

An Emergent Literacy Intervention for Students with Autism and Significant Cognitive Disabilities

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Session Outline

- What we know from research on reading
- Conceptual Model of Literacy for this Population
- Early Literacy Skills Builder Curriculum
 - Building with Stories
 - Building with Sounds and Symbols
- Research from Project RAISE with students with autism and intellectual disabilities

Science of Reading

- National Reading Panel's identified components of reading
 - Phonemic awareness
 - Phonics
 - Vocabulary
 - Fluency
 - Comprehension

What is Phonemic Awareness?

- Ability to hear and manipulate phonemes
 - E.g., How to change tap into cap
- Blending and segmenting
 - Say cat the slow way
 - I say slow way/ you say fast way

Print Awareness and Phonics

- Phonics is connecting sounds to symbols
 - E.g., can read new CVC word by sounding it out
- Print awareness
 - Letter recognition
 - Left to right sequence
 - Point to words that I read

Comprehension as Ultimate Goal

- NRP found multiple comprehension strategies:
 - Comprehension monitoring, cooperative learning, graphic organizers, story structure, questioning, question answering, question generation, summarizing
- Improved comprehension can boost overall reading skill and related communication skills

Fluency

- Fluent reading is accurate, completed at a reasonable rate and prosodic
- Examples
 - Rapid recognition of sight words
 - Reading a repeated story line
 - Decoding a word in short period of time

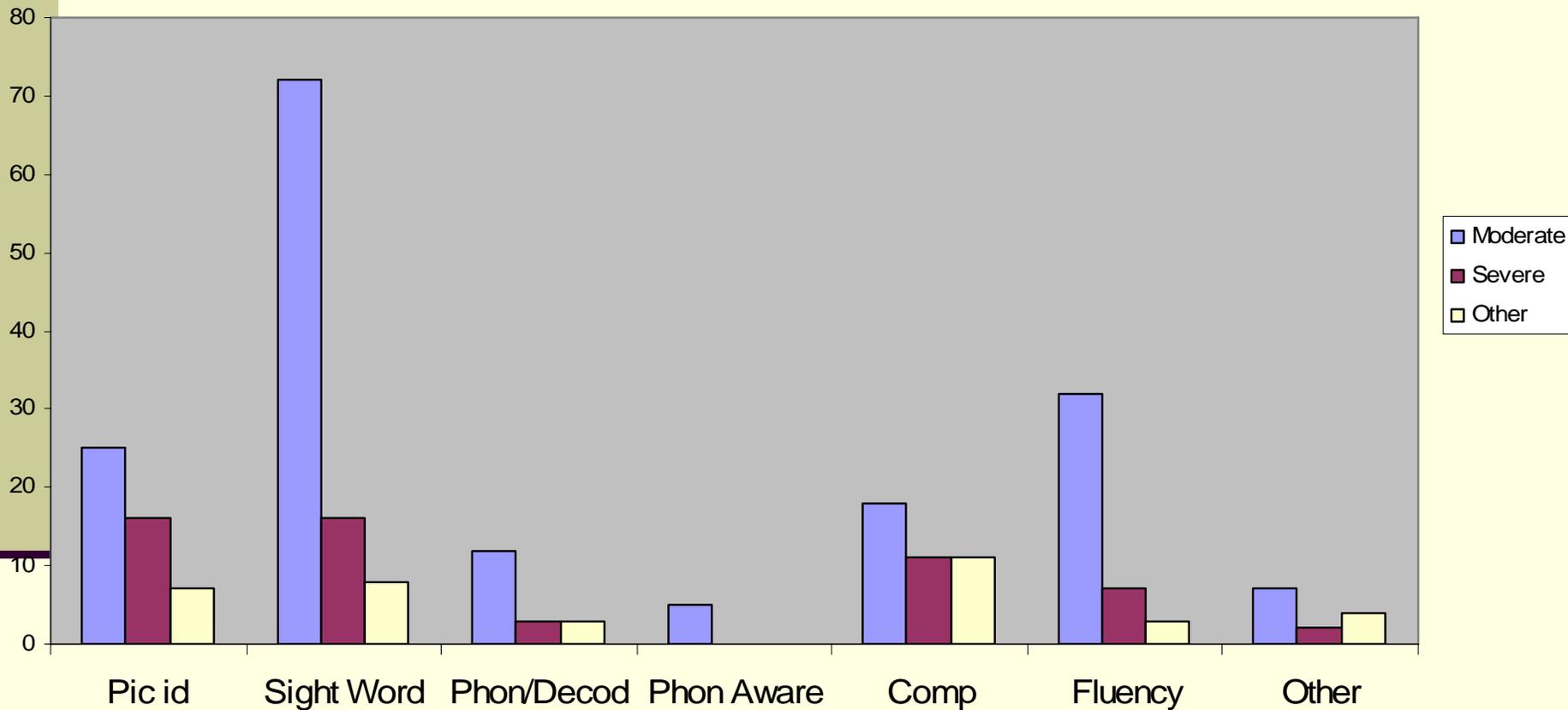
Vocabulary

- Reading ability and vocabulary size are related
- Direct instruction in vocabulary improves both vocabulary and comprehension

Why We Don't Know If Students with Significant Disabilities Can Learn to Read

- Consistent lack of focus on reading for this population
 - In content analyses of textbooks (Katims, 2000)
 - In ethnographic studies of students' school experiences (Kliwer, 1998)
- In the last 20 years while the “science of reading” has been developing, the focus in severe disabilities has been functional life skills

Current research on teaching students with significant disabilities early reading



- Browder, D. Wakeman, S., Spooner, F., Ahlgrim-Delzell, L., & Algozzine, R.F. (2006). A comprehensive review of reading for students with significant cognitive disabilities. *Exceptional Children, 72*, 392-408.

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- most research has focused on the acquisition of sight words
 - through massed trials
 - with systematic prompting and fading
 - students with significant cognitive disabilities can acquire sight words through this method of intervention
 - Need for research that incorporates other components of reading

New Model of Literacy: Outcomes

- Increased Independence as a Reader

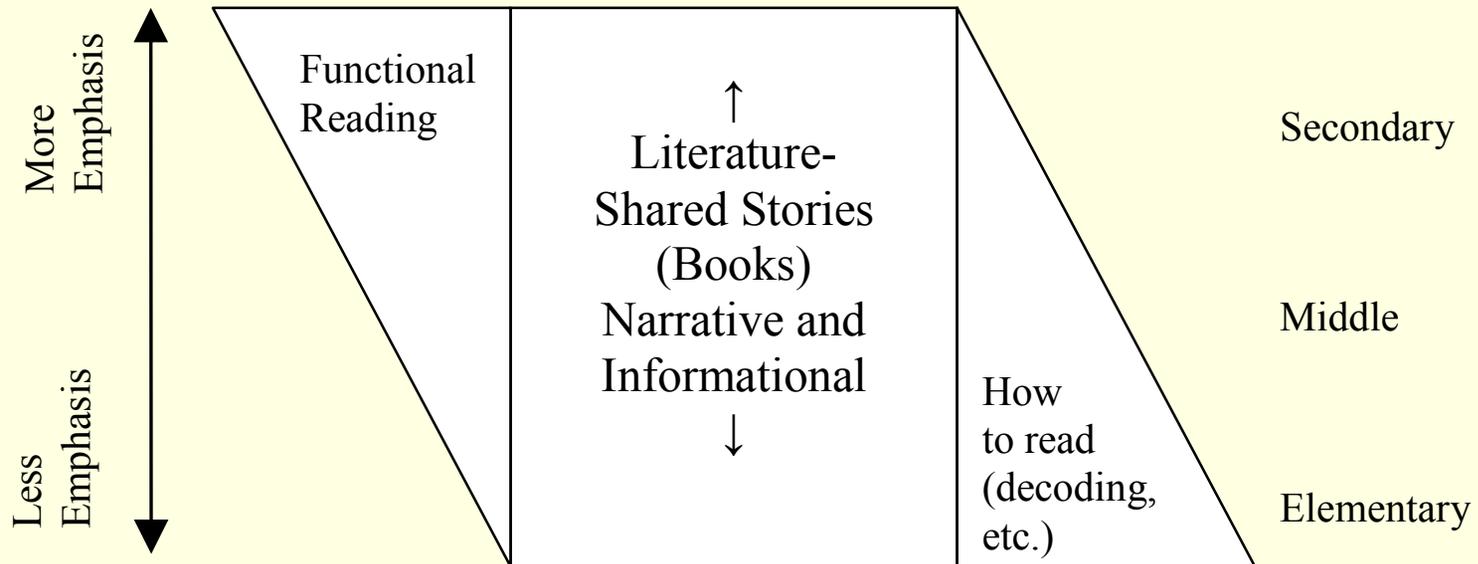


- Lifelong Access to Literature



Browder, D.M., Gibbs, S., Ahlgrim-DeLzell, L., Courtade, G., Mraz, M., & Flowers, C.P. Literacy for students with significant cognitive disabilities: What should we teach and what do we hope to achieve?

A New Model of Literacy



Goal 1: Gaining Meaning from Literature

- What is the literature?
 - Same books, novels, other literature as that of their chronological age and grade level
 - “Grade appropriate” instruction with support
 - Also includes text found across the general curriculum
- How to create access
 - Read alouds

From research on shared stories-

- Students read to daily
 - Score higher on measures of vocabulary, comprehension, and decoding
- Most effective read alouds are interactive
- Repeated reading of stories
 - Children's questions and comments increase and become more interpretive

Other potential benefits-

- Improve expressive communication skills as discuss book
- Introduce joy of books
- Enhance comprehension of spoken language
- Learn to construct meaning through interactions with the reader
- Broaden knowledge of the world

Outcome 2: Increased Independence as a Reader

- Phonemic awareness
 - Issue that usually is taught with verbal responding
 - E.g., first sound in “man”
 - Students may also need to go steps before phoneme awareness
 - Concept of word
 - Syllables

Examples of nonverbal demonstrations of phonemic awareness

- Concept of word
 - Use voice output to fill in word
 - Point to picture to complete sentence
- Segmentation
 - Clap syllables in word
- Letter-sound correspondence
 - Point to the letter that makes /s/ sound
- Initial consonants
 - Find picture that begins with /s/ sound

Phonics and Print Awareness

- Will introduce letters concurrent with sounds
 - Visual referent and symbol for responding
 - Caution: letter naming does not result in reading success; must connect with sounds
- Also concepts of print
 - Words vs. nonwords; left to right sequence; function of spaces

Vocabulary, Comprehension, Fluency

- Read alouds help to foster
 - Pair with some symbol and word recognition
- Pictures to promote meaning
 - Multiple pictures for same concept
- Early passage reading
 - Early skill-point to text as read aloud
- Comprehension
 - “Supported comprehension” as a starting point

Supported Comprehension

- Repeated reading of simple passage
- Question restates sentence just read
- Student finds answer using picture/word
- Shape towards comprehension by-
 - Using new stories
 - Delaying question
 - Asking question that requires some inference (not right on the page)

Early Literacy Skills Builder



- Based on research evidence
- Designed specifically for students with moderate and severe disabilities who may be nonverbal
- Scripted lessons using systematic and direct instruction

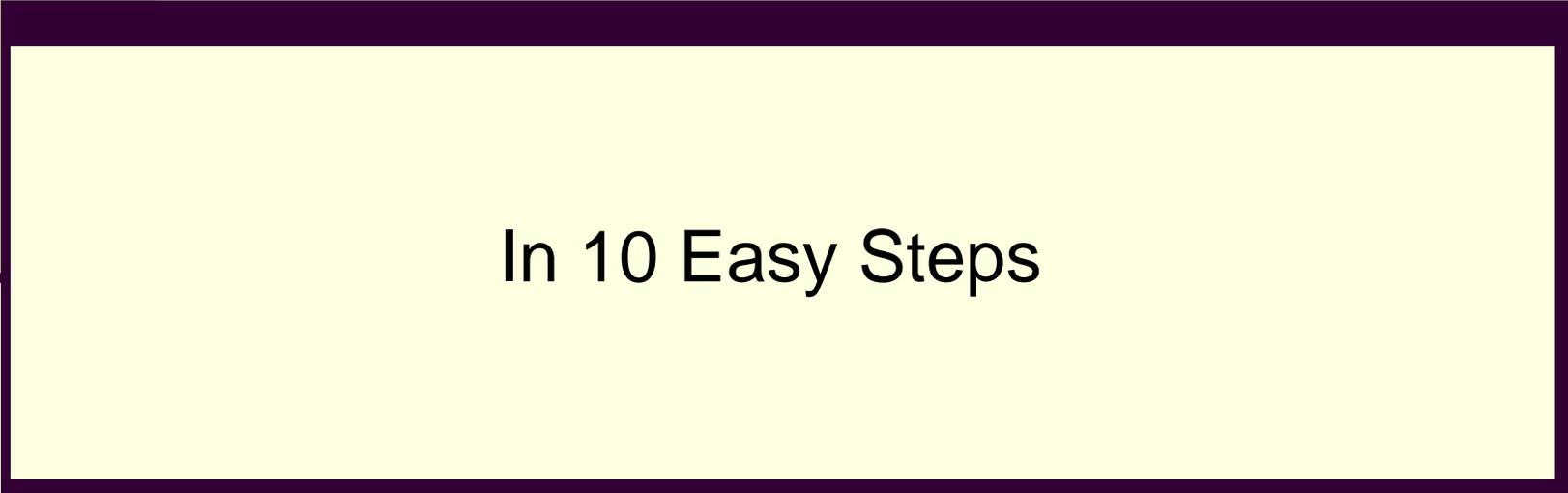
Browder, D.M., Gibbs, S.L., Ahlgrim-Delzell, L, Courtade, G. & Lee, A. (in press). Early Literacy Skills Builder. Madison, WI: Attainment company.

ELSB: Building with Stories

- Goal: Provides a template/task analysis to follow in sharing stories with students that will promote early literacy skills
 - We call these “Story-based lessons”



How to Teach a Story Based Lesson



In 10 Easy Steps

Step 1: Anticipatory Set

- Present an object that can be accessed through at least one of the five senses to represent a major theme and create an air of anticipation

Example: Elmer

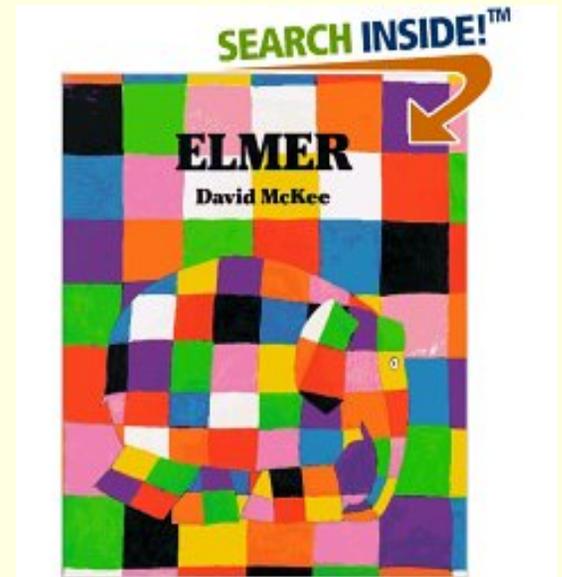
You can give the students an Elmer Elephant, show a small elephant toy, show a picture of an elephant, make mud with dirt and water...



Step 2: Read the Title

- The teacher will read, label, and point to the title. Every student will have an opportunity to touch and/or read the title.

Example: Teacher says “This title of our book is ‘Elmer’.
Can you touch the title?”



Step 3: Read the Author's Name

- The teacher will read, label, and point to the author's name. Every student will have an opportunity to engage with and/or read the name.

Example: Teacher says "This author of our book is David McKee. Can you touch the author's name?"

Step 4: Model Opening the Book

- The teacher hands the book to one student and ask the student to get the story started

Example: “ Max, Can you help us get our story started?”

Step 5: Ask a Prediction Question

- The teacher shows the students the cover page and may “take a picture-walk” through the text. S/he will ask the students what they think the story will be about? The child may choose from pictures, objects, or give a verbal response.

Example: “Christian, do you think our book will be about an elephant or an apple pie?”

Step 6: Text Point

- The teacher will read and point to the text. A specific sentence will be highlighted, and the students will have the opportunity to point to the text and “read” with the teacher.

Example: “Elmer the elephant is bright colored, patchwork all over.”

Step 7: Identify Vocabulary

- The teacher will identify one or two vocabulary words that apply to the story. These words may be highlighted throughout the text.

Example: The vocabulary for Elmer may be ***elephant*** and ***happy***.

Step 8: Read the Repeated Story Line

- The teacher selects a line that represents a central theme throughout the story. This line can be added into the story. Students will have the opportunity to point to and “read” the repeated story line.

Example: “Elmer was not happy”.

Step 9: Turn the Page

- Every student is given the opportunity to assist the teacher in continuing the story by responding to a verbal cue.

Example: “Alex, can you keep our story going?”

Step 10: Comprehension Questions

- The teacher asks each child a comprehension question. The question may be a literal, inference, or summary question.

Example: “Noah, what kind of animal was Elmer?”

ELSB: Building with Sounds and Symbols

- Students learn vocabulary, phonemic awareness, listening comprehension, conventions of print
- Bridges to beginning reading program



ELSB Levels

■ Level A

- Designed for the student who may not have picture recognition or awareness of books.
- Uses objects to give meaning to the stories as opposed to pictures
- Has five lessons; each lesson gets more difficult, fading the objects and increasing the pictures

ELSB Levels

- 7 levels with 5 lessons each
- 14 objectives taught throughout the levels
- Objectives increase in difficulty as you go through the levels
- Easier objectives drop out in upper levels, more difficult objectives introduced in later levels

Objectives/ Activities

■ Flashcard Game

- Obj 1-Student reads vocabulary words using time delay instruction
- Obj 2- Student uses words to fill in sentences

■ Text Pointing

- Obj 3-Student points to text as teacher reads

■ Hidden Word Game

- Obj 4-Student points to word that completes a repeated story line



Objectives/ Activities (cont')

- **Answering Questions**
 - Obj 5-Students respond to literal/ inferential questions about story
- **Chunking Words**
 - Obj 6-Students demonstrate understanding of segmentation by clapping out syllables in words
- **Tapping Out Sounds**
 - Obj 7-Students demonstrate understanding of segmentation by tapping out letter sounds in CVC words.



Objectives/ Activities (cont')

■ Learning Letter Sounds

- Obj 8-Students identify letter-sound correspondences

■ First/ Last Sounds Game

- Obj 9-Students point to/say first/ last sounds in words

■ Finding Pictures with Special Sounds

- Obj 10-Students identify pictures that begin/ end with named sounds



Objectives/Activities (cont')

- **Stretching Words**
 - Obj 11-Students point to letter sounds in words
- **Finding Pictures**
 - Obj 12-Students blend sounds to identify pictures
- **The New Word Game**
 - Obj 13-Students point to pictures/ words representing new vocabulary
- **Fun with Writing**
 - Obj 14-Students use new vocabulary and personal information to create a book entitled "My Book



RESEARCH OUTCOMES

■ PROJECT RAISE

Reading
Accommodations and
Interventions for
Students with Emergent
Literacy

- Funded by Institute of Education Sciences
- One of 3 Reading and ID centers
- In our 2nd year of intervention

■ Project Team

- PIs: Diane Browder & Claudia Flowers
- Faculty: Fred Spooner
- Researchers: Lynn Ahlgrim-Delzell & Ginevra Courtade
- School Liaisons: Angel Lee & Tracie-Lynn Zakas

Population

- In grades K-3
- Classified as having moderate/severe ID (IQ below 55); classified with autism with target IQ range
- Adequate hearing and vision to respond to verbal instructions and printed materials
- Some progress in English instruction if ESL
- Able to participate in assessment with or without assistive technology
- Adequate attendance at school

Year One

- Seven classrooms
 - 2 autism
 - 2 mod/sev
 - 3 sev/prof
- 23 met eligibility requirements
 - N=11 treatment
 - N=12 control



Design

- Group experimental study
- Randomly assigned students to treatment
- Pre/post testing in September and April/May



First Year's Questions

- What is technical adequacy of our instrument-NVLA?
- What is fidelity of teacher implementation of our curriculum-ELSB?*
- Do all students make progress (treatment and control) with story-based lessons?
- Is there a difference between students who receive ELSB vs. sight words? *
 - *Focus for today's presentation



Comparison of Treatments

- Experimental

- Intensive phonics/
phonemic awareness

- Control

- Sight words and
pictures

- Both

- Participation in story
reading with
systematic instruction

Content Validation of the ELSB

- First expert panel June 2005
- Expert panel for full written curriculum June 2006
- Curriculum in press with Attainment company



Dependant Measures

- Standardized measures
 - WLPB – subtests letter-word identification, memory for sentences
 - PPVT III
- Measures designed for this study
 - Nonverbal Literacy assessment – measures conventions of reading, word study, letter sounds, syllabication, blending sounds
 - Pretest/posttest measure for the curriculum-Early Literacy Skills Builder

Results: Could teachers implement intervention? YES!

- Instructional time and treatment diffusion
 - Both groups received about one hour/day instruction in literacy
 - While treatment students received time in ELSB, control students received other literacy such as sight words and calendar lesson
 - Both groups received story-based lessons
- Teacher fidelity
 - SBL – mean 85% with a range of 30% to 100% across 55 observations
 - Interrater mean 94.9% with a range of 80 to 100%.
 - ELSB – mean 93% with a range of 53% to 98% across 58 observations
 - Interrater mean 93.5% with a range of 89% to 97%.

Is there a difference in outcomes for ELSB versus control? YES

- Due to sample size, effect size may be most meaningful outcome measure
- Despite small sample, significant differences found for
 - Measures developed by researchers
 - For pre/post for objectives in the curriculum
 - For phonics/ PA skills
 - Other standardized measures
- No difference in conventions of reading
 - Remember both received story-based lessons

Effect Size for NVLA & ELSA: Researcher Developed Measures

	Pretest		Posttest		<u>Cohen <i>d</i></u>
	<u><i>M</i></u>	<u><i>SD</i></u>	<u><i>M</i></u>	<u><i>SD</i></u>	
<i>NVLA Total</i>					
Control	40.92	30.94	63.58	39.13	.65
Treatment	36.27	21.42	72.55	37.92	1.22
<i>CVR</i>					
Control	9.92	5.53	17.00	5.86	1.24
Treatment	11.82	4.40	19.00	4.77	1.57
<i>Phon Sk</i>					
Control	32.27	25.50	47.36	33.49	.51
Treatment	25.3	16.51	56.60	30.00	1.35
<i>ELSA</i>					
Control	40.33	35.40	54.08	35.73	.39
Treatment	42.64	30.80	79.00	32.69	1.15

Effect Size for Other Standardized Measures

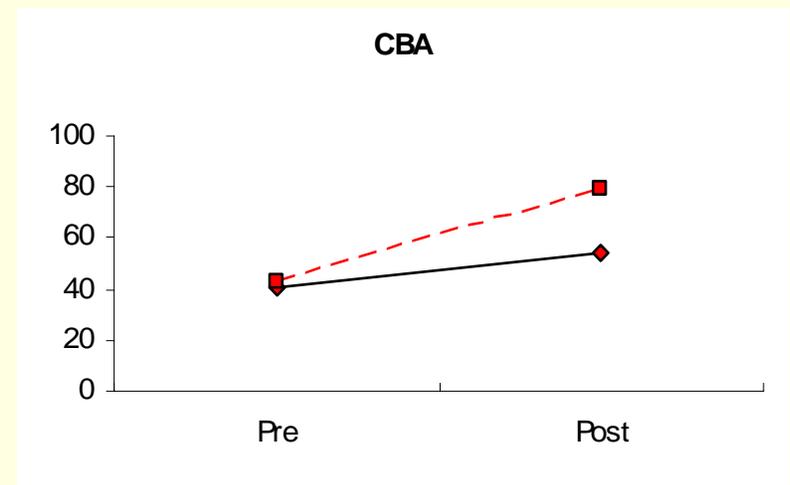
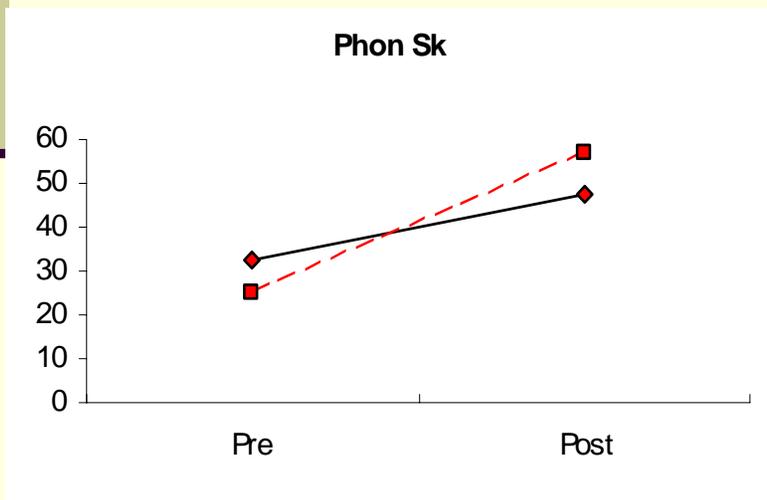
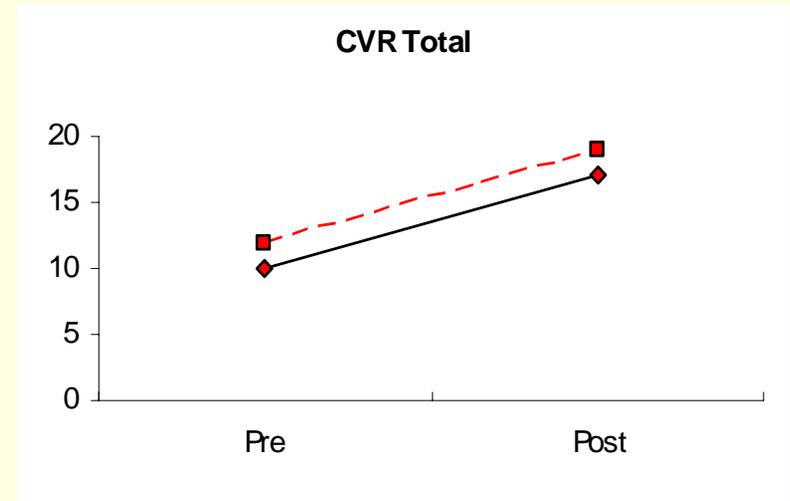
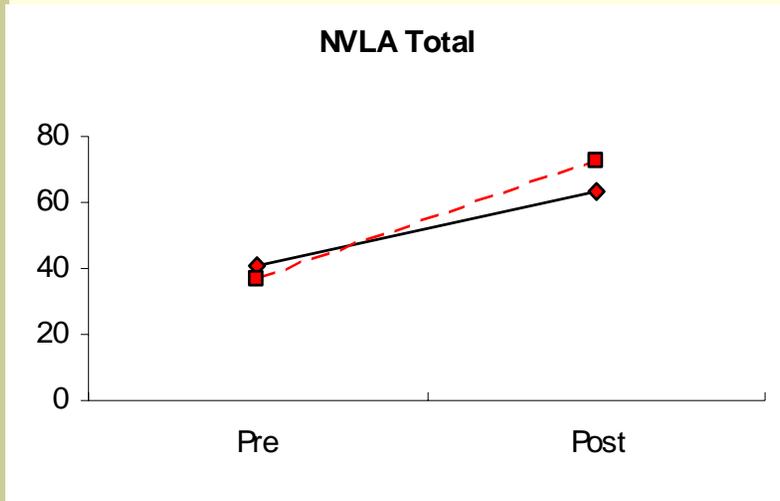
	Pretest		Posttest		<u>Cohen <i>d</i></u>
	<u><i>M</i></u>	<u><i>SD</i></u>	<u><i>M</i></u>	<u><i>SD</i></u>	
	<i>PPVT III</i>				
Control	18.83	15.76	18.42	18.31	.02
Treatment	14.36	12.18	20.82	15.76	.46
	<i>WLPB Total</i>				
Control	12.58	13.50	15.58	17.92	.19
Treatment	12.00	12.30	21.45	16.30	.66
	<i>Memory for Sentences</i>				
Control	9.83	11.67	9.83	12.80	<.01
Treatment	7.73	9.14	14.18	10.70	.65
	<i>Letter Word Identification</i>				
Control	1.83	2.98	3.42	4.80	.41
Treatment	3.18	4.35	5.55	5.54	.48

ANOVA for Primary Measures

Outcome		Effect	<i>F-Ratio</i>		η^2_p
NVLA					
	Within-Ss	Pre/Post	40.47	**	.66
		Interaction	3.47	*	.14
	Between-Ss	Instruction	.21		.01
CVR					
	Within-Ss	Pre/Post	24.82	**	.54
		Interaction	.01		<.01
	Between-Ss	Instruction	1.01		.05
PhonSk					
	Within-Ss	Pre/Post	32.83	**	.63
		Interaction	5.57	**	.23
	Between-Ss	Instruction	.22		.01
ELSA					
	Within-Ss	Pre/Post	17.42	**	.45
		Interaction	3.56	*	.15
	Between-Ss	Instruction	1.14		.05

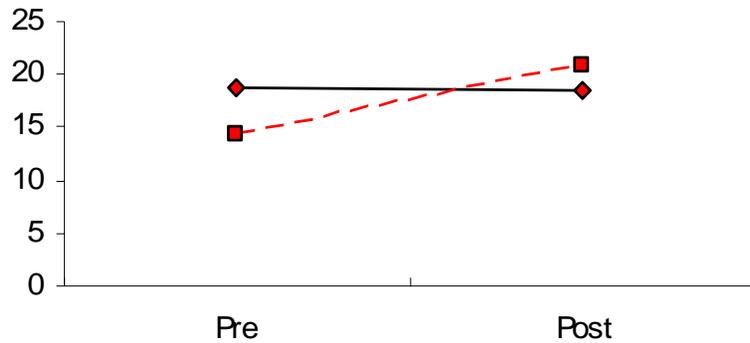
Note. ** $p < .01$, * $p < .05$. Degrees of freedom for all tests of significance was 1, 21.

Interaction effects for the measures NVLA and ELSA

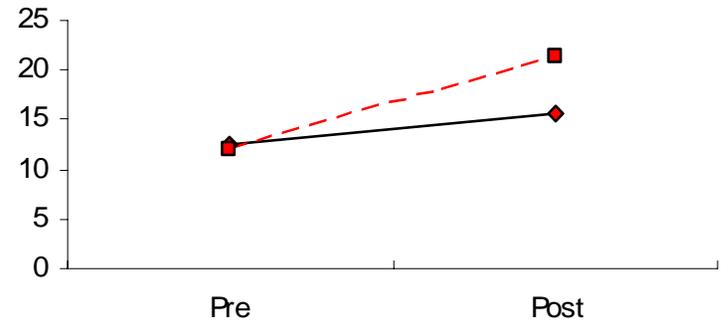


Interaction effects for the measures PPVT III & WLPB

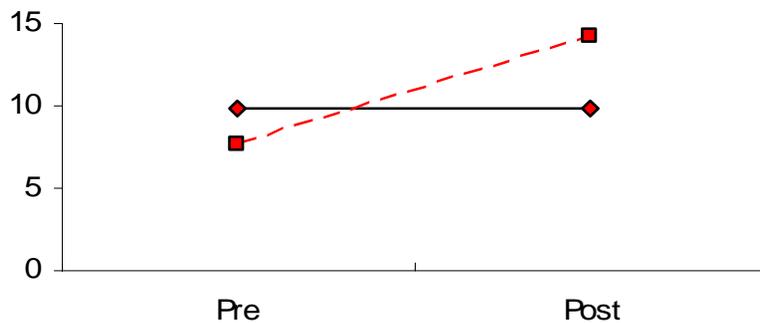
PPVT III



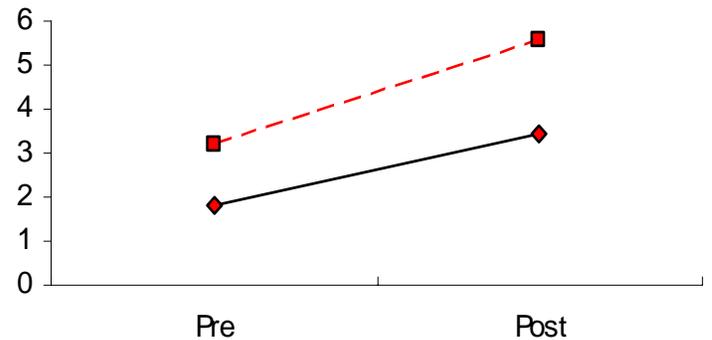
WLPB Total



Memory for Sentences



Letter Word Identification



Summary of Findings

- Curriculum could be developed; validated for this population
 - Those in it learned more objectives than those not receiving it
- Significantly higher on phonics section of NVLA for ELSB group
 - But slow gains
- No difference Conventions of Reading
 - Both received SBL
- Able to use a standardized assessment

Big Ideas of Today's Session

- Model of literacy
 - Story-based lessons and skill building for NRP components of reading
- Story-based lessons
 - 10 step TA and literature from grade level
- Skill building
 - Follow a sequential early literacy curriculum based on NRP; ELSB is one option

For more information on:

- Research on literacy for students with moderate/severe disabilities; Project RAISE
 - dbrowder@email.uncc.edu
- Foundation and development of ELSB
 - slgibbs@email.uncc.edu
- Teaching the ELSB
 - grcourta@email.uncc.edu
- Nonverbal assessment of literacy
 - laahlgri@email.uncc.edu
- Level A for students who are presymbolic
 - alee@lifespanservices.org