

“Leap into Literacy:” Strategies for Teaching Emergent and Conventional Literacy to Girls and Young Women with Rett Syndrome. ★

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“It’s all in a girl’s eyes” Eye Gaze/Eye Tracking System ★

- Eye gaze technology taps directly into a girl’s incredible use of her eyes for communication
- Their eyes function as their index finger for pointing and gives them the ability to directly select what they want to say
- Essentially two actions are performed when using eye gaze technology
 - Looking at what want
 - Maintaining visual attention on it for selection (Dwell)



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Which Eye Gaze/Eye Tracking System to Trial? ★

- Size of the Trackbox of Eye Gaze/Eye Tracking System is important relative to the girl’s positioning and natural movement patterns.
- Conduct eye gaze trials with at least **two** different systems
- Extended trial with one that represents a girl’s “best” and “easiest” access
- Do not have girl calibrate the eye gaze system; use rep’s or get parents to – closest genetic match
- Set the dwell to under 1 second; sometimes as low as 400 to 500 ms for younger girls



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Comparison of “Trackbox” Sizes ★

Device	Eye Gaze system	Height (up & down)	Width (side-to-side)	Depth (forward & back)	Distance from eyes
DynaVox EyeMax 12-inch	Quick Glance	6	9.4	11	17 to 24
PRC ECOPoint 14-inch	Tobii	10	15	8	20 to 28
Tobii C12/C15	Tobii - CEye Module	12	16	8	18 to 26

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Goal of Trial with Eye Gaze System

- It is not target practice! No "Where's the...?" Or Look at the... or Find the...
- Aim for Success - increased motor demands, lower the cognitive and communication demands
- Allow for natural and spontaneous interaction; respond to selections appropriately
- Assist with navigation to page (Model)



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Eye Gaze Technology Also Works for Women with RTT

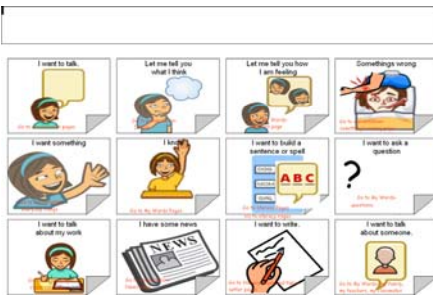
- 3 years ago – not very interactive; introduced choice making and sequenced voice output
- Gave a quick demonstration of how to navigate to different page to correct selection
- Quickly learned the motor plan and path for doing this independently
- This is very intentional; not by accident; [Video](#)



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The Dynamic Communication Book

- Developed by Pati King-DeBaun



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Judy's Next Eye Gaze page layout - Design is Copyrighted

- Starting page



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Main Conversation page



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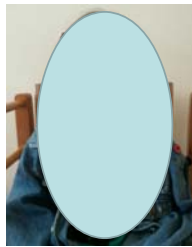
The Dynamic Communication Book for Girls

- Developed by Pati King-DeBaun
- www.creativecommunicating.com (click on **Catalog**, then click Visit our **NEW Shopping Cart**, then **Dynamic Communication Book Girl**)
- Over 100 Communication Pages set up in BoardMaker Plus with SpeakingDynamicallyPro
- Also set up for use in Tobii Communicator (Judy's eye gaze layout with 2 rows x 7 columns – easier motor plan); send picture to Judy of what Pati sends you and Judy will send content in my eye gaze layout electronically
- \$250 US

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7-year old girl

- 7 years old (almost 8)
- Started using symbols – Mayer Johnson very early on; first device Tango; hand and switches
- Integrated into regular second grade class
- Tobii C12 with CEye Module January 2011; Summer 2011 – Conversation pages



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7-year old Girl's Communication

- Very supportive team at home and at school
- Communication skills started changing dramatically over the summer and then so much more during the fall 2011
- Video taken on January 13, 2012 at Katie's Clinic for Rett Syndrome; showing "Authentic" communication when you don't know what a girl is going to say
- She selected, "I have a question to ask you" after which she selected "why?" in response to not seeing her last clinic; she also asked "who" she saw

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Why teach Literacy Skills?

- Second to music, girls love books – being read to and learning how to read
- Literacy opens the doors to truly expressing what is on a girl's mind and in her heart on an AAC device without relying on what others program for her
- Move beyond choice making for communication
- Spelling with word prediction allows for a girl to say what she wants to say, how she wants to say it, and when she wants to say it.
- Girls can and do learn to read and write when given the opportunity to receive good literacy instruction and materials they can access

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Barriers to Literacy Learning

- Notion of prerequisite skills – IEP goals
 - Colors and shapes before letters (not taught in functional context)
 - Certain level of cognitive ability
- Testing not teaching
- Require mastery of skills 80 to 90% accuracy – repetition to boredom with poor data results
- Lack of or decreased expectations about a girl's or woman's ability to learn to read and write
- If lucky, taught sight words but not exposed to connected text

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Prerequisite Model Limits Progress

- Prerequisite model does not work for girls and women with RTT
- IEPs stress color, shape, and letter identification (in isolation; out of functional context)
- Repeatedly drilled on the same concepts over and over again; poor data so never progress to sight words
- If lucky, taught sight words in isolation but never introduced to reading connected text

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Integrated Model of Literacy

- Literacy = Reading + Writing
- Integral part of literacy learning are communicating/social interaction and listening
- Auditory/listening skills represents a strength for most girls but they also need materials presented visually
- Tell girls to listen to and use the "voice in their head" to say sounds of letters; say words in head
- What we use when we read silently
- Definition of reading – silent reading with comprehension

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The Importance of Expectations

- Expectations =
 - Access to literacy materials +
 - Opportunities to participate in reading and writing activities that are engaging, motivating and providing repetition with variety
- Need to teach the girls using the research-based literacy instruction involving students with disabilities and best practices
- Center for Literacy and Disability Studies in North Carolina – Dr. Karen Erickson



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What I know about girls learning to read and write

- Worksheets do not support literacy learning; skills in isolation with emphasis on testing
- Using symbols to represent every word in books for teaching reading skills is highly ineffective
- Symbol for “the” or “is” very abstract – better to use the word as a sight word for quick and automatic recognition
- Copying text does not support independent writing



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Emergent Literacy

- **Building Blocks Model**
<http://www.four-blocks.com/kindergarten.htm>
- Create the desire to learn to read and write
- Language Concepts – building vocabulary using books; communicating about books; interesting words
- Print Concepts
- Phonemic Awareness/Letter and Sounds
- “The Teacher’s Guide to Building Blocks” by Dorothy Hall & Elaine Williams



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Repeated Readings of Books

Fun and engaging books

- www.adaptedstories.com – books to download to the iPad; including creating your own with photos
- Increase engagement and reciprocity with pull-off props
- Program vocabulary in communication device to allow for participation with a voice; model use of vocabulary
- Read language-rich books to build vocabulary
- www.onemorestory.com
- iPad – free Read Me Stories, E-I-E-I-O (coming soon), Dr. Seuss (download the free lite version first)



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Build Phonemic Awareness; Letters and Sounds

- Read books with rhyme and repetition – Sandra Boynton (Barnyard Dance, Going to Bed Book)
- www.starfall.com
- Exposure to alphabet in fun and engaging way
- Leapfrog fridge magnets – in BoardMaker Plus or Tobii Communicator – B for Beth or Baby – uppercase letter; full alphabet set up this way and broken into chunks with vowels at the beginning A-D, E-H, I-N, O-T; U-Z
- Integrate communication; “talk” about letters and books
- Do not use a “skill and drill” approach



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“Leaping” into Conventional Literacy

- Many girls and women beyond emergent literacy level; have sight words; know most of the letters of the alphabet and associated sounds

Four Block Literacy Model

<http://www.four-blocks.com/>

1. Guided reading
2. Working with Words
3. Writing
4. Independent Reading



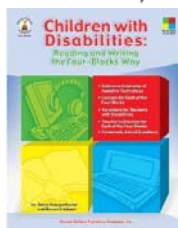
Select a Block for Information



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“Leaping” into Conventional Literacy

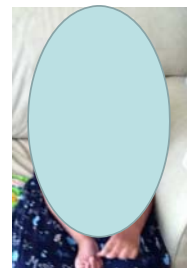
- “Children with Disabilities: Reading and Writing the Four-Blocks Way” for Grades 1 to 3 © 2007 by Dr. David Koppenhaver and Dr. Karen Erickson



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Guided Reading

- 7 year-old girl; completing first grade
- Uses optical head pointer (TrackerPro) on laptop with BoardMaker Studio/Tobii Communicator for educational material
- ECOPoint eye gaze system



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Guided Reading

- Silent reading with comprehension
- Special Needs Planet – computer-based reading comprehension assessment - ReachMeTeachMe Informal Reading Assessment (identify level of reading corresponds with Fountas and Pinnell)
- www.specialneedsplanet.com – Levels A to C \$49.99
- Works in Classroom Suite
- Download a free 30-day demo of Classroom Suite (www.intellitools.com) for assessment

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www.specialneedsplanet.com

Level B – Fiction



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Level B – Fiction Page 1



Annie can swim with me.

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Larger text with 3 spaces between words




Annie can swim
with me.

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Question 1 – Who is this story about?

Who is this story about?



Betty Morris Annie

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Question 2 – Do you think this story is real or make believe?

Do you think this story is real or make believe?

Real Make Believe

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For K-5; Downloaded & created from <http://www.readinga-z.com/>

No, Lily, Don't!



Read it


Turn the page

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Computer-based Books – Title Page

Eye gaze, optical head pointer, switch

Lily the cat was bored.



Read it

Turn the page

Previous

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Age-appropriate Material

- For adolescent girls and women – Route 66 Literacy
- <http://www.route66literacy.org/>
- Developed by Dr. Karen Erickson
- I worked with a teenage girl with Rett Syndrome years ago with beta-testing Route 66; this young adult has not stopped reading since; uses Kurzweil 3000 to access books such as Jane Ayre, Harry Potter, etc.
- Beginning readers with age-appropriate material
- [Http://tarheelreader.org](http://tarheelreader.org)



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Bookshare.org

- Repository of books – annual membership \$50
- Can download books in iPod Touch, iPhone and iPad app called Read2Go
- Download text for books including top sellers – Hunger Games; Twilight Series
- Reading for pleasure – difference between levels of text for independent, silent reading comprehension and listening comprehension (listening comprehension is higher – less motor demands; address higher level cognitive and learning abilities)



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Sight Words – Absolute Board (free app)



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Light tech options

- Black dry erase board – **Expo Neon** – purchase through Amazon.com
- Easier on eyes than white dry erase boards; more contrast
- If photosensitive and sensitive to black on white, use gray/silver

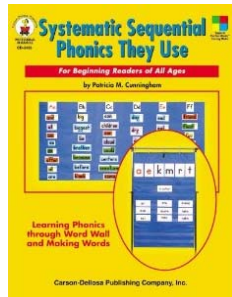


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Working with Words

- Helps with spelling and decoding unfamiliar words
- Seen dramatic changes in girl's word identification and invented spelling in as little as two months of completing lessons in this book on daily basis

[Example](#)



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Working with Words

Lesson 1

Letters: a d n s t

Words: at an and Dan tan ant sat sad sand stand

Name letters and their common sounds: Before beginning to make words, have the students hold up each letter, name it, and say its common sound. Have the students show both the lowercase and capital letters.

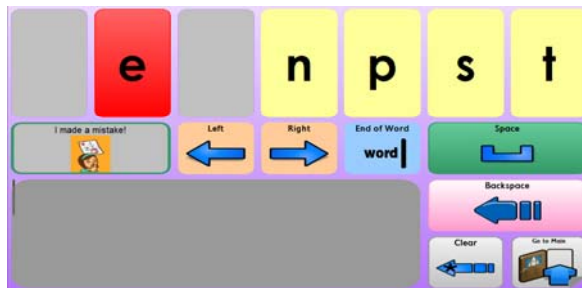
Make words: Have the students make these words, then send one student to make each word using the big letters. DO NOT wait for everyone to make the word before sending someone up. Keep the lesson fast-paced and the students will pay better attention. When the word is made with the big letters, ask everyone to check their words and fix them if necessary.

1. Take 2 letters and make **at**. *We are at school.*
2. Take the **t** away and add a different letter to make **an**. *Late an apple.*
3. Add a letter to **an** and you can spell **and**. *I like apples and bananas.*
4. Now we are going to do a trick with **and**. Move the letters in **and** around so that they spell **Dan**. Stretch out **Dan** and listen for where you hear the **D** and the **a** and the **n**. (Look for a student who has **Dan** spelled with a capital letter **D**, and send that student to make **Dan** with the big letters.) *My cousin's name is Dan.*
5. Take the **D** away and add a letter to spell **tan**. *I got a tan at the beach.*

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Making Words Lessons - 18

“tne” (P es t)



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Writing

- Need access to the alphabet
- Have girl select own photograph to write about (meaningful based on her life adventures)
- Access to the alphabet
- Invented spelling
- 7-year old girl selected picture of her family in front of the Taj Mahal.
- This is what she wrote (after working on writing using an alphabet she could independently access for 3 weeks)
- d m x mh – All of the letters she selected had meaning D for Dad, M for Mom, x for brother's name, mh for Mahal

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Light tech options for assessing knowledge; not technology

- If child selects the wrong answer using technology; question was it due to accuracy or motor planning or does child not know the answer; familiar communication partner
- If have apraxia, testing feeds right into it; low scores not reflect true ability
- In most cases, use technology for teaching and exploration; modeling concepts
- Better indication of what the child really knows
- Using communication software to present materials given ease of access – increasing learning demands

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In closing

- Learning to read and write is a gift we give to all of our children; it is also a gift for girls and women with Rett Syndrome



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