

# *Tri-State Autism Spectrum Disorder Webinar Series*

This presentation is a collaborative effort between the following:



**COLORADO**  
Department of Education

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N E B R A S K A  
autism spectrum disorders  
N E T W O R K

The contents of this power point presentation were developed under a grant from the Nebraska Department of Education, IDEA parts B and C from the U.S. Department of Education. However, this content does not necessarily represent the policy of the U.S. Department of Education and you should not assume endorsement by the Federal Government.

## Supporting Literacy in Individuals with Autism through the use of Assistive Technologies



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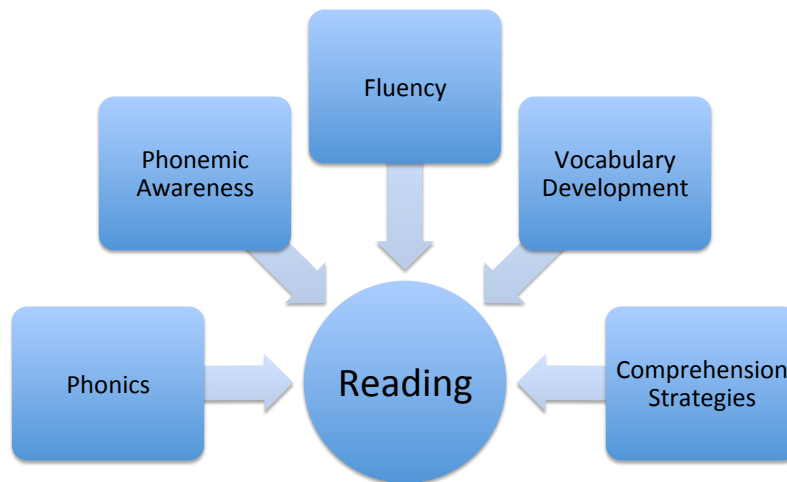
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A division of the ESC of Central Ohio 

### Objectives

- ✓ Gain understanding of common reading barriers for students with ASD
- ✓ Gain understanding of features of technology that address reading barriers
- ✓ Gain understanding of the need and process to feature matching student needs and technology features
- ✓ Become informed of AT tools for reading

## Components of Reading



Adapted from Ambruster et al. (2003)


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The reading problems of those with autism may not be obvious initially and may worsen over time

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## Autism Characteristics

DSM-5	Federal Definition of Autism
<b>Fixated Interests and Repetitive Behaviors</b>	
a) Stereotyped or repetitive speech, motor movements, or use of objects	<ul style="list-style-type: none"> <li>•Engagement in repetitive activities and stereotyped movements</li> <li>•Disability affecting verbal communication</li> <li>•Disability affecting nonverbal communication</li> <li>•Disability affecting social interactions</li> </ul>
b) Excessive adherence to routines, ritualized patterns of verbal or nonverbal behavior, or excessive resistance to change	<ul style="list-style-type: none"> <li>• Resistance to environmental change or change in daily routine</li> </ul>
c) Highly restricted, fixated interests that are abnormal in intensity or focus	<ul style="list-style-type: none"> <li>• Engagement in repetitive activities</li> </ul>
d) Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of environment	<ul style="list-style-type: none"> <li>• Unusual responses to sensory experiences</li> </ul>



## Autism Characteristics

DSM-5	Federal Definition of Autism
<b>Qualitative Impairments in social communication</b>	
a) Deficits in social-emotional reciprocity	<ul style="list-style-type: none"> <li>•Disability affecting social interactions</li> <li>•Disability affecting verbal communication</li> <li>•Disability affecting nonverbal communication</li> </ul>
b) Deficits in nonverbal communicative behaviors used for social interaction	<ul style="list-style-type: none"> <li>•Disability affecting social interactions</li> <li>•Disability affecting verbal communication</li> </ul>
c) Deficits in developing and maintaining relationships, appropriate to developmental level	<ul style="list-style-type: none"> <li>•Disability affecting social interactions</li> </ul>



## Socialization and Literacy Impact

Adapted from Iland 2011

Area of Developmental Concern	Possible effect on Literacy and Comprehension
Play Skills	Cognitive development, learning and literacy
Shared Enjoyment	Decreased time in shared activities including reading
Joint Attention	Limited attending to reading activities with others
Imitative Play	Practice of roles and actions in real life may impact understanding of those roles and actions in storybooks
Imaginary Play	Understanding of imaginary content in books
Conversations with Adults	Decreased language development
Social Experiences	Limited SE yields limited understanding of vocab and storyline (plot, characters etc.)
Social Understanding	Difficulty relating to story lines and characters
Perspective Taking	Understanding of characters and interactions



## Communication and Literacy Impact

Adapted from Iland 2011

Area of Developmental Concern	Possible effect on Literacy and Comprehension
Language development	Comprehension of word, sentence and text
Oral language	Spoken language relates to written language
Recognizing and responding to non-verbal language	Misses context cues and foreshadowing
Literal interpretation of language	Difficulty with idioms, connotation, multiple meaning words, metaphors, figurative language, hyperbole and personification
Understanding relationships between words and meaning	Difficulty organizing and categorizing words impacting recall of information
Interpretative language abilities	Generating inferences, resolving ambiguity, cause and effect, monitoring comprehension
Difficulties with pronouns	Loss of meaning and confusion of characters
Difficulty generating questions while reading	Difficulty establishing meaning and relevance
Listening and understanding oral language	Misses out on content of oral literacy activities



## Restrictive and Repetitive Behavior and Literacy Impact

Adapted from Iland 2011

Area of Developmental Concern	Possible effect on Literacy and Comprehension
Limited general fund of knowledge	Understands less
Narrow focus of interest/knowledge	Generalization of info may be difficult
Exposure and then repeated exposure to a narrow range of topics	General reading materials less motivating and interesting, socialization impacted
Restricted or repetitive play, leisure, or academic activities	World, word and social understanding impacted results in decreased flexible thinking
Reading as a restricted and repetitive activity	Isolation results in decreased social understanding and application to materials
Literal, specific, and concrete understanding	Generalization and imagination may be limited and impact understanding
Restricted focus	Difficulty with multiple meaning words
Over-selective attention	Shifting focus or attend to multiple details
Self stimulatory behaviors	Limits engagement in reading activities

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# 1 Digital Text

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## What Can You Do With Digital Text?



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## Digital Text can be Found in Many Places.....



e-mail



Download it



WWW  
(html)



Create it



Textbook CDs



PDFs

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<http://www.nimac.us/>

Text books published prior to 2006 may not be available



**Books without Barriers**

**Accessible Books and Periodicals for Readers with Print Disabilities**

- Bookshare® is free for all U.S. students with qualifying disabilities, thanks to an award from the U.S. Department of Education Office of Special Education Programs (OSEP).
- Bookshare dramatically increases the accessibility of books. People with disabilities deserve the same ease of access to books and periodicals that people without disabilities enjoy.
- A searchable online library. Bookshare offers approximately 127,000 digital books, textbooks, teacher-recommended reading, periodicals and assistive technology tools.
- Readers of all ages. Bookshare offers affordable membership, unlimited library privileges and a community of Members, Volunteers, parents, publishers and authors.

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October 11, 2011 - Bookshare Wins New OSEP Award to Extend Innovative Tools and Content

**Accessible e-Book Reader, Read2Go, First Update Now Available**  
September 8, 2011 - App for iPad, iPhone, and iPad touch Allows Users to Read Bookshare Books

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## SETT Framework

- Student
- Environment
- Task (what is the purpose?)
  - Connected to the standards
  - Need identified in the IEP
  - ID of weak skills through formative assessment
- Tool

## Jonah



- Third grader in general education setting
- Enjoys electronic media
- Uses iPad at school for recreation and leisure
- Excels in math computation
- Good word recognition and spelling but has difficulty understanding the true meaning of many vocabulary words
- Struggles with sequencing, listening capacity, cause-effect, interpreting, predicting, summarizing and making inferences
- Tends to keep to himself in social situations

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## Environments

- 3<sup>rd</sup> grade general education classroom
- 24 students in the class
- Students sit at tables (4 students per table)
- Jonah sits at table next to teacher's desk
- Attends small group social skills lesson once a week for 30 minutes with SLP/Guidance Counselor

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## Tasks

- Can share own point of view and identify how it is different from that of the narrator or characters.
- Describe the relationship between events, steps and ideas in a text, using time, sequence, and cause/effect language.
- Follow conversational rules (i.e. listening to other, taking turns and speaking one at a time)



## Matching Features to Student Needs

Needs	Features
Describe the relationship between events, steps and ideas in a text, using time, sequence, and cause/effect language.	Graphic organizers
Can share own point of view and identify how it is different from that of the narrator or characters.	Embedded notes and prompts within a story Highlighting of key points in books
Understand meaning of vocabulary words in text	Picture/video dictionaries
Follow conversational rules (i.e. listening to other, taking turns and speaking one at a time)	Video Modeling



# Tools for Trial



**Picture View**  
Students create maps, diagrams and webs.

**Math View**  
Students use visual math tools to understand essential math concepts.

**Writing View**  
Students expand their ideas into written expression.

<http://www.inspiration.com/>



## Reading/Writing Software



### Read&Write GOLD

<http://www.texthelp.com/North-America/our-products/readwrite>

<http://www.freedomscientific.com/LSG/products/wynn.asp>



**Kurzweil**  
EDUCATIONAL SYSTEMS®

<http://www.kurzweiledu.com/products/kurzweil-3000-firefly-overview.html>

<http://donjohnston.com/solo/#.UvpmuF6prGs>



## Embedded Notes

Bubble Notes  
Kurzweil 3000

<http://youtu.be/6TJlpZKlasQ>



## Highlighter Feature with Extraction

Highlighting and Collect Highlights-Read and Write Gold

[http://www.youtube.com/watch?v=Hv\\_OWdF1c20&feature=share&list=PLD2510358B7CFD5A5&index=1](http://www.youtube.com/watch?v=Hv_OWdF1c20&feature=share&list=PLD2510358B7CFD5A5&index=1)



## Picture Supported Dictionary

Picture Dictionary-Read Write Gold

<http://youtu.be/8Nf0KZEKYrA>



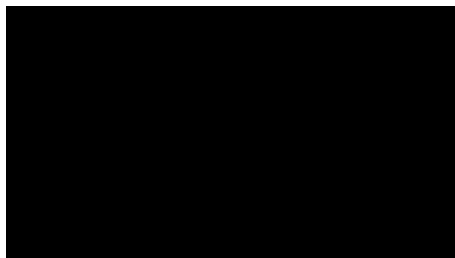
## Vocabulary Support

Vocabulary List Builder

<http://www.youtube.com/watch?v=2lq8UjZS06E&list=PL942D07588DD28062&feature=share>



GCF  
Vocabulary Videos

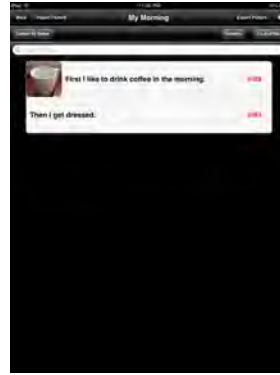
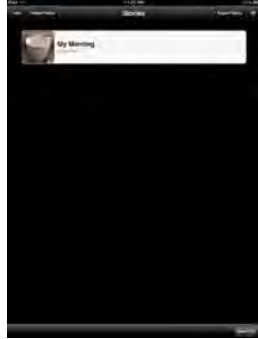


<http://www.gcflearnfree.org/>





## Video Modeling-Apps



My Pictures Talk  
Grembe




## UDL Book Builder Editions by CAST

**Gus's Rainforest Adventure**

1 of 17

TextHelp

**Gus's Rain Forest Adventure**



Written by Janice Marino, Megan Hunt, Connie Reed, Terry Ferro, and Helen Virga from the Davis School in Brockton, MA

Illustrated by Melissa Claire Henry

**Pedro**  
Let's look at the picture and talk about how the rain forest is different from where you live.

**Listen Again**

**Terry's Tips**  
It is important to talk to children and ask them questions about stories. In this book the coaches Pedro, Hali, and Monty give examples of how to help children make predictions, make connections, retell the story, think about how the characters are feeling, and talk about the pictures. On this first page the coaches talk about the rain forest and how it is different from our homes. This helps the child establish a picture of the setting.

**Extension Activity:** Have children draw a picture of where they live. Compare their pictures to the pictures of the rain forest in this book. How are they similar or different?

<http://bookbuilder.cast.org>





## Jada

- Seventh grader
- Enjoys listening to music and dancing
- Likes animated movies
- Limited verbal language
- Fine motor limitations and no standard keyboard access
- Cognitively delayed
- Behavior and engagement are communication modes
- Auditorily sensitive
- No word recognition
- Hits, screams, bangs head and throws objects when frustrated



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## Environments

- Resource room for language arts and math
- 12 students, one special education teacher, two paraprofessionals
- Attends social studies, science, all related arts classes in general education setting with shared paraprofessional
- Receives speech and language therapy once a week for 42 minutes in resource room
- Receives occupational therapy once a week for 42 minutes in resource room or related arts class when applicable

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## Tasks

- Determine the meaning of words and phrases in text
- Compare and contrast a text to other media versions of text content
- Read and comprehend science/technical texts independently and proficiently.



## Matching Features to Student Needs

Needs	Features
Fine motor support to show what she knows	Alternate access (touch screen vs expanded keyboard)
Read and comprehend science/technical texts independently and proficiently.	Alternate access software that includes the features of embedding video presentation of content, picture supported text, text-to-speech with highlighting, expanded keyboard access, custom layouts/content of supporting activities)
Compare and contrast a text to other media versions of text content	See above features
Determine the meaning of words and phrases in text	Picture supports of words and content
Communication support that are durable due to destructive bxs to show what she knows, to comments, request, etc.	AAC, cells, voice output vs no voice output d/t/ auditory sensitivities, Picture supports of vocabulary
Reduce auditory input	Noise cancelling devices (hadphones, earbuds)



Tools for Trial



You Tube Video of Biomes

<https://www.youtube.com/watch?v=ZouWWVyz9v8>

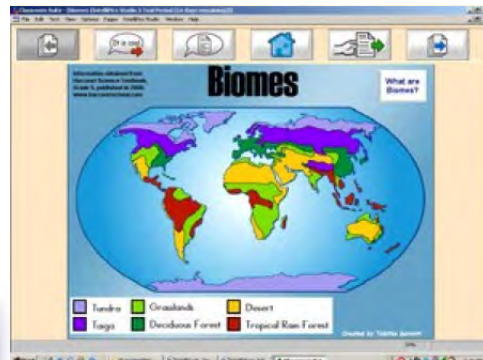


## Video: Showing What You know with Symbols and Biome Activity

<http://sda.doe.louisiana.gov/ResourceFiles/Literacy/Informal%20Assessment%20Using%20Symbols.wmv>



## Picture Supported Digital Books and Supplemental Activities



Intellitools Classroom Suite and Intellikeys

<http://www.intellitools.com/classroom-suite.html>





Mid Tech Leveled  
Communication System with  
Voice Output

Tech Speak

<http://amdi.net>

Theme: Rainforest Vocabulary can be used for bulletin boards, memory games, etc.

rain forest 	rain forest 	armadillo 	tarantula 
anteater 	iguana 	jaguar 	crocodile 
equator 	chimpanzee 	toucan 	toad 
boa constrictor 	sloth 	piranha 	tapir 
floor 	understory 	canopy 	emergent 

Low Tech Content Specific Communication Board

<http://fdlrsregion3curriculumvisuals.wikispaces.com/Biomes>



Auditory Sensory Support



Noise Cancelling Headphones

Earbuds and sound choices



## Adam



- Junior in high school
- Attends career center
- Prefers working independently
- Interested in how technology works (repair/technician)
- Literal comprehension skills are fairly good
- Detail oriented
- Deficits in working memory, organization skills, sequencing and planning and accessing relevant background knowledge
- Pragmatic skills deficits
- Verbalization skills more advanced than comprehension of

O C A L I

## Environments

- Attends high school for required language arts and math courses
- Participates in Interactive Technology Program at career center (2 year program)
- "Case manager" connects with Adam weekly at career center

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## Tasks

- Answer questions or solve problems using a variety of media or formats
- Determine meaning of symbols, words and phrases when used in scientific or technical context
- Follow multistep procedures in experiments, measurements, etc. and analyze results



## Matching Features to Student Needs

Needs	Features
Mobile solutions for school and work environment	Mobile technologies
Answer questions or solve problems using a variety of media or formats	Google search features (reading level, types of searches, etc), Skype/Facetime, Voice Thread, Prizmo,
Determine meaning of symbols, words and phrases when used in scientific or technical context	Dictionary support, homophones, Confusable words in DJ or RWG
Organizational skills support	Outlining Software DJ
Follow multistep procedures in experiments, measurements, etc. and analyze results	Siri-"tell me the definition of....."
Pragmatic skills support	Video Modeling -VoiceThread



## Tools for Trial



## Electronic File Management Systems





## Full Featured Reading/Writing Software



<http://www.donjohnston.com/products/solo/index.html>

## Read&Write GOLD

<http://www.texthelp.com/North-America/our-products/readwrite>



<http://www.freedomscientific.com/LSG/products/wynn.asp>



<http://www.kurzweiledu.com/default.html>



Google abraham lincoln

Web Images Maps Shopping News More Search tools

Any time All results Lancaster, OH

Abraham Lincoln - Wikipedia, the free encyclopedia  
en.wikipedia.org/wiki/Abraham\_Lincoln

Reading level: Intermediate

Private

Nearby

Verbatim

Results by reading level for abraham lincoln:

Reading Level	Percentage
Basic	36%
Intermediate	63%
Advanced	1%

Abraham Lincoln - Wikipedia, the free encyclopedia  
en.wikipedia.org/wiki/Abraham\_Lincoln

Intermediate reading level  
Abraham Lincoln was born February 12, 1809, the second child of Thomas Lincoln and Nancy Lincoln (née Hanks), in a one-room log cabin on the Sinking ...  
Sexuality - William Wallace Lincoln - Assassination of Abraham - Mary Todd Lincoln

News for abraham lincoln

Author of Lincoln mystery letter from 1846 identified  
Fox News - 5 days ago  
It's been more than 25 years since workers renovating Abraham Lincoln's home found a letter fragment in a mouse's nest inside a wall.  
New York Daily ...

Justin Tasch/New York Daily News  
New York Daily News - 4 days ago

Abraham Lincoln | The White House  
www.whitehouse.gov/about/presidents/abrahamlincoln

Intermediate reading level  
A short biography from the official White House Web Site.

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# Web Site Visual Simplification



Safari Reader



<http://www.apple.com/safari>



Firefox  
Readability  
Extension and  
App

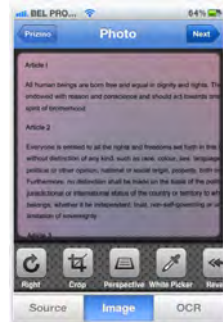
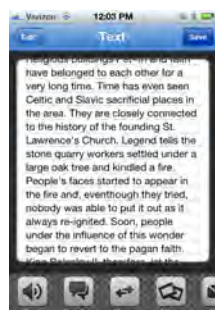
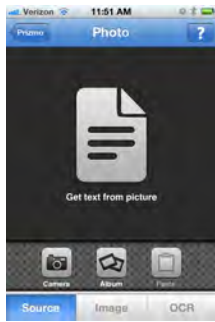


<http://www.readability.com>



Prizmo

[http://youtu.be/-kM1SO\\_6BfQ](http://youtu.be/-kM1SO_6BfQ)



Popplet



popplet.com Facts About Earth help

home view all edit share

Earth is 91 million miles from the sun.

Magnetic field is due to spinning iron core.

Earth is 4.54 billion years old.

The diameter of the Earth is 7,926 miles.

Earth has only one moon.

atmosphere is 78% nitrogen and 21% oxygen.

Earth is almost a perfect sphere.

Rotates once every 23.934 hours. Not 24 hours!

It is tilted at 23.4 degrees.

popplet.com NY Notes help

home view all edit share

Best Burgers

Prune!

Best Cupcakes

Two Little

Brooklyn Pizza

Best Cupcakes

OCALI

Reading Pen2  
WizcomTech



OCALI



## Merriam-Webster Dictionary



OCALI

Siri  
Apple iOS



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## You Tube Tutorials



Auto Repair & Diagnostics : How to Diagnose an Engine Problem

<https://www.youtube.com/watch?v=GHIoD6zECsM>




## Assessment Tool for Technology Based Reading Accommodations



<http://www.donjohnston.com/products/par/index.html>



[Skip Navigation](#) | [Site Map](#) | [Glossary](#) | Search:



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**DECISION-MAKING TOOLS**

- **AIM Navigator**
  - AIM Navigator Online Tool
  - Sample Student Summary
- AIM Explorer
- AIM Product Tutorials



**AIM Navigator**




**What is It?**  
 The AIM Navigator is an interactive tool that facilitates the process of decision-making around accessible instructional materials for an individual student. The four major decision points in the process include 1) determination of need, 2) selection of format(s), 3) acquisition of format(s), and 4) selection of supports for use. The AIM Navigator also includes a robust set of guiding questions and useful references and resources specifically related to each decision point.

Different scaffolds of support are built in so that teams can access information at the level needed to assist them in making informed, accurate decisions.

[http://aim.cast.org/experience/decision-making\\_tools/aim\\_navigator](http://aim.cast.org/experience/decision-making_tools/aim_navigator)



**Questions?**





O C A L I

linking research to real life.

A division of the ESC of Central Ohio 