil from rolling away and also can be clipped to clothes, pocket or bags as needed. The case is solid white plastic and has a place to store the cap when the pencil is being charged. It also keeps the tip protected when the pencil is not in use. There is a video available to help with the installation along with a manual.

**Ztylus Slim Apple Pencil Case** ([www.Ztylus.com](http://www.Ztylus.com)) is made of black aluminum and is only a little wider than the Apple Pencil. It gives complete access to the lightning connector, has a built-in holder for the cap and an integrated clip for clipping to clothes and also stops the pencil from rolling away. When you aren't using the Apple Pencil, the tip retracts into the case for protection from accidental damage. There is a video of the installation procedure and a manual.

## OTHER ACCESSORIES FOR THE APPLE PENCIL

**TechMatte Apple Pencil Charging Adapters** ([www.techmatte.com](http://www.techmatte.com)) If you like plugging the pencil directly into the Lightning port at the base of the iPad but find the pencil angle difficult to use, these adapters provide options for charging. Remove the cap and insert your Apple Pencil's Lightning connector into the TechMatte adapter and plug the other end of the TechMatte adapter into the iPad's Lightning port. These adaptors come in two sizes: 3.5" long and 1 foot (12") long. Each of these cables provides a more flexible connection between devices and even allows you to place the pencil on top of or beside the iPad Pro during the charging, instead of having it stick out from the iPad. A three foot (36" long) charging cable is also available and designed to charge the Apple Pencil with your current USB wall charger.



TechMatte Apple Pencil Charging Adapters ([www.techmatte.com](http://www.techmatte.com))

the Developers' Websites and don't forget to look at video reviews on YouTube.com.

## ASSISTIVE TECHNOLOGY SOLUTIONS FOR THE APPLE PENCIL

If the grip width or texture of the Apple Pencil is not comfortable for a user with special grapho-motor needs, consider

some of the following adaptations to enhance grip and writing positions:

**Plus Ergo for the Apple Pencil** ([www.plusergogrips.com](http://www.plusergogrips.com)) is an ergonomically designed grip for the Apple Pencil. It's made of soft silicon and is twice as wide as the Apple Pencil. It provides another





Pen Pal - Clip for Apple Pencil ([www.giantlion.com](http://www.giantlion.com))



Poetic Lumos Back Cover ([www.poeticcases.com](http://www.poeticcases.com))



Moko Holder Case ([www.mokodirect.com](http://www.mokodirect.com))

**Pen Pal - the Clip for Apple Pencil** ([www.giantlion.com](http://www.giantlion.com)) If you have concerns about your Apple Pencil rolling off the desk, you can look at the Pen Pal that slips onto the pencil and provides a clip if you want to put in your pocket or clip to a holder and at the same time prevents any rolling on the desk.

**Moko Holder Case for the Apple Pencil** ([www.mokodirect.com](http://www.mokodirect.com)). This organizational accessory is designed to hold the Apple Pencil, along with accessories, cables, connectors, etc. It has a built-in mesh pocket and elastic strap that secures and stores small accessories such as the pencil cap holder, lightning tether, charging adapters, etc. as well as the Apple Pencil. It's a hard case, with zipper all around and measures approximately 8 ½ inches long, 3 inches wide and 1 ¾ inches deep.

**CableSnap** ([www.twelvesouth.com](http://www.twelvesouth.com)) If you are looking for a way to organize all the cables that you have with the iPad Pro and Apple Pencil, try these leather CableSnaps. Available in packs of three, they keep your cables neatly wrapped and keep them from getting tangled with themselves and with each other. You get one large one and two small ones- great for your Lightning cable, your EarPods/headphone cables, and others, like Tech-Matte cables too. The metal snap keeps each cable enclosed, and the cable loop keeps it attached when in use.

**PencilSnap** ([www.twelvesouth.com](http://www.twelvesouth.com)) If you have an Apple Pencil with a Smart Cover or a Smart Keyboard, you will appreciate PencilSnap, another great organizational tool. PencilSnap is a leather holder for the Apple Pencil that snaps to the SmartCover with hidden magnets. The Pencil fits snugly inside and protects the tip while the magnets keep the pencil safely attached to the iPad Pro. You never have to wonder where your Apple Pencil is. PencilSnap can also be used as a stand-alone protective case when you don't want to take it along with you.

**Poetic Lumos Back Cover for the iPad 10.5** ([www.poeticcases.com](http://www.poeticcases.com)) If you are a Smart Keyboard and an Apple



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compact device, with the ability to switch from one to the other quickly and easily without carrying around a lot of bulky accessories. Combine this with the new software and accessibility features of iOS11, the large number and quality of apps available, the size and weight of the device, the assistive technology and organizational accessories and the iPad Pro becomes an even more powerful learning and educational tool.

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PencilSnap ([www.twelvesouth.com](http://www.twelvesouth.com))



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Monday, April 25, 2018  
2:30 pm – 3:30 pm (CDT)



### **Partner Skills Tips and Strategies to Support Your Students that Use Core Boards and Devices**

By Kelly Key  
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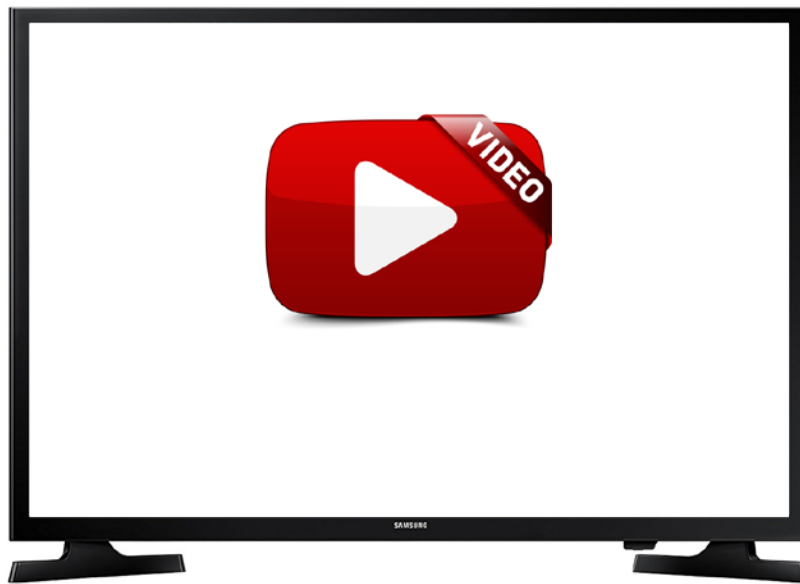
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# Perspectives on Universal Design for Learning in Higher Education: On Campus and Online Learners

In education, heated debates and discussion often arise from the following questions:

1. What is best, evidenced-based practice?
2. What are the most valid and appropriate ways to assess learning?
3. With classroom demographics changing and becoming increasingly more diverse, how do instructors meet learners' varied needs?

Instructors across disciplines and age groups, from pre-kindergarten through higher education, discuss and research these questions regularly. Heavy emphasis on the third question, addressing increasing classroom diversity and learner needs, is prevalent in K-12 school systems. According to Burgstahler (2015), diversity in the classroom can take many

forms, such as ability, disability, age, reading level, learning style, native language, socioeconomic status, race, ethnicity, and more. Over the past 20 years, as Universal Design principles became a focus of education, K-12 educators have continued to implement principles of Universal Design for Learning (UDL) in their practice as a means of addressing the ever-increasing diversity among learners. Higher education faces similar challenges and must continue to foster innovative learning environments. Given instructors have diverse backgrounds themselves, many having never received instruction on curriculum design or pedagogical approaches in education, the answers to the above questions may vary widely.

## UNIVERSAL DESIGN FOR LEARNING - WHAT'S THAT?

As institutions of higher education become more aware of UDL and its importance in meeting the needs of diverse learners in the classroom, it is critical to acknowledge laws that support equal access. Multiple federal laws, such as the Americans with Disabilities Act (ADA), Section 504 of the Rehabilitation Act of 1973, the Assistive Technology Act of 1998, and the Higher Education Opportunity Act (HEOA) of 2008, exist to ensure equal access and appropriate supports for individuals who experience disabilities.

From the Higher Education Opportunity Act (HEOA) of 2008, the term Universal Design for Learning (or UDL) means a scientifically valid framework for guiding educational practice that:



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# Universal Design for Learning

## Affective networks: THE WHY OF LEARNING



How learners get engaged and stay motivated. How they are challenged, excited, or interested. These are affective dimensions.



Stimulate interest and motivation for learning

## Recognition networks: THE WHAT OF LEARNING



How we gather facts and categorize what we see, hear, and read. Identifying letters, words, or an author's style are recognition tasks.



Present information and content in different ways

## Strategic networks: THE HOW OF LEARNING



Planning and performing tasks. How we organize and express our ideas. Writing an essay or solving a math problem are strategic tasks.



Differentiate the ways that students can express what they know

Scientific research on the brain and learning informs the UDL framework. The framework is comprised of the “affective networks,” “recognition networks,” and “strategic networks,” which support the “why,” “what,” and “how” of learning. Image courtesy of CAST ([www.udlcenter.org](http://www.udlcenter.org)).

1. provides flexibility in the ways information is presented, in the ways learners respond or demonstrate knowledge and skills, and in the ways learners are engaged; and
2. reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all learners, including learners with disabilities and learners who are limited English proficient.

Universal Design (UD) was initially coined by Ronald Mace, an architect. His goal was to establish usable and functional spaces for all people, not only the “average person” (Mace, Hardie, & Place, 1996). Since UD was introduced, it has been applied across a variety of sectors, such as continued work in physical spaces, UD of information technology, and UD of instruction (Burgstahler, 2012).

UD with a focus on instruction became Universal Design for Learning (UDL) and is deeply explored and researched by CAST (previously - but no longer - referred to as the Center for Applied and Special Technology), a nonprofit educational research and development organization based in Massachusetts. CAST maintains the National Center on Universal Design for Learning ([udlguidelines.cast.org](http://udlguidelines.cast.org)) web-

site. This website offers general information about UDL, how to implement UDL principles across the age continuum, research, and provides connections and resources to a UDL community. CAST also shares foundational information and resources for institutes of higher education ([udloncampus.cast.org](http://udloncampus.cast.org)) looking to implement UDL principles.

CAST (2012) emphasizes the variation in learning needs, preferences, and abilities of individuals and stresses the importance of the following three UDL guiding principles:

- Multiple means of action and engagement (i.e., motivate through interest, build metacognitive skills, encourage collaboration, and involve learners in their learning).
- Multiple means of representation (i.e., access and build background knowledge, generalize information, use multiple forms of media, instruct with both auditory and visual information).
- Multiple means of action and expression (i.e., support goal development, monitor progress, offer multiple types of media to show understanding, support access to assistive technologies, and other tools).

The UDL framework proposed by CAST provides instructors with practical

application for these three principles in practice. Instructors may attempt to follow these principles as best as they can, but difficulties arise when lecture-style courses are the norm and class sizes increase. Although learners who decide to disclose their documented disability are often supported with accommodations through a learner support service (whether it be Disability Services or a similar office by a different name), this does not address the needs of learners who choose not to disclose, have an undiagnosed disability, are English language learners, or other circumstances that contribute to increased classroom diversity. The intention of UDL is to provide an equitable and varied learning environment that allows learners to access education and curriculum without the need to call out learning differences, challenges, or potential obstacles. One consistent challenge in higher education with regards to UDL, however, tends to be a misunderstanding about the difference between UDL and Differentiated Instruction (DI).

## UNIVERSAL DESIGN FOR LEARNING VERSUS DIFFERENTIATED INSTRUCTION

UDL and DI are two separate frameworks for instruction, yet they are often misunderstood or used interchangeably. It is easy to get overwhelmed thinking about meeting various learner needs in a course with hundreds of learners if you are equating that with providing each learner a separate assignment. Fortunately, that is not at all what UDL proposes - UDL should offer the chance for learners to take ownership of their own learning and figure out how they can best retain, make use of, and share information.

Traditionally, DI follows more of an accommodation style framework. Assignments and assessments are catered to the strengths and needs of each learner. It is heavily instructor reliant and does not provide much opportunity for the learner to take charge. On the flip side, UDL-based instruction provides various options to engage with curriculum and demonstrate

## EQUALITY VERSUS EQUITY



In the first image, it is assumed that everyone will benefit from the same supports. They are being treated equally.



In the second image, individuals are given different supports to make it possible for them to have equal access to the game. They are being treated equitably.



In the third image, all three can see the game without any supports or accommodations because the cause of the inequity was addressed. The systemic barrier has been removed.

This illustration is often used in education to help conceptualize UDL. The illustration was initially created by [Craig Froehle](#) and has been adapted by many to expand on the idea of “equality” versus “equity”, leading to the addition of a third portion of the cartoon that calls for the removal of systemic barriers to access. Image courtesy of Cultural Organizing ([culturalorganizing.org/](http://culturalorganizing.org/)).

knowledge. Learners take charge of the way in which they choose to represent what they know from a variety of options, making it more learner-centered.

Katie Novak (2017), an Educational Consultant with a focus on UDL, explains the difference between UDL and DI with “The Dinner Party Analogy”. She asks instructors to think about a classroom as though it is a dinner party, with the instructor as the host. When inviting many people over for dinner, it is likely there is diversity in food preferences among the guests. Is it reasonable to create a separate meal for each attendee based on dietary need or preference, specifically crafted by the host? Or, would it be better to provide a buffet of options that address a variety of dietary needs and preference, allowing each attendee to create their own plate? In order to stay sane, enjoy the meal, and please the majority of guests, a buffet makes the most sense for a large group. The exact same idea holds true for instruction. DI would require an instructor-directed (dinner party host) approach to learning, providing each learner with

their own lesson (individual meal). This is unrealistic in large-group, general education environments. Instead, a UDL or learner-centered (dinner party attendee) approach would meet varied learning needs and allow individuals to choose from an array of options (buffet) offered by the instructor (dinner party host), which encourages self-directed and personalized-learning. To see more success with UDL framework implementation in higher education classrooms, this distinction between UDL and DI needs to be clearly described. UDL is much less overwhelming than it is often thought to be!

### THE ROLE OF ACCESSIBLE EDUCATIONAL/INSTRUCTIONAL MATERIALS AND ASSISTIVE TECHNOLOGY IN UDL

Institutions of higher education have an opportunity to lead the charge in terms of creating accessible environments for learners, staff, and faculty. This is particularly important since many staff and faculty are responsible for educating future instructors, whether it be for the K-12 en-

vironment or post-secondary. One of the greatest barriers in the classroom is a lack of accessible educational and instructional materials (AEM/AIM). This severely hinders access to course information and learning, particularly for individuals who use assistive technology to access course materials. UDL is often misunderstood as interchangeable with AEM/AIM. This is not the case, as creating AEM/AIM is one component of UDL. UDL, as outlined previously in this article, is much more than the creation of AEM/AIM.

That being said, AEM/AIM as a component of UDL is critical to ensuring student access to course materials. When considering materials for a course - such as course syllabi, textbooks, manipulatives, handouts, readings, Learning Management Systems, websites, multimedia, and more - the instructor must also consider various access points for the material. How would they render to an individual with blindness/low vision using a screen reader or magnification tool? Someone who is deaf or hard-of-hearing? Someone with a cognitive or language-based learning need? Someone with a physical mobility difference? Someone who is learning English as a second language? There are many factors to consider, but it is much easier to ensure course materials are accessible from the get-go. Retroactively designing for accessibility (reactively versus proactively) is a recipe for disaster, causing more frustration than keeping accessibility in mind throughout the entirety of the course design.

For instructors reading this who are worried about the accessibility of their already developed course content and materials, it is important to know there is no quick fix. Reach out to the Disability Services office (or equivalent) to ask for help. Start small by creating a priority list to address main concerns, such as ensuring course textbooks and exams are accessible to a variety of learners. On the flip side, it can also be challenging to ensure accessibility of content and materials learners submit for review (by the instructor, teaching assistant, and/or their



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peers). To address this concern, consider making accessibility principles a component of the grading structure (as a whole or on a rubric for individual assignments). This will not only address concerns with submitted material, but it offers an opportunity to teach students a new skill and the importance of creating accessible materials for all. A course is not only made up of the materials an instructor provides, but also the incredible work learners contribute - all of which falls under the framework for UDL.

## DIVERSE LEARNERS INTRODUCED

According to the National Center for Education Statistics (2016), approximately 11 percent of undergraduate learners (across gender) experience and disclose a disability. As age brackets increase, percentages of students who disclose having a disability increases as well. In addition to age, learners who are veterans also disclose having a disability at a higher percentage. The National Center for Education Statistics (2016) provides more

in depth information about distance and online learners, showing the largest percentage are over the age of 30, attend exclusively part-time, and hold a job while taking courses. It's important to understand learner demographics, regardless of whether they attend classes on campus or online.

Consideration for learner diversity in the classroom, such as in the area of disability, is a driving force for applying UDL as a framework for instruction. At institutions of higher education, many learners attend classes on campus in a more traditional format. As the demand for more widespread access to higher education increases, coupled with the need for affordable and flexible learning, online education has flourished. The difference in physical "space" is important to consider when applying UDL principles. On campus and online instructors face similar challenges in meeting the needs of diverse learners, but the way in which learner needs are met may be slightly different. Take online learners, for example

- we know many of these learners are returning to school after a hiatus for various reasons such as to work, raise families, or both. Lisa Modenos, instructor at the University of Massachusetts Amherst stated, "I have learned from this job that so many adult learners deal with anxieties about education and college - they have a lot of baggage about the past and their assumed abilities, and that baggage weighs them down a lot. So much of what we do...is help learners process their past experiences and have them let go of some of that baggage." Essentially, education may only be one facet of a learner's day to day experiences.

Below, two case studies are provided that look at post-secondary education through the lens of a learner and instructor in both on campus and online environments.

### **View Case Study #1: On Campus Learner, and Case Study #2: Online Learner**

## CASE STUDY #1: ON CAMPUS LEARNER



Meet Fey. [Source](#)

### MEET FEY

Fey is an 18 year old young adult. She was accepted to a large liberal arts college. Fey has a particular talent for the arts and has always been an active part of her community, teaching summer painting and pottery classes to school-aged children, as well as running an art club at a summer camp for preschool and kindergarten learners. At college, she majors in fine arts, with a focus on pottery.

Prior to being accepted to college and deciding to enroll, she was supported by her special education team in high school. Fey has both dyslexia and a degenerative vision condition, which impact how she accesses school curriculum. She received her first individualized education plan (IEP) in third grade after educational testing identified her reading difficulties in the absence of an intellectual disability. At that time, she was identified with a Specific Learning Disability (SLD) in the areas of foundational reading skills,

reading fluency, and reading comprehension. Fey's degenerative vision condition was identified in 7th grade when she began losing peripheral vision.

Throughout Fey's public school career, she received explicit, systematic instruction by a reading specialist to aid in building strong foundational reading skills. Fey also received support from a teacher of the visually impaired (TVI) and special educator/case manager. Once she reached high school, she started working with a transition counselor to begin planning for life after high school. Fey knew she wanted to attend school with a focus on fine arts. The transition counselor worked with Fey on understanding her rights as a learner with a disability and how responsibility shifts in terms of obtaining accommodations in a post-secondary setting. Much of their time together focused on educating Fey about the nature of her disability, her strengths and needs as a learner, and building self-advocacy skills.

### LEARNER PERSPECTIVE

As a sophomore in college, Fey details some of her successes and challenges below.

It wasn't that I thought college would be easy, but I knew I had the drive and desire to do well. The first year was the most difficult. Now that I'm halfway through my sophomore year, I feel a bit more settled and have a better understanding about the process of disclosing my disability, as well as accommodations I receive, and how I may need to advocate more for myself in some classes over others.

Overall, my major-related coursework has been a bright spot in some of my darker days in college. My deep interest in the material, combined with the hands-on focus of the program, has naturally catered to my needs as a learner without requiring extensive accommodations or support. I am currently thinking about combining my fine arts major with an education major, as well.

The college I attend provides me with free assistive technology tools while I am a learner, which is critical as being a learner is not a lucrative endeavor. Assistive Technology is incredibly helpful in terms of coursework, as I need quite a few tools to access my readings, course websites, handouts,



and more. I primarily use magnification, text-to-speech, and speech-to-text tools. Since my vision continues to worsen, I am learning screen reader technology to aid me in navigating computers and mobile devices.

Despite these successes, it has not all been easy. Some instructors are more understanding than others. I am more comfortable discussing my needs with instructors I know well, such as those from my program/major. During my second semester of freshman year, I experienced a particularly challenging circumstance in a women's studies course I had to take to fulfill certain general education requirements. I was excited at the prospect of taking the course, but it proved to be incredibly challenging.

The women's studies course took place weekly in a large lecture hall. There were approximately 300 learners in the course. Due to the size of the class, the locations available on campus were minimal. The space consisted of auditorium seating, quite a distance from the instructor at the front of the room. The classroom was, however, equipped with a lot of technology, as well as both whiteboards and chalkboards. This particular instructor mentioned early on in the semester she "didn't believe in technology in replacing handwriting", causing her to write extensively on the chalkboards and whiteboards during class, as well as encouraging learners to do the same by leaving their technology behind. She failed to use the equipment provided in the room aside from PowerPoint slides, which she uploaded after the class was completed each week. Most difficult was the course readings. They were uploaded to the course website as inaccessible PDFs, as the instructor photocopied them herself and did not think to create cleaner copies and save them in a format that could be read using assistive technologies. This set me back significantly in terms of my course work and participation, as I had to wait for Disability Services to provide me with alternate, accessible versions of the readings.

Although I continued to communicate my needs to my instructor, I was worried she perceived me as "lazy" or "making excuses". I desperately wanted to be an avid participant and to show I was a diligent learner, but it proved difficult given the circumstances. Even with my accommodations and strong self-advocacy skills, I became anxious and concerned my knowledge and investment was not coming through. It was the closest I felt to failure during my time in college thus far, despite knowing this is not who I am.

#### INSTRUCTOR PERSPECTIVE

The particular instructor Fey references above, Dr. Mariah Wilson [name changed], has taught in higher education for over 20 years. She prides herself on the courses she has worked hard to design. In response to the challenges Fey experienced above, Dr. Wilson sought support from the college's Center for Teaching Excellence and Development in partnership with Disability Services. Dr. Wilson became a Universal Design for Learning fellow as part of a pilot program in an attempt to learn more about how to meet the needs of diverse learners in her ever-growing courses. Dr. Wilson's perspective and experiences are outlined below.

It is never my intention to ignore the diversity of the learners in my classes. As the learners in my classes grow in number, I find it increasingly more difficult to meet everyone's needs. I find myself struggling to keep track of learner accommodations from Disability Services, and although the staff means well, they are severely overworked with extremely high numbers of learners to support. It was my experience with Fey that finally made me realize there has to be a better way. Although I knew I could not fix all of the challenges and barriers in my course in one day, I knew I had to start somewhere. I began searching for more support on campus. When I discussed my concerns with Disability Services, they informed me of a pilot program for instructors on campus focused on practical support for implementing Universal Design for Learning principles into instructional design.

I decided to focus on my women's studies course, the same course in which Fey was enrolled. One of the reasons I appreciated this experience was because it allowed me to work with learners who volunteered to provide their perspective and experiences, which in turn helped me to consider altering aspects of the course I did not even realize caused difficulty for some.

Some changes I made not only supported learners with disabilities, but

were changes that benefited all learners and allowed for more personalized learning, even in a course of 300 or more. A few of these changes are outlined below.

- **Establish a flipped classroom with small seminars:** Instead of a once a week (in person) two and a half hour course, I established one and a half hour, weekly (in person) seminars on various days throughout the week. These were primarily run by Teaching Assistants (TAs), with my consistent support and guidance. Prior to the seminars, which were no more than 30 learners, I provided my lectures as audio/video recordings on the course website. Information from these lectures was discussed and explored during seminar. Having a smaller group allowed for more personalized learning, deeper discussions, and hands-on group and partnered work. This type of instructional practice ended up supporting my learners in meeting course learning objectives in a more meaningful way.
- **Create accessible educational and instructional materials:** One of the reasons I appreciated being a UDL fellow was the introduction to topics I never even considered. I had no idea about assistive technologies. I also had no idea how my inaccessible photocopies of articles or textbooks provided undue stress to individuals who were trying to access them with screen readers or text-to-speech tools. I became educated on creating accessible documents in Word, PowerPoint, Excel, and more. I also began to understand how the materials I use in class (or require learners to use) may need to be provided in a few different ways. Reading an article is not the only way to gain knowledge. Videos, audio, and in-person experiences (such as visiting special collections and archives in the library) can support learning, as well. Options, options, options!
- **Alter the presentation of content and materials:** Since I was providing recorded lectures, it was important for me to prepare my script. This made it easier to add closed captions to my lectures and allowed me to offer better descriptions. I learned about the importance of being more descriptive for both my recorded and in person lectures. If I write something on the board, it's important I state what I am writing or drawing out loud. If I am showing an object, I need to describe that object. These simple changes can completely impact a learner's experience in the course.
- **Build a community:** Although I had made many other large and small changes, these had a significant impact on learning. I received some of the strongest course evaluation reviews than I had in my prior 20 years of teaching. Although I have a long way to go, particularly in terms of how best to assess learning, I now have a community of faculty spread throughout campus (as well as support from the Center for Teaching Excellence and Development and Disability Services) to bounce ideas off of and explore options and innovative ideas as I continue developing my courses.

I learn the most from my learners. I want them to feel heard and successful. I know what I am working on is not perfect and not always easy, but it's a start. My courses become more powerful each semester. I am now exploring ways to embed accessibility requirements into coursework learners share as a way to educate them on the importance of Universal Design. Working in higher education and educating potential future educators, I feel it is my duty to share this knowledge with anyone who will listen.



## CASE STUDY #2: ONLINE LEARNER



Meet Jim. [Source](#)

### MEET JIM

Jim is a 38 year old father of two young children. He loves building elaborate train tracks and block cities with them. Their summers are filled with forts and sand castles. In high school Jim was always good with numbers and was intrigued by how mechanisms worked. One of his fondest memories is taking apart a broken thermostat. He saved the gears and springs, hoping to one day build something with them, but they just sat on a shelf gathering dust. Back then he dreamed of going into engineering.

In high school Jim was never the top learner, but got decent grades. Starting in 7th grade, he received help to stay focused and complete homework assignments, as well as an accommodation for extended time on tests. He hated being pulled out of the main classroom to complete work. He would miss out on group projects because he was working with the special education teacher in the resource room. Some kids taunted him and said it wasn't fair that he received extra help. Jim's friends were just being curious when they asked about the "other room", but Jim never wanted to talk about it.

Jim first started an undergraduate degree straight out of high school at the local state university. At university he wanted to prove to his parents (and himself) that he could go it alone. He loaded his schedule with science courses. He loved the lab component where he could see how things worked, but struggled to submit the required lab reports. Problem sets were even worse. He never knew where to begin and how to show his work. As the semester progressed he found himself cramming for exams and pulling all-nighters to finish assignments. His grades slipped, and he decided to not return after his first summer. He moved back home, and worked multiple minimum wage jobs.

Now Jim works nights at an automotive parts supply warehouse. He dreams of the day when his work schedule will align better with that of his family. His supervisor has told him that he could be promoted to a day shift with more responsibility, but that position requires a bachelor's degree. Jim has been accepted into an online degree completion program that provides extensive learner advising and gives credit for work experience.

### LEARNER PERSPECTIVE

Jim has just completed his first semester as an online learner. He describes some of his successes and challenges below.

I was terrified of coming back to school. All I could think of was how poorly I did the first time around. My family support was amazing! My kids made me study snacks and my wife made sure I had quiet time on the weekends to do my work. Everyone is looking forward to when I no longer have to work nights.

My advisor, Dr. Laura Hart, reached out to me before the semester started. We talked for two hours about my past experiences and the study strategies I would need to put into place to succeed. She would also be the instructor for my first class. Having someone who believed in me felt so good. We decided that I would focus on just one class in my first semester, and she would help me keep track of deadlines.

Even with Dr. Hart's help, taking the online class was really hard. I tried to answer discussion posts on my phone during breaks at work, but would become distracted by social media. By the time I came back to it at home, I forgot what I was going to write. I learned to set strict schoolwork time slots. I miss the time watching TV on the couch with my wife, but my degree goal is worth it.

Since I received extra help in high school, Dr. Hart suggested I get in touch with the Office for Learners with Disabilities. I will likely need double time on exams in the science classes I hope to take. I no longer have any paperwork from my high school days, and my condition wasn't medical, so I was skeptical. The Office for Learners with Disabilities was able to grant me a scholarship to be evaluated for learning disabilities and I am now in the process of scheduling appointments.

I was really anxious about writing my first paper as an online learner. I was far from campus and my local public library is tiny. My university library had videos on how to search databases to find the information I needed. I used eBooks and downloaded articles, and they even sent me one book by mail. The Office for Learners with Disabilities recommended that I convert the articles to MP3 files using campus-owned assistive technology. This way I would listen to the article while I drove to and from work. Then at home, I would read it again, but was able to better pick out the sections that were relevant to my paper.

I know that not all of my instructors will provide as much guidance as Dr. Hart, but she will still be my advisor and I am hoping to receive further assistance from the Office for Learners with Disabilities.

### INSTRUCTOR PERSPECTIVE

Dr. Laura Hart [name changed] has been teaching in a fully online bachelor degree completion program for seven years. In this role, Dr. Hart is both an instructor and an advisor for her learners. She connects with her learners on a professional and a personal level, as she herself was a non-traditional learner. She came to higher education only in her late twenties as the first person in her family to go to college. She loves the collaborative nature of teaching learners who are "like her". Dr. Hart understands the challenges her learners face, coming back to higher education after years, or possibly decades, out of school. She sought pedagogical help from the eLearning group on her campus to learn about Universal Design as it applies to her Learning Management System, participated in an instructional innovation symposium, and a symposium specific to working with diverse learners. Dr. Hart's perspective and experiences are outlined below.

The learners whom I teach are a unique population. Many of them come to my classes with extensive baggage of past learning experiences. My first task is to help them unload that baggage so they can move forward in their studies. I am inspired by the courage of learners like Jim to come back to school. He had a clear goal but needed substantial help with time management and prioritization of work. Most of my learners have never seen an online course before and equate online with web browsing. I put a lot of effort into setting clear expectations for course work and use of technology. Over the years, I have made adjustments to my courses which are outlined below.

- **Establish straightforward navigation:** Many of my older learners are not comfortable with technology. I try to keep navigation clean and consistent. Each week follows the same structure so learners know what they need to be working on at any given point in time. Course menu links also allow learners to navigate directly to an assignment, discussion, or course group. I ease them into the online environment with a welcome video that is available the week before the term begins. The video explains how to sign into the course, shows where to find content, and goes over the syllabus.
- **Scaffold technology use:** I give learners opportunities to practice using a particular tool before they have to submit graded work. For example, learners introduce themselves in a discussion forum before replying to content-based prompts. I also see it as an opportunity to show learners tools they may see in future courses. I always allow multiple attempts for submitting written work. That

way if a learner selects the wrong file, they can upload the right one without my having to reset the assignment. They save face and I save time: win-win!

- **Chunk content:** I noticed learners have a hard time transitioning from one assignment to the next when they have several concurrent projects. I guide them toward a sense of accomplishment by setting small, attainable assignment goals. My weekly discussions have a clear start and end date. Once a discussion ends, learners can still review past material, but they can no longer submit more posts, guiding them to the next assignment. Some of my discussions use the Learning Management System's "Groups" tool to contain the number of posts and focus learner engagement. Large research papers are broken down into multiple deliverables that lead up to the final product. Learners complete discrete tasks such as submitting a preliminary bibliography, paper outline, and introduction before writing the complete work. Learners also go through draft revisions with both instructor and peer reviews. Each component is assigned its own grade, lowering the stakes of any one assignment.
- **Allow flexibility:** I understand the challenges of balancing studies, work, and personal life. Flexibility is my educational mantra. I discuss schedules with all of my learners. If someone has a hard week, I will readily provide an extension. For me, it's about learners reaching their goals, not strict enforcement of due dates. I am also flexible with the format of

learner assignments. For some learners, a term "paper" may be delivered as a PowerPoint with typed notes or recorded narration.

- **Incorporate accessible multimedia:** I use videos to show learners how to interact with the Learning Management System and remind them of course requirements for each week. I create videos using automatic captioning as the first pass. I then edit the captioning to correct for my New York accent and ensure that the captions capture the same nuances and tone as my speech. Since it is such a slow process, I started out with just a couple videos, and have built out my library over the years to have one video for each week of content. As I update my content, I will begin to refresh videos.

I love the collaborative nature of adult education. With the course modifications I have made, I see how it benefits my learners, and they thank me for it. It has now been years since I had a learner ask me where to find an assignment. Learners are also having a much easier time staying on track with only one assignment due at a time. Learners choose our online program because it fits with their life and learning needs and I am happy to maximize that flexibility to help them meet their goals.

## BRINGING IT ALL TOGETHER

In the end, UDL is designed to support both instructors and learners in meeting a common goal: increase knowledge outcomes and generalization of knowledge for greater good. The UDL framework is intended to support instructors with course design, not hinder the learning process. Similarly to how instructors support metacognitive skills and growth in students, they too can benefit from reflecting and "checking in" with one's own practice. Loui Lord Nelson (2014) provides a set of steps to self-assess UDL implementation over time:

1. **Reflect** on the needs of your students. "What are my students struggling with?"
2. **Identify** a principle or checkpoint that addresses that need. "How might I use this checkpoint to meet the needs of my learners?"
3. **Investigate** and create new methods or strategies. "What brings this principle or checkpoint to life?"
4. **Teach** a lesson using the new method or strategy. "What does this principle or checkpoint look like in my teaching environment?"
5. **Assess** the new method or strategy. "In what ways did my students demonstrate knowledge or skills?"

6. **Reflect** on how the new method or strategy worked. "How did the principle or checkpoint enhance my students' outcomes?"

Research continues to grow with regards to UDL and higher education. Universities, such as the University of Washington's [Center for Universal Design in Higher Education](#), prioritize UDL as an instructional framework in their campus learning environments. Despite this push in the UDL direction, there is still room for improvement and more in-depth research on global learning outcomes when UDL is implemented in higher education on a larger scale across varied disciplines. From anecdotal and qualitative information provided by colleges and universities creating initiatives and implementing UDL on small or large scales (UDL on Campus, n.d.), instructors can benefit from the following first steps:

- **Find a community of practice:** Working with other instructors, whether they are teaching the same discipline or not, can keep engagement and motivation high. Share best practices and support each other through challenging teaching situations.
- **Come back to learning objectives/**

**outcomes:** Focus on the "what", rather than the "how" of education. Provide choice, and work together with learners to pick the best deliverable that will demonstrate mastery.

- **Consider creative ways to use learners/staff to support workload:** Student employees can help with video captioning and creating transcripts. Teach UDL principles in classes by making accessibility part of the requirement of submitted work through overall grading structure or individual assignment rubrics. This is not only an educational opportunity for learners, but contributes to the success of UDL throughout an entire course, not only the instructor-driven side.
- **Reduce learner anxiety:** Lowering the stakes for any one assignment, breaking large assignments into smaller segments, keeping learners focused on one task at a time, and providing content that is accessible in multiple modalities encourages student learning and success. Many students, regardless of ability or disability, continue to develop basic skills around prioritizing, managing time, and assignment completion. These steps provide structure and encour-



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## CLEARING A PATH FOR PEOPLE WITH SPECIAL NEEDS CLEARS THE PATH FOR EVERYONE!

"Shovel the ramp" is a cartoon conceptualized by Michael F. Giangreco and illustrated by Kevin Ruelle. This cartoon provides a short and sweet way to introduce the idea "When we design for disability, everyone benefits" (Lawyer and Civil Rights Activist, Elise Roy). Graphic courtesy of [www.peytral.com](http://www.peytral.com).

age the meaningful development of study skills.

### • Offer a "buffet" of learning options:

Meet learner diversity with instructional choices rather than differentiated instruction. It is important to understand the "why" of an assignment. What is the anticipated learning outcome? Why is it important? Don't make the assignment just work, make it meaningful work.

An instructor's viewpoint is not the only one that matters in terms of UDL. A learner's perspective is critical to successful outcomes. In order for a learner to access the curriculum in a meaningful way allowing for successful, effective, and effi-

cient access to their coursework, both on campus and online learners can benefit from the following:

### • Connect to Disability Services (or equivalent support on campus):

Choosing to disclose a disability can be a difficult decision for learners. However, Disability Services (or an equivalent support on campus) can provide supports in terms of advocacy and accommodations. Having this protection helps to ensure an individual's rights are being respected and provides a more level playing field in terms of accessing curriculum. Contacting Disability Services is a great place to start.

- **Understand and explore strengths and areas of need as a learner:** Advocating for one's own academic needs is important in the world of higher education. Knowing one's strengths and needs allows the learner to take better control of their learning by developing appropriate study skills, finding supports and activities on campus, and figuring out how best to show knowledge and understanding.

- **Build and exercise self-advocacy skills:** Being able to understand the nature of disability and how it impacts learning is only the beginning. It is important to also be able to verbalize strengths and needs to others, such as Disability Services, instructors, and peers, to obtain appropriate supports and necessary accommodations. Not everyone will understand how a disability may impact academics. Sometimes it will be important to provide awareness and educate others.

- **Explore tools, such as assistive technologies, to support learning:** Many institutions of higher education provide learning tools to active students. Assistive technologies, otherwise known as low-tech, mid-tech, or high-tech tools to support learning, may also be available. Some institutions provide these supports at no additional cost to the student. Making use of these tools and supports can positively impact academics, particularly in the area(s) of organization, studying, researching, reading, and/or writing.

- **Research and utilize campus resources:** Disability Services (or equivalent support) is only one campus resource. It can be helpful to find out what else is available, such as a writing center, counseling services, tutoring, mentoring, and more. Explore these options to find out what combination might work best to meet academic needs and goals.



So, why is UDL important? UDL is a framework that provides instructors with an effective, efficient, and meaningful way to approach classroom learning with student diversity in mind. It does not dictate curriculum and allows for learners to work in conjunction with instructors to take hold of their education in innovative ways. It is important to start small, keep learning outcomes and goals in mind, and recognize “Rome was not built in a day” (but it was built). Build communities, be persistent and engaged, and turn challenges or frustrations into learning opportunities. Remember, in the words of the well known human rights activist and lawyer Elise Roy, “When we design for disability, we all benefit”.

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# New and Updated Free and Low Cost Assistive Technology for Everyone

It seems like everyday, there is a new app, an update to a favorite assistive technology (AT) software, or a new version of an AT device hitting the market. With the constant changes in our AT field, it can be a challenge to stay abreast on what tools are available. With more than five million apps available between the Android and Apple app stores<sup>1</sup>, as well as all the other pieces of software and standalone devices, the AT field is not, and has not been for quite some time, a small field of work.

As technology plays an even bigger role each year in all the facets of our lives, so does its essential nature for students with disabilities transitioning to a college or university. Technology has become an essential part of the accommodation process for students in higher education to receive access to the curriculum and parts of campus life. This focus on technology is the direct result of guidance by governing bodies who oversee the work Disability Resource Offices in colleges and univer-

sities across the United States; as well as settlement agreements from complaints made to the Office of Civil Right and the Department of Justice. Colleges and Universities are being urged to use technology whenever possible when accommodating students with disabilities. Despite this urgency, higher education budgets are being stretched more than ever. Free and low cost tools are the avenue some schools go to support their students over traditional higher cost programs used predominantly in the past and still used currently.

In order to support students with disabilities with technology as they enter into the postsecondary environment, having multiple tools to use is essential for anyone working with students, especially tools that are free or low cost. However, having a list of these tools is not enough. One must keep in mind the S-E-T-T process when working with our students. Created by Joy Zabala, the S-E-

T-T process provides those working with AT a framework for assessing and making decisions on what AT is most appropriate for a person to use. S-E-T-T starts out with us looking at the student: what their strengths are, their areas of further development, and what experiences they bring. Next is the Environment. Are they in a class, and if so, which class are they partaking in? Is this at home? At school? Is this an active or passive learning environment? Third is Task, or what is the student trying to do or accomplish. Are they completing a math assignment? Writing a paper? Cooking in Home Economics class? Finally, is Tool, or what tool is best going to work for the student based on the other three parameters. Without the three other pieces of information, we can not choose a suitable tool for the student to try in order to support themselves. Remembering the S-E-T-T framework with every tool one works with when working with a student is essential. Without



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spending the time to decide which tool is really the best, students may abandon their technology due to frustration, lack of interest or buy in with the tool, lack of training, or the tool not really addressing the need of the student. You wouldn't use a screwdriver to help you pound a nail into your wall to hang a picture.

To help those working with AT build their toolbox, Augsburg University has created a website dedicated to free and low cost AT tools on the market. This web resource contains over 125 apps, AT software tools and devices that can support students in a variety of academic areas. These areas include reading and literacy support, writing, notetaking, dictation, organization and time management, stress management and other areas. This resource is constantly being updated to feature the most current tools students are using in high school through their time in higher ed. The resource can be found at the following web address: <http://www.augsburg.edu/class/groves/assistive-technology/everyone/>

As with each year, there have been huge software and AT developments from 2017-early 2018. As a result, below is the 2018 update of some of the latest and greatest free and low cost AT tools on the market. Given how vast our field is, this list is not exhaustive. There are handfuls of other amazing tools forging the way to provide access for our students. The list below is just a sample of the newest tools to spend some time trying out.

## BLAST OFF WITH MERCURY READER

For years, Readability was one of the tools educators and AT specialists would use if a student needed a reduced distraction reading environment online. However, in the last quarter of 2016, Readability discontinued its service. In its place is the new alternative: **Mercury Reader**. **Mercury Reader** is similar to Readability by giving readers the ability to remove excess distractions such as ads, non-article text and videos while reading. In addition, text size (small, medium and large) and text font (Serif and Sans) can be adjusted,

as well as an inverse background color can be added for a black background with white text effect. Articles can be sent to Kindle for reading later on. This Chrome Extension is free for users with more information about this tool being found at: <https://mercury.postlight.com/reader/>.

## IMMERSE YOURSELF IN MICROSOFT UPDATES

Over the course of the last few years, Microsoft has been working towards more inclusive software for people with disabilities. As a result, a variety of new Learning Tools have been created to support reading and writing within their suite of office products. Within the Learning Tools function, the user can customize how wide the width of text is across a page, the background and text color can be adjusted, letter and word spacing can be adjusted to increase or decrease how much space is between letters and words, as well as electing to have the Syllable feature turned on which gives the user the ability to see where the syllable breaks are in the words. Within the Learning Tools, the Read Aloud function will read out loud the text in the document.

The **Immersive Reader**, another tool, allows users to have a dedicated interface to read text. Users have the ability to adjust the voice and speed when it is being read out loud. Many of the same features in the Learning Tools can also be adjusted within the Immersive Reader. Focus Mode, one of the newest feature within the Immersive Reader, zeros in the reader's attention to just the line or lines immediately surrounding the text being read to increase focus for students. Each word can also be highlighted in a different color to indicate the different parts of speech with nouns being colored purple, verbs colored maroon, and adjectives colored teal.

**Editor**, another new development from Microsoft, gives users support when writing by providing editing and proofing support. Editor gives readers a definition for each suggestion of a misspelled word as well as for any confusable words that

students easily get stuck on. Editor can check for Clarity and Conciseness of your writing, Passive versus Active voice, as well as many other grammatical and editorial supports. Colored lines under words within the document can indicate spelling errors (red lines), grammatical errors (double blue underline) or things that impact your writing generally (gold line).

These new features and updates are being rolled out for free throughout Microsoft's Office Suite products. The Microsoft website has more information on all these tools and developments, as well as details on which tools are available in which products and platforms. More information can be found at the following web addresses:

- Learning Tools: <https://support.office.com/en-us/article/learning-tools-to-improve-reading-and-writing-skills-735fc6ea-21eb-401a-9293-4a481ef7e482>
- Immersive Reader: <https://www.one-note.com/learningtools>
- Editor: <https://support.office.com/en-us/article/editor-your-writing-assistant-91ecbe1b-d021-4e9e-a82e-abc4cd7163d7>

## BUILT-IN DICTATION SUPPORT

Within the past few years, dictation support is being built-into many of the platforms we use on a daily basis, such as within our speech-to-text feature within our cell phones, operating systems of our computers such as with Cortana. In addition, these programs are free for use as they are built-in tools. **Voice Typing in Google Docs** debuted over two years ago in September, 2015. Despite its tenure as a essential tool for struggling writers, there is still a large number of students and teachers who forget about the availability of this tool, or do not know about this built-in capability. This is a powerful tool for both K-12 and higher education institutions who are GSuite schools. However, not all K-12 and college and universities are GSuite schools. Some are Office 365 schools and focus on providing Microsoft Office Tools to their faculty, staff,

teachers and students.

**Dictate** started as a Microsoft Garage tool and now has integration capabilities within Word, Word Online, PowerPoint, Outlook Desktop, OneNote Windows 10 and OneNotes Online 2. Dictate works just like many of the other dictation tools on the market, such as Dragon or Google Voice Typing. Users can talk directly into Microsoft's Dictate and have their text typed in their document. More than nine spoken languages are available for use with an accuracy level that is similar to the other dictation tools on the market. It was just announced that Dictate will be built-into Office and rolled out to Office 365 customers in the coming months. There is no need to do a separate install as before for this tool to be used within your document creation window. Previously, if users wanted access to dictation in these Microsoft platforms, Dictate would have to be downloaded by the student as an add-on. In contrast, it will automatically show up as a feature beginning soon.

This tool, paired with the Immersive Reader Tools discussed above will be essential to supporting struggling readers and writers working within Office 365. Both Google Voice Typing and Dictate are free to use. More information can be found at the following:

Google Voice Typing: <https://support.google.com/docs/answer/4492226?hl=en>

Dictate: <http://dictate.ms/> and <https://www.microsoft.com/en-us/garage/profiles/dictate/>.

## TOOLS TO SUPPORT NOTE TAKING IN THE CLASSROOM

The continuous struggle of providing a note taking accommodation for a student in the classroom is getting additional support from two tools.

**Sonocent Audio Notetaker** has been in the business of supporting student notetaker for over five years and is staking a claim in the US market through a series of trials in colleges and universities. A slew of updates were released in late 2017, which provides additional tools to help students take notes in the classroom. Audio Note-

taker has the capability for a PowerPoint presentation to be uploaded into the interface of the program. From there, students can hit the record button to have the lecture recorded. However, what makes this program unique, is the ability for students to color code and annotate the audio segments of the recorded lecture in live time to help them discern the important parts of the lecture from other lecture aspects such as things that need to be reviewed, deleted, or followed up on. In addition, students are able to type notes in the program interface at the same time. All of these aspects are organized on the screen to keep students focused on learning the information and taking notes either during class or when reviewing later on. Sonocent also has a companion app with similar features to the computer interface allowing students to record, take notes, annotate the audio, and take pictures to enhance their notes. Then, recorded lectures can be uploaded to the computer version of the software for additional playback, editing, and studying.

Two major updates were released in October, 2017. The first is the ability to link the typed notes to the recorded audio. By pressing on a button either before or after taking notes while using the tool, students can see where certain audio and their typed notes coincide. Students can click on either the typed text or the recorded audio bars and the software will bring the user to the corresponding part of the input. For example, if a student clicks on a word they typed, the software will indicate the recorded audio that was recorded at the exact moment the word clicked on was being typed. Likewise, if the bar of audio is clicked on, the text that was being typed at the same time will be highlighted. This new syncing feature allows students to know exactly where pieces of their notes are in relation to the audio recording for easy studying later on.

The second major update was the addition of "Scribble" to the Sonocent Recorder App. While in the app, users can

draw diagrams, write equations, doodle, annotate photos, or take notes in a way that traditional typing would not be as effective for conveying a note. These Scribbles can then be imported into the Images area of the computer portion of the app like other recorded audio or typed notes. For subject matter such as math or science, or notes needing to be drawn out or graphed, this new option provides a better method to create notes for the user. This program does come with a slightly higher price point than most free or low cost tools. The app, however, does come with a free to low cost price point. This is a tool that allows students to be in control of notetaking and provides them with the opportunity to create notes that can benefit them. The desktop version is available for both Windows and Macs and the Sonocent Recorder App can be downloaded on both iOS and Android. More information about Sonocent Audio Notetaker can be found at <https://www.sonocent.com/en-us/>.

While not as high tech as some of the other tools featured in this article, the **Rocketbook** line of notebooks can be just as impactful in providing AT support to students. Rocketbooks from a first look looks just like a regular notebook that students can take notes in; much like the traditional paper and pencil notetaking strategy. However, there are a few hidden secrets within the notebook. The Rocketbook line of notebooks comes with four notebook types: Rocketbook One, which provides the user with a single use notebook, Rocketbook Wave, which can be reused approximately three times, the Rocketbook Everlast, which provides the user an infinite number of reuses, and Rocketbook Color for kids to draw and doodle in. By using Pilot FriXion Erasable Pens in either the Wave or the Everlast notebook, the user has the ability to reuse either of these notebooks. For the Wave, once the notebook is filled, the user can place the notebook in the microwave with a glass of water and heat the notebook for a few minutes. Once completed, the ink will have disappeared from the notebook.





With the Everlast notebook, the user can remove their writing simply with a damp cloth. However, the digital technology aspect that comes into play is with the digital interface portion of this tool.

Each notebook page comes with seven symbols on the bottom of the page; an apple, star, diamond and bell are just a few examples. Each of these symbols can correspond to a location in the digital world such as an email address, a folder in Google Drive or a Dropbox folder that the user can customize or edit at any time. When a page of notes is complete within the notebook, the user can write an "X" over the symbols on the bottom of the notebook page corresponding to the location where they want the notes to be sent in the digital world. Then, using the free Rocketbook app on either iOS or Android, the user takes a photo of the notes. The app then sends a digital copy of the notes to the location(s) the user specified on the page using the symbols. Images of the pages of notes will show up instantaneously in the locations indicated.

The implications for use with students are seen in one of two ways. First, for a student taking their own notes who may struggle with organization or may easily lose their notebook or notes, this tool provides a built-in way to organize their notes in a digital capacity, as well as prevents students from losing their notes. The student will always have a digital backup in the cloud or in their email. In addition, with the digital nature of the notes, the student can study from anywhere, at any time without the excuse of leaving their notebook behind. The second implication of these notebooks would be to put them in the hands of a peer notetaker. For peer notetakers, getting a student a copy of the notes can be a challenge after class. However, by using this tool, the challenge is all but removed. Each student receiving a copy of the class notes would be assigned one of the symbols on the bottom of the page corresponding to either the student needing note's email address or a digital folder such as one within Google Drive. Once class is over, the notetaker

can immediately upload the notes using the app so the student(s) receives instantaneous access to their notes. This gives the student needing notes equal access to their notes at the same time that their peers have access. Notebooks cost about \$20 per notebook while the FriXion pens vary in price depending on the number of pens purchased. More information can be found at <https://getrocketbook.com/>.

## MAKING MATH ACCESSIBLE WITH EQUATIO

Making math accessible has been a struggle for teachers in K-12 and for professionals in postsecondary education. However, in early 2017, Texthelp announced the release of a brand new product to help create accessible math: **EquatIO**. Derived from the Google Add-on, g(Math), EquatIO works within a variety of applications within GSuite such as Docs (free version only), Forms, Sheets, Slides and Drawings. It's also available within Microsoft Word for Mac, Windows and Mathspace (limited features in free version), an online workspace for users to work with the tool. Mathspace allows users to have a non-linear space to work on math using all the EquatIO tools, but without being constrained to a document with lines and set spacing. EquatIO provides a variety of ways to input math into any of these applications. Users can type, use speech input, use handwriting recognition, or they can also use the LaTeX entry. With the premium version of this tool, users have access to a word prediction feature when typing out math or chemistry equations. Given the various methods of input, EquatIO employs the concepts of Universal Design for Learning, giving students multiple means of entry into the program.

In addition to being able to insert equations into the different platforms, when using EquatIO and integrating it with Read&Write, their literacy support tool, inserted equations can be read out loud by this software. EquatIO within GSuite will be read with Read&Write for Google while EquatIO for Word in Win-

dows or Mac can be read by Read&Write for desktop program. There is also functionality to graph within EquatIO using Desmos. Texthelp, the creator of EquatIO is working to make sure this product is available to every student. As a result, the program has been tested and does work with JAWS and other screen readers. In addition, Desmos which provides the graphing capability is WCAG 2.0 compliant. The program has the above mentioned built-in features for input which makes the program accessible to more students with disabilities. Some features are available for free within each of the platforms. EquatIO is changing the way our students read math books, tests and worksheets out loud, as well as the way students create digital math. A premium version does come with additional capabilities and features over the basic free version features. Price is based on the number of users in a district or licenses purchased. More information on EquatIO can be found at <https://www.texthelp.com/en-us/products/equatior/>.

## COLD TURKEY WRITER

As a tool to help support distraction free learning, **Cold Turkey** has been a favorite tool for students. By blocking distracting websites for a set length of time, students can focus on the task at hand as opposed to social media, video websites or other attention distractors on the internet. Cold Turkey Writer, a newer tool by the same company, can be downloaded to a student's computer to block them out of not just websites, but all aspects of their computer. Once downloaded, the user can set parameters such as how much time or how many words must be typed before the program unlocks itself and gives the user access to their computer again. Once set, the interface takes over a student's computer until the time limit is up or they have produced the number of words they have set to type. The free version of this tool provides only the parameters set by time or words typed. However, the pro version, with a one-time cost of \$10 provides the user with the

ability to change the background color of the interface, provides stimulating music and the ability to disable certain keys on the computer, such as delete, to help students get through a first draft without editing the writing. This tool is available for both Mac and Windows operating systems. More information can be found at: <https://getcoldturkey.com/writer/#>.

## TOOLS TO SUPPORT STRESSED OUT STUDENTS

Over the last few years, the number of students in both K-12 and in higher education with mental health concerns such as depression and anxiety have skyrocketed. More students than ever are impacted by these mental illnesses. As a result, software creators have responded with tools to help support students impacted by this. **Pacifica**, uses aspects of Cognitive Behavioral Therapy integrated within an app to support students. Pacifica helps users to address their depression, anxiety or just daily stress through a variety of options. Pacifica provides tools to track your mood/health, goals/thoughts as well as provides audio lessons on mindfulness and relaxation. In addition, there is the ability to track your statistics over time, as well as a community to interact with for additional support. This app has been widely talked about from various news sources and has received positive press. The basic Pacifica app with limited features is free to all users on the web, iOS, or on Android. For full access to the app, users can pay \$3.99 per month or \$29.99 per year. More information can be found at <http://www.thinkpacific.com/>.

A second tool which focuses on a similar area of support, as well as adds in aspects of organization and task management is **Momentum**. Momentum is a Chrome Extension that turns your default new tab of your Chrome Browser into your own personal dashboard. Once a new tab is opened, Momentum's backdrop is a landscape or serene picture one can focus on. A daily quote is supplied at the bottom of the page, as well as a question which prompts the user to

think about their main focus for the day and answer it on screen. The user's answer to the question is then displayed on the center of the dashboard as a checkbox that the user can strive to achieve throughout the day. Within the premium version, users can sync their to-do list to the program through integration with a handful of other apps and programs such as Google Tasks, Todoist, Wunderlist, and Trello. In addition to the to-do list integration, personalization with photos on the dashboard, quotes and colors are a few of the other features of the Plus version of the tool. With a goal to support mental health, organization and goal achievement, Momentum is a quick tool to help users stay focused and calm throughout the stress of a day. The basic features of Momentum are free, while Momentum Plus is \$2.50 per month. More information can be found at <https://momentumdash.com/>.

## EQUAL ACCESS TO CONVERSATIONS AND MEETINGS WITH AVA

For individuals who are deaf, hard-of-hearing or struggle to understand spoken words in a meeting or conversation, reliance on an interpreter, captioning or simply missing parts of the conversation are a normal part of one's day. However, a new app is helping to bring all individuals back into the conversation. Using on the spot captioning technology, **Ava** provides real-time captioning to show what people are saying around a user on a tablet or mobile device. With little to no lag time in the production of words on the screen, the student can receive the same access to the meeting that their peers have. This tool can be used in meetings with a handful of colleagues or peers, as well as in a one-on-one conversation. When using the app, you can see who is speaking as well as what they are saying. Up to five hours of conversation can be captioned with a free account per month with the ability to join other Ava conversations as much as you want. An upgraded account costs \$29.99 a month and allows for unlimited captioning and conversations for

the user. Ava is available on Android and iOS and more information can be found on their website at <https://www.ava.me/>.

## RESOURCES:

1. App stores: number of apps in leading app stores 2017. (n.d.). Retrieved January 23, 2018, from <https://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/>
2. The Office 365 Team. (2018, January 22). Office 365 Education delivers the next wave of innovation. Retrieved January 23, 2018, from <https://blogs.office.com/en-us/2018/01/22/office-365-education-delivers-the-next-wave-of-innovation-for-inclusive-and-collaborative-learning/> ■



| Tool Name                  | Platform  | Cost   | More Information  |
|----------------------------|---|--|---|
| Mercury Reader             | Online Resource   | Free   | <a href="https://mercury.postlight.com/reader/">https://mercury.postlight.com/reader/</a>   |
| Microsoft Learning Tools   | Within Microsoft Products   | Free within Microsoft Products                                       | <a href="https://support.office.com/en-us/article/learning-tools-to-improve-reading-and-writing-skills-735fc6ea-21eb-401a-9293-4a481ef7e482">https://support.office.com/en-us/article/learning-tools-to-improve-reading-and-writing-skills-735fc6ea-21eb-401a-9293-4a481ef7e482</a> |
| Microsoft Immersive Reader | Within Microsoft Products   | Free within Microsoft Products                                       | <a href="https://www.onenote.com/learningtools">https://www.onenote.com/learningtools</a>   |
| Microsoft Editor           | Within Microsoft Products   | Free within Microsoft Products                                       | <a href="https://support.office.com/en-us/article/editor-your-writing-assistant-91ec-be1b-d021-4e9e-a82e-abc-4cd7163d7">https://support.office.com/en-us/article/editor-your-writing-assistant-91ec-be1b-d021-4e9e-a82e-abc-4cd7163d7</a>   |
| Google Voice Typing        | Google Docs   | Free   | <a href="https://support.google.com/docs/answer/4492226?hl=en">https://support.google.com/docs/answer/4492226?hl=en</a>   |
| Microsoft Dictate          | Within Microsoft Products   | Free within Microsoft Products                                       | <a href="http://dictate.ms/">http://dictate.ms/</a> or <a href="https://www.microsoft.com/en-us/garage/profiles/dictate">https://www.microsoft.com/en-us/garage/profiles/dictate</a>  |
| Sonocent Audio Notetaker   | Desktop program: Windows and Mac OS; Sonocent Recorder app: iOS and Android | Varies by number of licenses on computer; Companion app price varies | <a href="https://www.sonocent.com/en-us/">https://www.sonocent.com/en-us/</a>   |
| Rocketbook                 | Stand Alone Technology; companion app on iOS and Android                    | Approx. \$20/notebook  | <a href="https://getrocketbook.com/">https://getrocketbook.com/</a>   |
| EquatIO                    | GSuite; Microsoft Word or Mac and PC; Online Resources                      | Free; Premium version cost dependent on number of licenses purchased | <a href="https://www.texthelp.com/en-us/products/equatio/">https://www.texthelp.com/en-us/products/equatio/</a>   |
| Cold Turkey Writer         | Mac OS; Windows   | Free; Pro version \$10   | <a href="https://getcoldturkey.com/writer/#">https://getcoldturkey.com/writer/#</a>   |
| Pacifica                   | iOS; Android; Online Resource   | Free; Premium \$3.99/month or \$29.99/year                           | <a href="http://www.thinkpacific.com/">http://www.thinkpacific.com/</a>   |
| Momentum                   | Online Resource   | Free; Plus version \$2.50/month                                      | <a href="https://momentumdash.com/">https://momentumdash.com/</a>   |

## UNSURPASSED RESOURCES AND PROFESSIONAL DEVELOPMENT

[www.closingthegap.com/solutions-memberships/](http://www.closingthegap.com/solutions-memberships/)



### MEMBERS RECEIVE:

- ✓ SIX, BI-MONTHLY ISSUES OF THE ONLINE MAGAZINE PER YEAR. PLUS ACCESS TO THE ARCHIVES.
- ✓ ACCESS TO OVER 90 ARCHIVED WEBINARS ON DEMAND. +MORE ADDED REGULARLY!
- ✓ OVER 100+ CONTACT HOURS AVAILABLE UPON COMPLETION OF WEBINAR VIEWING.
- ✓ ACCESS TO THE ACCLAIMED RESOURCE DIRECTORY.

### STAY CURRENT

Technology and strategies are ever-changing. Receive year-round resources and tools to meet the needs of ALL learners

- ✓ PROFESSIONAL DEVELOPMENT FROM EXPERT PRESENTERS.
- ✓ WEBINARS SHOWCASING NEW AND EMERGING TECHNOLOGIES.
- ✓ EACH ISSUE DETAILS PRACTICAL AND SOUND AT IMPLEMENTATION STRATEGIES AND BEST PRACTICES.

### TRIAL MEMBERSHIP INCLUDES:

- ✓ ACCESS TO ONE FULL ISSUE OF CLOSING THE GAP SOLUTIONS MAGAZINE – FEBRUARY / MARCH, 2017
- ✓ RESOURCE DIRECTORY – A GUIDE TO OVER 2,000 AT PRODUCTS – PRODUCT GUIDE
- ✓ TWO ARCHIVED WEBINARS (TRIAL VERSION LIMITED TO 15 MINUTES)

### SOLUTIONS, AS AN ELECTRONIC TEXTBOOK

Solutions, as an electronic textbook, is a very effective and cost efficient state-of-the-art training tool for undergraduate and graduate university students in the disciplines of special education and rehabilitation. With Solutions, students have unlimited access to:

- ✓ CURRENT AND ARCHIVED ISSUES OF CLOSING THE GAP
- ✓ THE CLOSING THE GAP RESOURCE DIRECTORY
- ✓ ARCHIVED WEBINARS

When Solutions is chosen as an electronic textbook, students can purchase for only \$85. Instructors, in turn, receive a one-year membership in exchange.

It is really just that simple.

To get started, instructors should email the following to Closing The Gap:

1. Their name, institution and email address
2. The course title and start date
3. A course roster (students' first and last names)

Upon receipt, Closing The Gap will activate the instructor's complimentary membership and students can begin to join at the special student rate of \$85.

For more details or if you have questions, contact Becky at Closing The Gap or call 507-248-3294.





# YOUR CONFERENCE FOR EXCEPTIONAL LEARNING OPPORTUNITIES

## 24 PRECONFERENCE WORKSHOPS ANNOUNCED

**MONDAY AND TUESDAY, SEPTEMBER 24 - 25**  
**8:00 AM - 4:30 PM**

**PC-1 Two-Day Introductory PODD Course (Official PODD Course)**

*Linda J. Burkhart, Dale Gardner Fox*

**MONDAY, SEPTEMBER 24 8:00 AM - 4:30 PM**

**PC-2 Pragmatic Organization Dynamic Display (PODD) Alternative Access Workshop**

*Kelly Fonner, Laura Taylor, Debbie Reinhartsen*

**PC-3 The Accessible School: How the iPad Empowers All Learners**

*Mark Coppin, Nancy Kawaja*

**PC-4 Expanding Environments with AT and AAC (including iPads & Tecla) Using Access, Integration of Systems, Navigation Through Systems to Support Students in the Classroom** *Karen M. Kangas*

**PC-5 Core Vocabulary Quick Start: Everything You Need To Provide Core Vocabulary Intervention Next Week** *Kelly Key, Deidre Dobbels*

**PC-6 Embrace the Future: Tech Trends and AT** *Kirk Behnke, Mike Marotta*

**PC-7 "Now What?" - Strategies to Support School Teams in AT Implementation**

*Keri Huddleston, Elizabeth Echebarria, Robin Dunn*

**PC-8 Teaching AAC! The Balance of Conversation and Generative Language - Make and Take** *Pati King DeBaun*

**PC-9 Creating Assistive Technology Solutions in Minutes, Part III: A Make and Take Workshop** *Therese Willkomm*

**PC-10 Using Technology as Evidence-Based Practice! Developing Appropriate Programming to Meet the Learning and Behavioral Needs of Students with ASD** *Susan K. Lewis Stokes*

**PC-11 Digital Storytelling and Adapted Books: Creating Materials By, With, and For Students** *Caroline Musselwhite, Deanna Wagner, Gretchen Hanser, Laurel Richardson Buell, Jeanmarie Jacoby*

**PC-12 Skills for Life: Revamping Language and Literacy Instruction for our Most Complex Learners** *Lauren Enders, Kate Ahern*

**TUESDAY, SEPTEMBER 25 8:00 AM - 4:30 PM**

**PC-13 Breaking Out the AT Toolkit**

*Lindsey Huntley, Maricris Formoso-Santos, Mylene Matro, Loreto Dumitrescu*

**PC-14 Model Magic: Become the Next Top Modeler** *Kelly Key, Deidre Dobbels*

**PC-15 "Oh EYE understand it now!" Visual Supports for Those With Autism and Other Disabilities** *Mo Buti*

**PC-16 Teaching, NOT Testing, How to Find and Support Access to AT and AAC for Students with Complex Bodies** *Karen M. Kangas*

**PC-17 Choose Your Words: Teaching Language, Literacy and AAC in the Classroom** *David Niemeijer, Jennifer Marden, Erin Sheldon*

**PC-18 The SETT Framework: More Relevant Today than Ever!** *Joy Smiley Zabala, Diana Carl, Kirk Behnke*

**PC-19 Roadside Assistance for AAC, Anxiety and Apraxia** *Kate Ahern, Jeanne Tuthill, Tanya Scott*

## REGISTRATION OPTIONS AND FEES

| Conference - Wednesday, Thursday, Friday, September 26-28, 2018   |  |  |  |
|---|--|--|--|
| Includes Preview of Exhibits – Tuesday, September 25, 5:30 pm - 7:30 pm and Continental Breakfast Wednesday and Thursday, September 26 & 27 |  |  |  |
| Registration Received   | On or Before June 30   | July 1 - September 13  | September 14 - Onsite  |
| <b>Standard Rate</b><br><b>Group Discount - 5 or more</b><br><b>Group Discount - 8 or more</b><br><b>Group Discount - 20 or more</b>        | <b>\$475</b><br>Groups 5+ Deduct \$30<br>Groups 8+ Deduct \$50<br>Groups 20+ Deduct \$70 | <b>\$550</b><br>Groups 5+ Deduct \$30<br>Groups 8+ Deduct \$50<br>Groups 20+ Deduct \$70 | <b>\$575</b><br>Groups 5+ Deduct \$30<br>Groups 8+ Deduct \$50<br>Groups 20+ Deduct \$70 |
| <i>All group registrations must be received at the same time.</i>   |  |  |  |
| <b>Parent Rate</b> (A letter describing your child's disability must accompany registration.)   |  |  | <b>\$295</b>   |
| <b>Full-time Student Rate</b> (Proof of full-time student status must accompany registration.)  |  |  | <b>\$320</b>   |
| <b>Presenter / Exhibitor Rate</b>   |  | <b>\$375</b>   | <b>\$500</b>   |
| Single Day Registration   |  |  | Price  |
| <b>Thursday Only - September 27</b>   |  |  | <b>\$300</b>   |
| <b>Friday Only - September 28</b>   |  |  | <b>\$130</b>   |
| Preconference Workshops (Includes Preview of Exhibits – Tuesday, September 25, 5:30 pm - 7:30 pm)   |  |  | Price  |
| <b>Monday, September 24 or Tuesday, September 25* PC-1 through PC-22)</b>   |  |  | <b>\$290 per day</b>   |
| <b>BUNDLED PRICING! Monday and Tuesday Bundle - \$80 savings \$500</b>  |  |  |  |
| <b>Sponsored, Half-Day Preconference Workshops** PC-23 &amp; PC-24, Tuesday, September 25</b>   |  |  | <b>\$99</b>  |
| <b>Exhibit Hall Only</b> (Includes Preview of Exhibits – Tuesday evening, September 25, through 1:30 pm, Friday, September 28)              |  |  | <b>FREE</b>  |

\* Some preconference workshops carry an additional fee for materials. \*\* Bundled pricing not applicable to sponsored, half-day workshops.

# PRESENTATION & HANDS-ON LAB HOURS

## PC-20 Chrome Literacy Support Lab

Mike Marotta, Kelly Fonner

## PC-21 Teaching Students with Significant Disabilities to Use

**Switches: Ready-Set-Click!** Gretchen Hanser, Deanna Wagner, Laurel Richardson Buell, Leon Kirschner, Stephanie Hui

## PC-22 COMMUNICATION CIRCLES: With a Little Help From My Friends

Caroline Musselwhite, Jane Odom, Beth Waite-Lafever, Kim Daswick, Sidney Daswick

## SPONSORED HALF-DAY WORKSHOPS TUESDAY, SEPTEMBER 25

(Sponsored by Attainment Company, Inc.)

## PC-23 Half-Day Workshop - Proven Collaborative Special Education Program Improvement

8:00 am - 12:00 pm

Ann Meyer, Robert C. Pennington

## PC-24 Half-Day Workshop - Results Focused PRE-ETS (Pre-Employment Transition Services)

12:30 pm - 4:30 pm

Janet Estervig

Presentations will showcase practical and sound assistive technology implementation strategies. Connect and learn from the best and brightest minds in assistive technology, and create a professional development path that covers what's important to you.

**Presentations will be announced July 15.**

In addition, some of the industry's most innovative manufacturers will offer unique learning opportunities, showcasing accessibility features across their respective platforms.

### First-hand Learning From Global Educators

Experience hands-on activities with Apple Distinguished Educators (ADEs) in the 2018 **Apple Accessibility School**, where attendees will create content and design engaging learning experiences. In addition, attendees may participate in dedicated ADE presentations to get a deeper understanding of how Apple products are creating new opportunities for teaching and learning.

### Visit with Microsoft Education Experts

Learn from the experts in the Microsoft Education Booth, where attendees can partake in the Microsoft Education Short Talks on various topics. Attendees can further their participation with Microsoft by attending the presentations that take a closer look at how to implement Microsoft into everyday activities.

# PROFESSIONAL DEVELOPMENT

| RESNA ATP Fundamentals Course and Exam   | Price        |
|--|--------------|
| <b>2-day, ATP Fundamentals Course</b><br>Sunday - Monday, September 23-24, 8:00 am - 4:30 pm | <b>\$600</b> |
| <b>ATP Fundamentals Exam</b><br>Tuesday, September 25, 8:00 am - 12:00 pm                    | <b>\$500</b> |

### IACET CEUS

As a co-sponsor, AAC Institute will again provide CEUs for both the conference and pre-conference workshops. AAC Institute has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). CEUs will be offered for all sessions without charge. CEUs that relate to the practice of speech-language pathology and audiology can be used for ASHA certification maintenance. RESNA accepts IACET CEUs for ATP/ATS credential maintenance. Most state licensure systems accept IACET CEUs or other forms of self-reporting. Preconference workshops are offered for up to 1.4 CEUs. The conference is offered for up to 2.0 CEUs. For additional information visit [www.aacoinstitute.org/CEUs](http://www.aacoinstitute.org/CEUs).

### ACADEMIC CREDIT

Graduate-level academic credit from Hamline University is available for a variety of levels of conference attendance. One full semester credit Cost: \$190

Requirements:

- 12 contact hours
- An outside assignment (12 contact hours requires one preconference workshop and conference participation; two preconference workshops; OR conference participation only.)

### CERTIFICATES OF PARTICIPATION

Closing The Gap-issued Certificates of Attendance for conference participation will be available upon request at no additional fee. All preconference workshop participants will receive a Closing The Gap-issued, presenter-signed Certificate of Preconference Workshop Attendance.

## Mystic Lake Center and Casino Hotel

Guests will experience luxury, modern amenities and sweeping west-facing golf course views as one of the first guests in the newly constructed Promenade Tower—adjacent to the new Mystic Lake Center and everything Mystic Lake has to offer. It's all just steps away from restaurants, bars and nonstop entertainment.

### Get Active

All hotel guests also receive complimentary access to Dakota! Sport and Fitness during your stay. Dakota! is a full-service fitness club, featuring an aquatic center with waterslide, cardio room, gymnasium, ice center, running/walking track, strength training area, and small bowling alley.

### Gaming Action

Play slots, blackjack, bingo and pulltabs at the largest casino in Minnesota.

### Dining, Drinks and Entertainment

Mystic Lake's seven restaurants offers something for every taste and budget. Plus, visit one of the three lively bars all close to the action!





# product spotlight



## SuperNova USB – Take the World’s Best Magnification Anywhere!



Choose SuperNova USB for instant magnification on any computer or Windows tablet! Simply plug the SuperNova USB into any free USB port and experience instant access to your favourite SuperNova features, complete with your exact SuperNova settings. No hassle or set-up required!



### VIDEO: Quick Overview of the SuperNova USB

We make it easy for students to get the self-guided practice they need, to go at their pace, conveniently at home.

- Instant Magnification - Crystal clear magnification, instantly available, on the move.
- Perfect YOU, everytime - Take your unique settings with you to every PC. Your perfect blend of magnification, colours and visual settings, everytime. No setup, no adjustments, no hassle.
- Home, School or Work - Perfect for home & school, hot desking at work, or for assessors working with multiple clients & their PCs.

## SUPERNOVA USB – UNIQUE IN 2 WAYS:

SuperNova USB brings accessibility to any computer or Windows tablet in 2 ways:

- Choose Guest Mode - If you're visiting clients, with friends or working away.
- Choose Full Access - If you're a regular visitor or staying longer, install the Dolphin driver for the fullest access to SuperNova.

## SUPERNOVA USB - BETTER THAN THE REST!

Unlike other 'well known' magnifier solutions that are available on a USB, SuperNova USB is no compromise. SuperNova USB is a full working licence that runs directly from the USB and doesn't leave trial software on every PC you visit.

[LEARN MORE](#)

## Controlling Your TV With Upper Body Impairments



Whether you want to browse channels or start a new series on Netflix, tecla-e eliminates the barrier of traditional hand-held remote controls by bringing people with limited upper-body mobility hands-free access. There are three ways in which individuals can control their Smart TV through with an assistive switch: through Amazon Alexa, Universal Remote applications, and on Apple TV.

## 1. AMAZON ALEXA + TECLA APP

Depending on which Smart TV you own, Amazon Alexa has different Skills available that can give you control of all its features through tecla-e. For example, if you have Sony's Android Smart TV, some Skills include:

- "Alexa, turn off Living Room TV."
- "Alexa, change the channel to \_\_\_\_\_ on TV."
- "Alexa, next channel."
- "Alexa, mute TV."
- "Alexa, switch input to HDMI 1."
- "Alexa, rewind."

Once you have integrated these Skills on your Alexa account, you now have full access to activate any of your commands on the Tecla app as well. To put it simply: anything Alexa can do, Tecla can do. Add a new Alexa Button on the Tecla Remote and type the command that you want access to on the Tecla app. Now, when you're on the app, you can press the button and Tecla will tell Alexa to tell your Sony TV to perform a Skill like the ones listed above through the power of the Internet of things (IoT).



## 2. REMOTE APPLICATIONS.

AnyMote is a smart universal remote application that connects with Smart TVs so that users can control their TV, no matter where they are, through their smartphone or tablet. The app replaces the need for a physical remote control and has unique features like the ability to make a custom interface and automation capabilities.

Unfortunately, AnyMote is not fully switch-accessible and can only be used in Point Mode for Apple's Switch Control. This means the application will not be as user-friendly as the Tecla app or Apple TV and will require more time to perform all of its functionality.

## 3. APPLE TV + TECLA-E

tecla-e users with an Apple TV can connect the two devices to change the channel, adjust the volume, and more instantly using Switch Control. tvOS has similar features to iOS devices for switch users – making it easy to adjust to a new interface. When connecting tecla-e to Apple TV, you will be able to switch between your iPhone, iPad, Mac, and Apple TV, so you don't have to worry about missing a phone call while watching a movie.

Tecla users can also control Apple TV through the application available in the App Store. This app is fully accessible with Switch Control, making it possible to also control your Apple TV from your iPhone or iPad.

For step-by-step instructions on connecting Apple TV to your tecla-e, visit the article on their Support Page at [gettecla.com](http://gettecla.com).

[LEARN MORE](#)

## UFO – Universal Finder One



A small device connected to your smartphone that allows you to find people, create playground areas, identify places and for the first time, create solutions tailored to your own needs in 3 clicks.

### FEATURES

**Family Care:** You can go tranquil wherever you want with your little child, put a UFO in his pocket, which will beep if he goes too far from you. You can also find valuable objects. Set your UFO to keep safe those you love the most.

### ACTUAL USE EXAMPLES



BACK TO  
CONTENTS



I wanna go to the public garden to make my son and daughter enjoy a nice outdoor games noon. Now I can know where are each one of them at all time.

Even if one or both are going too far, I will know it immediately from my smartphone, and simultaneously with a sound arriving from their exact position.

Hey!! I can also use it to make a tour with a guide. So I can make my way, and be sure that I will not lose the group.

**Take Control:** For the first time you are the protagonist. In addition to the features that UFO offers you, you can generate your own ones, tailored to your specific needs in 3 clicks.

## DARE TO TAKE CONTROL!

- You can make the UFO beeps, when you approach it.
- You can link UFO to a website.
- You can also program your Smartphone to warn you when you approach UFO.
- ... and more options to chose from.

## ACTUAL USE EXAMPLES

I'm enjoying a few days in a country hotel, it is very nice and they're very dynamic on their web, but some places are a bit difficult to find.

Now, the way to the swimming pool, the elevator or the restaurant is very simple; I've placed easily my own UFO's anywhere I wanted, and as I approach the area I'm looking for, the selected UFO emits a sound from its position.

I also adjusted the UFO I placed in the restaurant, to display in my smartphone the daily menu just by approaching its door. They change it every day!

I just concentrate on enjoying my stay.

**Play Ground:** Easy creation of safe playground areas anywhere, in which you will know your relative position at all time.

## ACTUAL USE EXAMPLES AT WORK

The offices of my new job have a somewhat confusing layout, I have placed UFOs in the corners of the corridors that show me the office's path. The UFOs sound consecutively; the ones closest to my office, with lowest tones, so that I recognize the direction I lead and the place where I am.

## WHY UFO?

Each person has their own needs and different preferences. To fully address them, they only need the right tools, the rest depends on each of them.

This conviction has led them to create a set of applications, each of which provides several functionalities to your UFO for daily life, sport or leisure.

But they have gone further. UFO is ready to give you answers that only you want. For the first time, create your

solutions in 3 clicks, which will adapt the device to your own lifestyle.

## DARE TO TAKE CONTROL!

[LEARN MORE](#)

## THE FUTURE OF EDUCATION & SOCIALIZATION FOR LEARNERS WITH AUTISM



### SAY HELLO TO MILO!

A Non-threatening way for learners with ASD to practice their communication and social skills.

Milo the robot is designed to be interesting and approachable for learners with ASD. He can walk, talk and even model human facial expressions. Milo never gets frustrated or tired. He consistently delivers lessons in a way that learners with ASD respond to. This recurring positive experience creates an environment in which learners can learn and thrive. Robots4Autism helps learners improve their social and behavioral skills and



gain the confidence they need to succeed academically and socially.

Using the Robots4Autism program, individuals with ASD learn to:

- Tune in on emotions
- Express empathy
- Act more appropriately in social situations
- Self-motivate
- Generalize in the population

The Robots4Autism lessons are designed to teach social behaviors and emotional identification to learners ages 5-17 who meet the Prerequisite Skills. To determine if the curriculum is appropriate for your child, please read the prerequisite skills needed.

Milo delivers lessons verbally. As he speaks, symbols are displayed on his chest screen that will help your learner better understand what he is saying. Throughout the lessons, Milo will ask your learner to watch four to five second video clips on the student tablet. The videos show learners displaying the skills or behaviors both correctly and incorrectly that Milo is teaching. Your learner will be asked “yes” or “no” questions to determine if the learners in the video are doing the behaviors right or wrong.

It is recommended that your learner work with Milo, along with an educator or therapist, for 30 to 60 minutes at least three times a week.

After KLS, a news outlet in Utah, ran a story on Milo teaching children with autism spectrum disorder (ASD) in Piute County. RoboKind reached out to the school and caught up with Circleville Elementary’s special education teacher Kristy DeLange, who was featured in the KLS news coverage. She was joined by the Director of special education for Piute, Heidi Hansen, and Erica Cardman, a parent whose 10-year-old son, Culann Waddington, works with Milo.

Milo was introduced to their district by Mark Child, the Executive Director of Marketing at RoboKind, and has been working with over eight students, who have various mental disabilities, for a little over four months. The children have shown incredible improvement both academically and socially. For Cardman, she says that her son has even gone so far as to start a club called the Digidestined, based off the popular Japanese animation Digimon, and actively develop friendships with his peers.

“Since working with Milo, he’ll ask to stay late after school to meet with his club he put together, or he’ll ask to go over to friends’ houses,” Cardman tells RoboKind. “Something that he never really did before because he just didn’t like to go out there and be around other people.”

DeLange says that another child who has behavioral problems and struggles with understanding the difference between him and others has slowly started to develop awareness. Another student who is multi-handicap and struggles with communication now initiates conversations.

“We always knew she had a lot to say,” Hansen says, “she’s starting the conversation, and we’re not always drilling her with questions.”

During the interview, Cardman made it clear that she is a proactive parent who is constantly looking for ways to improve or help Culann succeed in life.

“I’ve looked up so many articles, there have been specials that I’ve watched on T.V.,” she explains, “I’ve looked into therapies, what kind of activities I should be looking into. It kind of turns your world around as, ‘Hey, I have a child with autism. What can I do to do the best by him?’ I’m very much proactive, I go after whatever I need to help any of my children. The first thing I did was I got him up to Salt Lake, which was a bit of a drive, and got him fully tested at the University of Utah.”

Cardman and DeLange work as a team to ensure Culann’s academic success. They worked together to build achievable individualized education program (IEP) goals, and lessons with Milo have helped to succeed in the social development goals.

“The friend issue will affect them for their whole life, and if we can teach them those social skills through Milo, and then we reinforce it in the classroom, and at home, Culann’s going to have friends, and he’s going to be happier,” DeLange says.

“Autistic children, especially higher functioning ones like Culann, they know they’re different, and they know they don’t have friends, so they’re hurting all the time,” Hansen adds. “If we can help them be part of the school and have friends they’re going to be more successful because they have real strength academically usually and artistically, but we need to have them fit in too.”

So many people with autism spectrum disorder (ASD) struggle with social cues and emotional beats. Robots4Autism helps them develop the skills they need to cross the divide between autism and the rest of the world. In Piute County, Milo is having a bigger impact than just on children with autism. He is helping other students with disabilities join regular classrooms, and in turn contributes to creating a more understanding environment for all.

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## INTEGRAMOUSE PLUS – THE MOUTH CONTROLLED MOUSE

### IntegraMouse<sup>+</sup> The Mouth Controlled Mouse



### GATEWAY TO THE WORLD

Email, Google, Skype, Facebook, YouTube, Twitter ... Today's life cannot be imagined without having use of a computer. With IntegraMouse Plus you can operate the computer solely by mouth. The slightest movement of your lips will control the mouthpiece and move the mouse across the computer screen. By simply sipping and puffing, you can trigger mouse clicks as with any standard mouse. IntegraMouse Plus has been developed for people with paralysis, progressive musclediseases or arm amputations. The use of IntegraMouse Plus can enhance quality of life, privacy and independence.



### FEATURES OF INTEGRAMOUSE PLUS

**Wireless:** The IntegraMouse Plus comes as wireless. IntegraMouse Plus is a fully adequate computer mouse which can be operated with the mouth. New feature: it is wireless! Of course it still operates with USB connection.

**More than a mouse device:** IntegraMouse Plus has two additional operating modes. It can be used as a joystick or set to keyboard mode – ideal for gaming.

**All-in-One:** IntegraMouse Plus offers all the functions of a classical mouse device.

**Hygienic:** The disposable mouthpiece is made to the highest hygienic standard and can be replaced easily and economically.

**Independent:** IntegraMouse Plus can be used with all standard operating systems, which support USB.

**Longlife:** The IntegraMouse Plus has a long battery life and built-in rechargeable batteries.

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## GIVING PEOPLE A VOICE – INSTANT COMMUNICATION FOR THOSE WHO CAN'T SPEAK

TippyTalk allows a person with a verbal disability to communicate by translating pictures into text messages, which are then sent to a family member or care givers phone.

This allows the person who is non-verbal to communicate and express a desire, want, need or feeling.

The TippyTalk is an enhanced AAC (communication) platform that removes the person living with the verbal disability from the frustration. Isolation and limitation of same room communication and opens the door to the world around them.

### HOW IT WORKS

Their solution allows a person living with a verbal disability to communicate by translating customized pictures into personalized text messages, which are then sent to a family member or care givers phone or tablet. TippyTalk allows you the parent or caregiver to capture images that are uniquely identifiable and familiar to the person living with the verbal disability. You simply take a picture of an object, place, or person and apply the appropriate text. You can also reinforce language development by recording your voice over each picture insuring the person living with the disability will recognize and understand the message.

This communication is not restricted by distance the person living with the verbal disability can communicate with whom-ever they chose no matter where they may be in the world.

TippyTalk is unique in that it removes the person with the verbal disability from the limitations of same room communication and by doing so increases and promotes Communication, Independent choice, and provides a platform for Social inclusion, while also reducing the frustration for the person and the entire support network.



No two TippyTalkers will be the same, each unit is extremely user friendly and simply to program. Putting the control back into the hands of the parent/caregiver, after all no one knows their loved ones better than you do.

Their enhanced AAC platform is breaking down communication barriers by allowing the user to connect instantly with whomever they choose anytime, anywhere.

Rob Laffan, CEO of TippyTalk quotes "Hi I'm Rob and this is my beautiful little girl Sadie. Thank you for taking the time to read OUR story.

As a nonverbal family we understand that we are not unique, and that there are so many loving families, just like ours, living with verbal disabilities all over the world.

Our community is full of passionate people who are always striving to add value to our loved one's lives.

People like you and me who understand that all we want is to communicate with our child, understand how they are feeling, what they desire and how we can support them.

As a parent we can all relate to the overwhelming need, want, and desire to protect and provide a better quality of life for our children. However, you and I have a pesky obstacle in our path called "NONVERBAL" which tries to stop us from achieving these goals.

It's this that inspires us to constantly ask these questions.

How can we help Sadie explain who she is as a person?

How can we provide a way for Sadie to express her individual likes and dislikes her own needs, wants, and desires?

How can we provide a way to remove some of the limitations placed upon her, and help change society's perception of who she is?

This way of thinking led to TippyTalk. I truly believe we must have expectations for our children, and provide them with the tools and skills necessary for them to reach their full potential.

Without this commitment we are just placing more limitations upon them.

TippyTalk allows our Sadie communicate who she is, when she is sad, happy, frustrated or not feeling well. TippyTalk helps to reduce our frustration while also expanding Sadie's social network beyond the confines of a room.

I am just a Dad who had an idea, which we are so thankful for, the value TippyTalk has added to our family's life, we find hard to describe in words.

That's why we hope your family can become part of our TippyTalk community and share you own personal experiences with families just like ours."

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| 1 Year Membership    | 2 Year Membership    | 1 Year Membership   | 1 Year Membership   |

## GROUP MEMBERSHIPS

| GROUP                | GROUP                  | GROUP                  |
|----------------------|------------------------|------------------------|
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