Tri-State
Autism Spectrum Disorder
Webinar Series

This presentation is a collaborative effort between the following:

OCALI

linking research to real life.

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

Understand

Discover

Connect

Autism
Center
at OCALI

Autism

Assistive
Technology
Center
at OCALI

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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

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Components of Reading
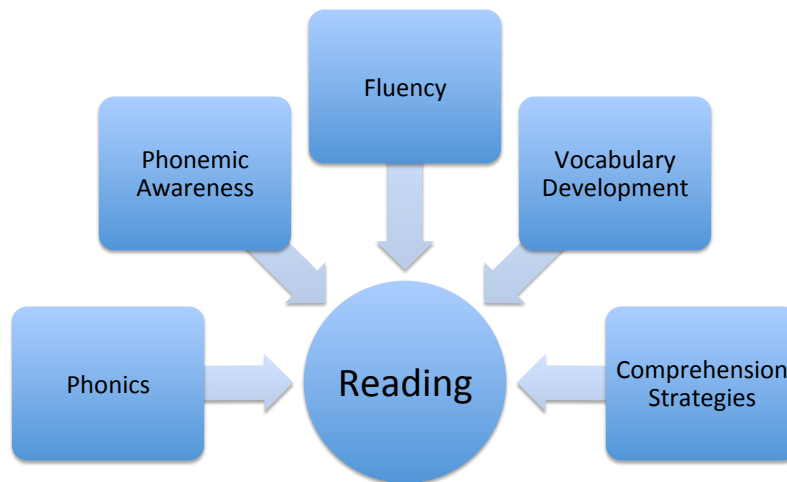
Adapted from Ambruster et al. (2003)

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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
Fixated Interests and Repetitive Behaviors	
a) Stereotyped or repetitive speech, motor movements, or use of objects	•Engagement in repetitive activities and stereotyped movements •Disability affecting verbal communication •Disability affecting nonverbal communication •Disability affecting social interactions
b) Excessive adherence to routines, ritualized patterns of verbal or nonverbal behavior, or excessive resistance to change	• Resistance to environmental change or change in daily routine
c) Highly restricted, fixated interests that are abnormal in intensity or focus	• Engagement in repetitive activities
d) Hyper-or hypo-reactivity to sensory input or unusual interest in sensory aspects of environment	• Unusual responses to sensory experiences

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Autism Characteristics

DSM-5	Federal Definition of Autism
Qualitative Impairments in social communication	
a) Deficits in social-emotional reciprocity	•Disability affecting social interactions •Disability affecting verbal communication •Disability affecting nonverbal communication
b) Deficits in nonverbal communicative behaviors used for social interaction	•Disability affecting social interactions •Disability affecting verbal communication
c) Deficits in developing and maintaining relationships, appropriate to developmental level	•Disability affecting social interactions

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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 like 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

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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

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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?

- Text-to-Speech
- Size
- Spacing
- Background
- Alternate Access
- Color
- Summarize
- Reading Level
- Highlight

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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

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www.bookshare.org

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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

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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

- 3rd 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)

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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

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Tools for Trial

Picture View
Students create maps, diagrams and webs.

Integrated Picture and Writing Views

Writing View
Students expand their ideas into written expression.

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

Model the addition or subtraction problem and complete the number sentence.

http://www.inspiration.com/

kidspiration 3
The visual way to explore and understand words, numbers and concepts.

Reading/Writing Software

Read&Write GOLD

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

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Embedded Notes

Bubble Notes
Kurzweil 3000

http://youtu.be/6TJIpZKIasQ

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Highlighter Feature with Extraction

Highlighting and Collect Highlights-Read and Write Gold
http://www.youtube.com/watch?
v=Hv_OWdFIc20&feature=share&list=PLD2510358B7CFD5A5&index=1

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Picture Supported Dictionary

Picture Dictionary-Read Write Gold
http://youtu.be/8Nf0KZEKYrA

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Vocabulary Support

Vocabulary List Builder

http://www.youtube.com/watch?
v=2Iq8UjZS06E&list=PL942D07588DD28062&feature=share

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GCF
Vocabulary Videos

http://www.gcflearnfree.org/

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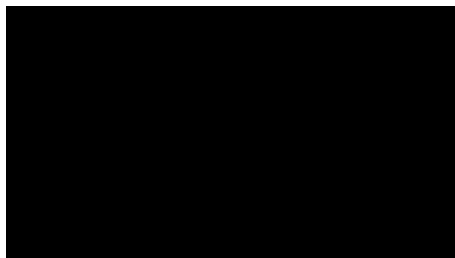
Video Modeling-Apps
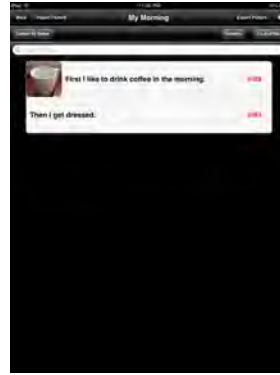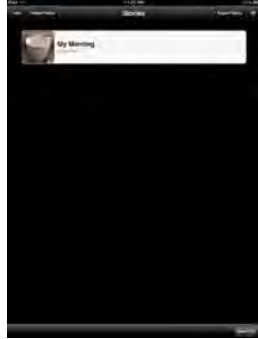
My Pictures Talk
Grembe

UDL Book Builder Editions by CAST

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.

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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)

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Tools for Trial

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You Tube Video of Biomes

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

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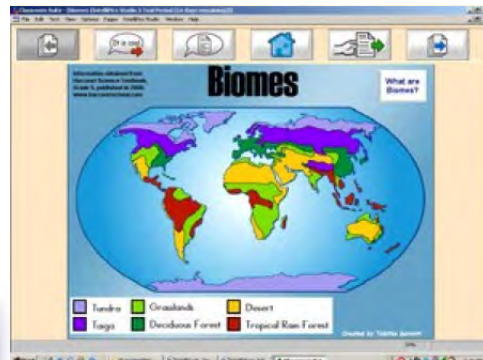
Video: Showing What You know with Symbols
and Biome Activity

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

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Picture Supported Digital Books and Supplemental Activities

Intellitools Classroom Suite and Intellikeys

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

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Mid Tech Leveled Communication System with Voice Output

Tech Speak

http://amdi.net

Low Tech Content Specific Communication Board

http://fdlrsregion3curriculumvisuals.wikispaces.com/Biomes

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Auditory Sensory Support

Noise Cancelling Headphones

Earbuds and sound choices

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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

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

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

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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

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Tools for Trial

Electronic File Management Systems

Full Featured Reading/Writing Software

SOLO 6 by Don Johnston

CO:Writer
READ:OutLoud
WRITE:OutLoud
DRAFT:Builder

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

Read&Write GOLD

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

Wizard with scanning
WYNN
Network Version
Freedom Scientific WYNN

Kurzweil EDUCATIONAL SYSTEMS®

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

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

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Google
abraham lincoln

Web   Images   Maps   Shopping   News   More ▾   Search tools

Any time ▾   All results ▾   Lancaster, OH ▾

✓ All results
Reading level
Private
Nearby
Verbatim

Abraham — he free encyclopedia
en.wikiped — oln ▾
Abraham L — 2, 1809, the second child of Thomas Lincoln and
Nancy Linc — om log cabin on the Sinking ...
Sexuality - — sassination of Abraham - Mary Todd

News for

Google Search Reading Levels

Web   Images   Maps   Shopping   News   More ▾   Search tools

Any time ▾   Reading level ▾   Clear

Results by reading level for abraham lincoln:
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
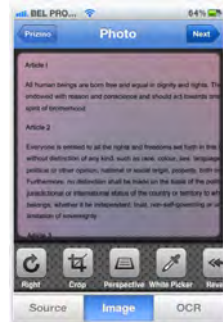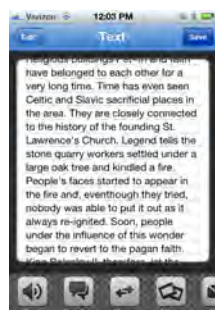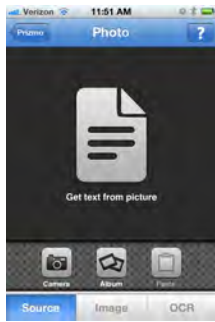
Safari Reader

Firefox
Readability
Extension and
App

OCALI

Prizmo

http://youtu.be/-kM1SO_6BfQ

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Popplet

Reading Pen2
WizcomTech

Merriam-Webster Dictionary

Siri
Apple iOS

You Tube Tutorials

Auto Repair & Diagnostics : How to Diagnose an Engine Problem

https://www.youtube.com/watch?v=GHloD6zECsM

Assessment Tool for Technology Based Reading Accommodations

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

http://aim.cast.org/experience/decision-making_tools/aim_navigator

linking research to real life.

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