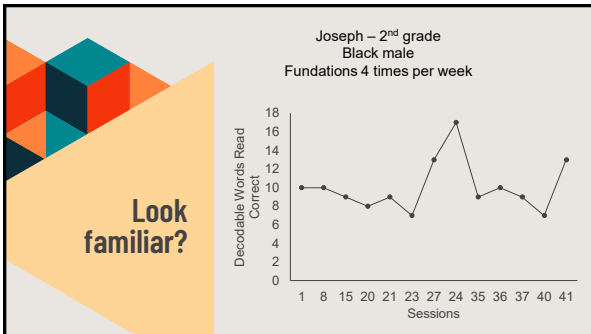
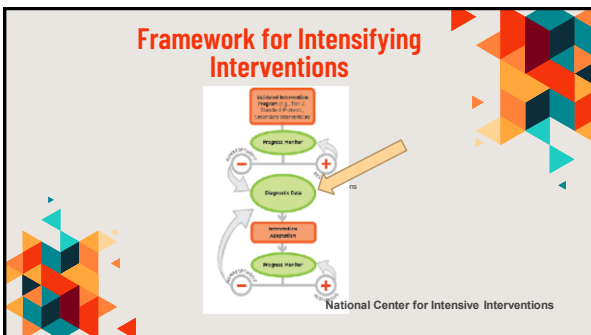


The Intervention Didn't Work: Intensifying Academic Interventions with Data

1



2




3

Instructional Hierarchy:
Stages of Learning


	Acquisition	Proficiency	Generalization	Adaption
Learning Hierarchy	<ul style="list-style-type: none"> Slow and inaccurate 	<ul style="list-style-type: none"> Accurate but slow 	<ul style="list-style-type: none"> Can apply to novel setting 	<ul style="list-style-type: none"> Can use information to solve problems
Instructional Hierarchy	<ul style="list-style-type: none"> Modeling Explicit instruction Immediate corrective feedback 	<ul style="list-style-type: none"> Novel practice opportunities Independent practice Timings Immediate feedback 	<ul style="list-style-type: none"> Discrimination training Differentiation training 	<ul style="list-style-type: none"> Problem solving Simulations

Haring, N. G., & Eaton, M. D. (1978). Systematic instructional procedures: An instructional hierarchy. In N. G. Haring, T. C. Lovitt, M. D. Eaton, & C. L. Hansen (Eds.) *The fourth R: Research in the classroom* (pp. 23-40). Charles E. Merrill.




4

Learning Process



Acquire Maintain Generalize



5

Table 2. Strategies for Intervention Intensification (Fuchs et al., 2017) and Phases of Learning

INTERVENTION STRATEGY	DEFINITION	MOST APPROPRIATE PHASE IN LEARNING HIERARCHY
Dosage	Number of intervention sessions each week, number of minutes and opportunities to respond in each session, and the size of the intervention group.	Fluency building—A student in the fluency-building phase of learning might complete the task accurately, but they not retain it the next day; increasing dosage helps with retaining newly learned information.
Alignment for Acquisition	Intervention adequately addresses skills that the student has yet to learn while incorporating a meaningful focus on grade-appropriate standards, but does not address skills that the student has already mastered.	Acquisition—Assess reading comprehension, fluency, decoding, and phonemic awareness to identify the most fundamental skill in which the student needs support and those that have already been mastered. The intervention is then matched to the skill for which the student needs support to facilitate better initial learning.
Transfer for Generalization	Explicitly teaching how to transfer the skill to other forms and contexts, and to replicate the connections between mastered and new skills.	Generalization—Providing opportunities to practice the skill across different contexts and situations enhances generalization of the skill.
Comprehensiveness for Acquisition	Including components of direct instruction such as using simple and direct language, increasing modeling of the skill, building background knowledge before teaching, and incorporating systematic cumulative review.	Acquisition—Modeling and explicit instruction are strategies appropriate for the acquisition phase of learning.

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Problem Analysis

- At the end of the lesson, can the kid do it? (Learn it in the first place?)
- If the kid learns it, does she remember it the next day?
- If she remembers it, can she apply or use it?

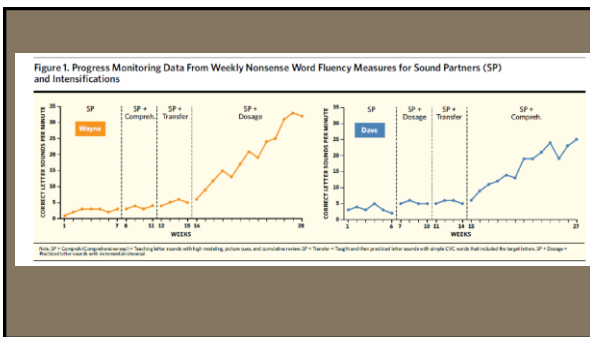
7

Acquire
 Alignment
 Validated protocol – different target – back it up!
 Comprehensiveness
 Adaption – Modeling or make stimuli more salient and errorless

Retain
 Dosage
 Validated protocol - Increased repetition within lesson (IR)
 Adaption - Increased repetition across lessons or frequent review

Generalize
 Transfer
 Validated protocol – comprehension or application interventions
 Adaption - Integrate a variety of forms of the letters, words, numbers etc., into intervention

8



9

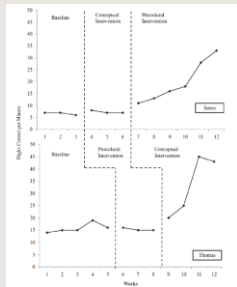
Meet the Presenters

Matthew K. Burns - University of Missouri, Special Education
 Jonie B. Welland - University of Missouri, School Psychology
 Emily L. Singell - University of Missouri, SPED
 McKinzie D. Duesenberg-Marshall - University of Missouri, SP
 Robbin S. Coddington - Northeastern University, Boston, MA
 Heather Ferguson - School Psychologist in Jefferson City, MO
 Erica Lembke - University of Missouri, SPED
 Katie Graves - University of Missouri, SPED



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Contra-Indication



1. Researched or frequently implemented intervention
2. Reasonable to assume teachers might try
3. Randomly selected
4. Keep short at possible

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METHODS

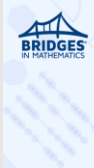
- Math STI



12

METHODS

- Missouri Elementary
- Providing Tier 2 support: BRIDGES Math



Building Mathematical Thinkers

Bridges in Mathematics is a comprehensive PK-5 curriculum that equips teachers to fully address state standards in a rigorous, engaging, and accessible manner. Students gain a deep understanding of concepts, proficiency with key skills, and the ability to solve complex problems. The curriculum is composed of three distinct but integrated components: Problems & Investigations, Work Places and Number Corner.

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OUR STUDENTS

Name	Grade	Phase of Learning	
Brendan	2nd	Retain	Slow & Accurate
Casey	4th	Generalize	Fast & Accurate
Katie	4th	Acquire	Slow & Inaccurate
Arianna	3rd	Acquire	Slow & Inaccurate
Louise	3rd	Retain	Slow & Accurate

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OUR STUDENTS

Name	Phase of Learning	Intervention	Contraindicated
Brendan	Retain	Incremental Rehearsal	Schema-based Strategy
Casey	Generalize	Schema-based Strategy	Modeling
Katie	Acquire	Modeling	Incremental Rehearsal
Arianna	Retain	Incremental Rehearsal	Schema-based Strategy
Louise	Retain	Incremental Rehearsal	Modeling

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Method

1. **Measure**

Aimsweb Mathematics Computation (addition and subtraction)

$a = .82$ to $.89$

Problems correct per minute

1. **Procedure**

10-15 minute individual interventions, 3-5x/week

Progress monitoring 2x/week



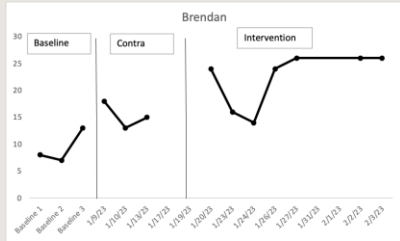
16

Brendan

Phase of learning: Retain

Contra: Schema

Intervention: IR



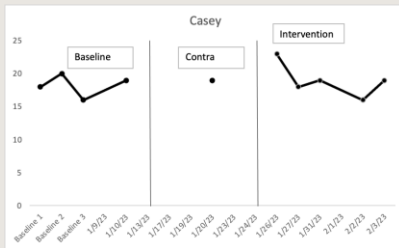
17

Casey

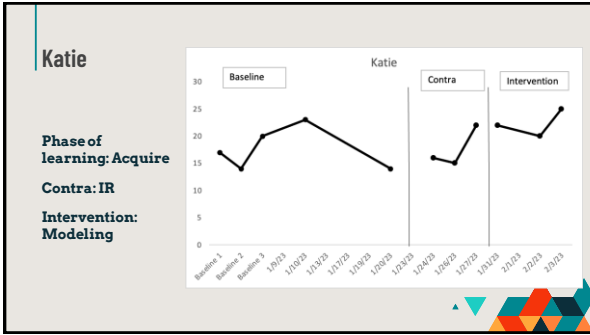
Phase of learning: Generalize

Contra: Modeling

Intervention: Schema



18



19



20

METHOD

- Participants
 - 5 students in a Missouri elementary
 - 2nd - 5th grade
 - Not currently receiving ELL or SPED services
 - Not responding to Tier 2 intervention
- Existing Tier 2 Intervention: Foundations (vowel teams)

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METHOD

3. **Measure**

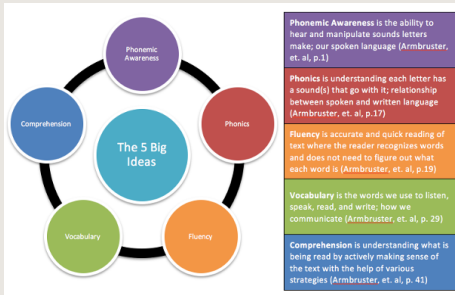
Decodable Words by FastBridge
Alternate form reliability = .70 to .76
Interrater reliability = .99
Words read correctly per minute (WCPM)

3. **Procedure**

10 minute individual interventions, 3-5x/week
Progress monitoring 2x/week



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READING DECODING INTENSIFICATION

Acquisition: Comprehensiveness
Provide more modeling and explicit instruction

Intervention:
PRESS P-3 Vowel Teams (words with magnet letters)

Generalization: Transfer
Read texts containing target word patterns

Intervention:
Vowel Teams word lists



Acquisition: Alignment
Target PA skills or lower decoding skills

Intervention:
PRESS PA-3 and PA-4 (blending & segmenting)

Retention: Dosage
Increase opportunities to respond


Intervention:
Incremental Rehearsal with Vowel Teams



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OUR STUDENTS

Name	Grade	Phase of Learning	
Jacob	2nd	Acquire	Slow & Inaccurate
Lucas	4th	Retain	Slow & Accurate
Joseph	2nd	Acquire	Slow & Inaccurate
Iliana	3rd	Acquire	Slow & Inaccurate
Mia	4th	Acquire	Slow & Inaccurate



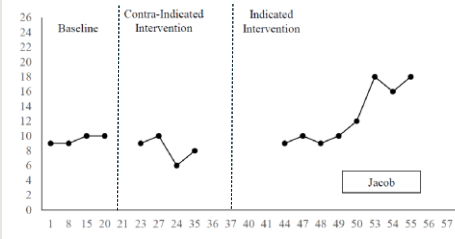
25

Name	Phase of Learning	Intervention	Contra-Indicated
Jacob	Acquire	Comprehensiveness: PRESS P-3	Dosage: Incremental Rehearsal
Lucas	Retain	Dosage: Incremental Rehearsal	Comprehensiveness: PRESS P-3
Joseph	Acquire	Alignment: PRESS PA-3 and PA-4	Transfer: Reading word lists
Iliana	Acquire	Comprehensiveness: PRESS P-3	Alignment: PRESS PA-3 and PA-4
Mia	Acquire	Comprehensiveness: PRESS P-3	Transfer: Reading word lists



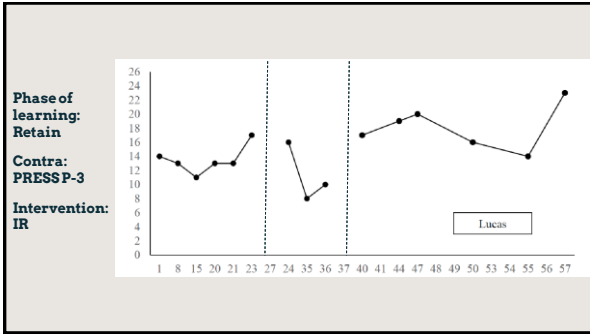
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Phase of learning: Acquire
Contra: IR
Intervention: PRESS P-3

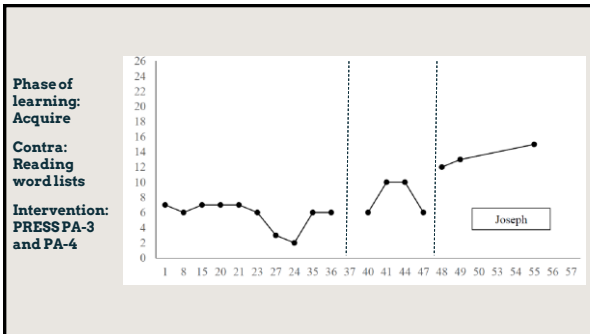


Phase	Time Point	Score
Baseline	1	8
	8	9
	15	10
	20	10
	21	10
Contra-Indicated Intervention	23	9
	27	10
	31	6
	35	8
	36	7
	37	7
Indicated Intervention	44	9
	47	9
	48	9
	49	10
	50	11
	53	18
	54	17
	55	19
	56	18
	57	19

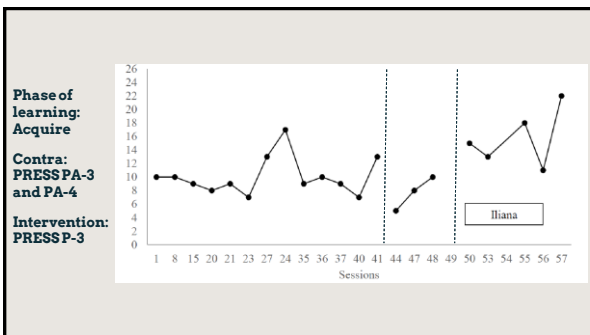
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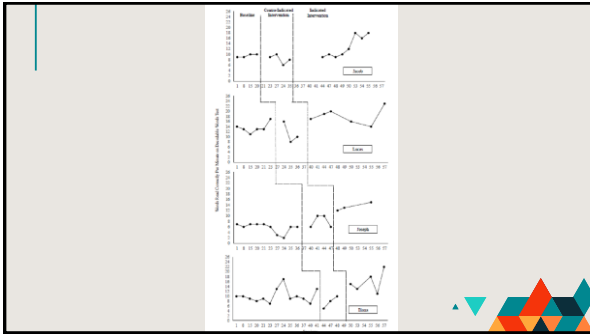
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Results

Student	Baseline		Contra-Indicated Intervention		Indicated Intervention		NAP 1	NAP 2
	Mean	SD	Mean	SD	Mean	SD		
Jacob	9.50	0.58	8.25	1.71	12.75	3.96	.25	.88
Lucas	13.50	1.98	11.33	4.16	18.17	3.18	.28	.92
Joseph	5.70	1.77	8.00	2.31	13.33	1.52	.50	1.00
Illiana	10.08	2.78	7.67	2.52	15.80	4.32	.33	1.00
Total	9.30	3.47	8.71	2.76	15.00	4.09	.44	.93

NAP = Nonoverlap of all pairs. NAP 1 = Baseline to Contra-Indication. NAP 2 = Contra-Indication to Indicated Intervention.

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WRITING DBI

Data collected through IES Grant
Supporting Teachers' Implementation of Data-Based Instruction in Early Writing

Also known as **Early Writing Project**

Principal Investigators: Erica Lembke & Kristen McMaster


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EWP Background

The Early Writing Project
DATA BASED INSTRUCTION: TOOLS, LEARNING, AND COACHING

Through this project we provided:

- Tools for assessing young writers' performance and progress
- Research based Instructional materials for providing early writing intervention
- A process for systematic decision-making to individualize instruction for struggling writers
- Individualized coaching support

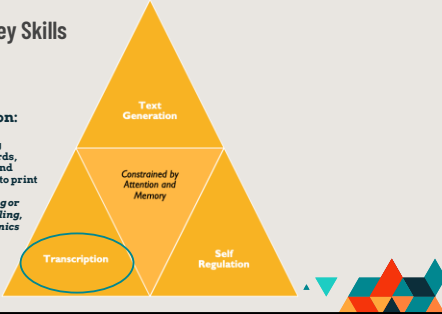


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Writing: Key Skills

Transcription:

- Translating sounds, words, sentences and passages into print
- Includes handwriting or typing, spelling, and mechanics

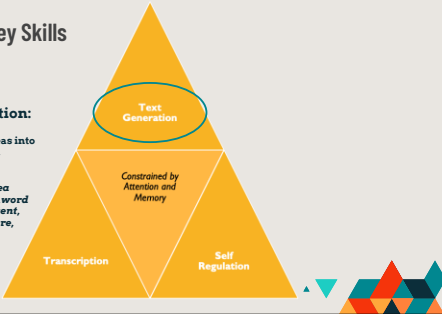


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Writing: Key Skills

Text Generation:

- Turning ideas into text (words, sentences, passages)
- Includes idea generation, word choice, content, text structure, genre



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Writing: Key Skills

Self-Regulation:

- What writers do to meet their writing goals
- Includes goal setting, planning, organizing, self-monitoring, self-evaluating, and self-rewarding

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Writing: Key Skills

All skills are constrained by the student's attention and memory

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Assessment and Evaluation

CBM Task (Level of Language)

Story Prompt (Passage Level)

Picture-Word (Sentence Level)

Word Dictation (Word Level)

Text Generation*

Constrained by Memory (short & long term, working memory)

Transcription* (Handwriting, Spelling)

Self-Regulation* (Goal-setting, planning, editing, etc.)

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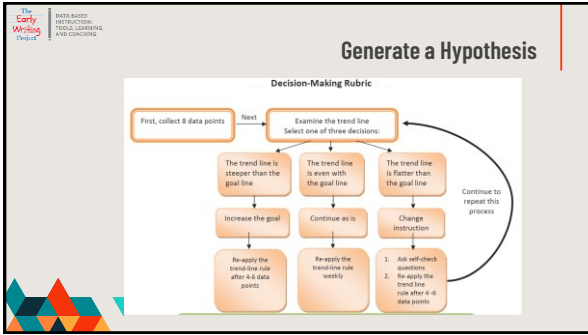
Student Skill

Diagnostic Checklist		
Process	Product	Matched Conventions
<p>Transcription</p> <p>Observe your student during the writing process</p> <p>Marking:</p> <p>Over the whole:</p> <ul style="list-style-type: none"> Hold the pen or pencil in a tripod grip? Write fluently without excessive erasing or scribbling? Form letters independently without relying on a scribe-like model? Produce letters and words fluently without pausing or hesitating? Match writing time to extended time without struggle? <p>Spelling:</p> <p>Over the whole:</p> <ul style="list-style-type: none"> Spell words without requiring frequently to see the target or read spelling? 	<p>Observe your student using simple lines (3/4" or other equivalent)</p> <p>Marking:</p> <p>Over the whole parts of lines...</p> <ul style="list-style-type: none"> Do upper and lower case height? Do the correct direction? Using correct strokes? Are a regular size (not too large, not too small)? With proper slant? With correct spacing between letters and words? Words on lines? <p>Spelling:</p> <p>Simple consonants and vowels. Over the whole:</p> <ul style="list-style-type: none"> Consistently use the appropriate consonants at the beginning and end of words? Consistently recognize and write short vowel sounds? Write vowels followed by the letters, the vowels, "oo" after the "m," "oo," "oo" after the "n"? 	<p>Observe student that can read (not just about) writing and:</p> <p>Marking:</p> <ul style="list-style-type: none"> Min-lesson T20: Alphabet Practice Min-lesson T20: Alphabet Practice <p>Spelling:</p> <ul style="list-style-type: none"> Min-lesson T21: Phonetic Warm-up Min-lesson T20: Word Building Min-lesson T20: Word Bank Min-lesson T20: Alphabet Practice Min-lesson T20: Word Bank Min-lesson T20: Assessment Completion (using word sort words)

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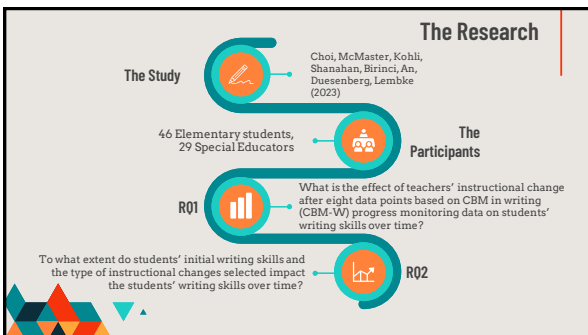
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Intensification			
Refer to the following potential elements, ask the listed questions, and if this element applies to your intervention, choose one or develop your own and share with your coach.			
Transfer	Complexity	Design	Behavioral Support
<p>Transfer: How transferable are the skills/strategies to new contexts?</p> <ul style="list-style-type: none"> Help students transfer the skills they learn from this instruction to other related or transfer skills, such as word reading or sentence reading fluency Target words consistently used by the student Encourage the student to self-edit or self-monitor Use the word in context in a sentence—check spelling once complete 	<p>Complexity: Is the intervention actively engaging?</p> <ul style="list-style-type: none"> Provide more direct, explicit instruction Break the skill into smaller steps Model the steps Provide more practice opportunities until the student generates more correct responses Incorporate systematic corrective review Include more error correction Deliver more 1 to 1 instruction Use three words instead of five Focus on a specific, specific pattern Spell a novel word, check, spell a third word, check, then attempt those three in a row without checking 	<p>Design: Can the intervention be adapted to change or increase or change?</p> <ul style="list-style-type: none"> Increase duration or frequency of practicing activities (e.g., 10-min word mats) until the student can quickly and consistently produce the correct target skill Expand the same word lesson Add an additional 2-5 minutes each day to cover two more words Create opportunities for practice in general ed. Consider whether there have been too many observations, and if so, meet with parents to discuss options and narrow your focus in a more targeted manner Consider who delivers intervention 	<p>Behavioral Support: Is there evidence to engage appropriate behavioral supports for the intervention?</p> <ul style="list-style-type: none"> Incorporate attention, motivation, or self-regulated learning components (e.g., goal setting with the student, self-monitoring, self-reinforcement) Use strategies to minimize nonproductive (e.g., distract or disruptive) behavior such as proximity control or use of positive, specific praise of productive behavior Incorporate attention strategies Incorporate motivational strategy Is instruction fun? (How do you feel? Do you want to do it?) Do students understand behavioral expectations for receive and transitions?

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The Research

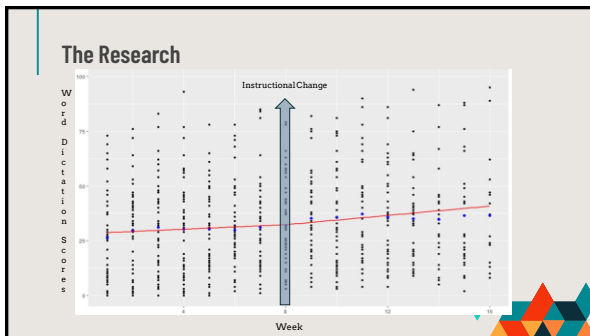
Analysis

- Identify best-fitting model by comparing various functional forms, random effects structures, and residual error covariance structures
- Fairwise linear-linear mixed-effects (PLME) model with knot (time point of transition; Week 8)

Variables

- Outcome: CBM-W Week 1-16 scores
- Level 2 Covariates:
 - CBM-W baseline score
 - Type of instructional change
 - Cohort (3)

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The Research

Parameters	Baseline model	Covariates included	Parameters	Baseline model	Covariates included
Fixed effects			Difference between pre- and post-change slopes		
Initial status			Intercept	0.75 (0.30)**	0.54 (0.44)
Intercept	27.98 (2.84)***	28.14 (1.63)***	Baseline scores		0.65 (0.61)**
Baseline scores		0.99 (0.65)***	Cohort2		0.11 (0.51)
Cohort2		-1.11 (2.16)	Cohort3		0.29 (0.58)
Cohort3		-2.35 (2.20)	Quantitative change		1.01 (0.67)
Quantitative change		0.68 (2.10)	Behavior support		0.26 (0.92)
Behavior support		2.88 (3.38)	Variance components for random effects		
Pre-change slope			Initial status	345.57	19.67
Intercept	0.65 (0.18)***	0.52 (0.24)*	Pre-change slope	0.20	0.36
Baseline scores		-0.01 (0.01)	Model fit		
Quantitative change		0.30 (0.38)	BIC	4518.59	4359.97
Behavior support		-2.27 (0.58)	Residual variance	48.74	45.40


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What does it mean?


		
Progress	Baseline	INTENSIFY!
Students' writing progress significantly improved	Address the needs of students with lower achievement scores	Intensify instruction on an individual basis



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<https://skippmizzou.weebly.com/>
burnsmk@missouri.edu
@burnsmk1



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