Critical Components of Reading and Math Instruction

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Welcome to Critical Components of Reading and Math Instruction

Linda Ewing-Cobbs, Ph.D.
Professor of Pediatrics
Harriet and Joe Foster Chair in Cognitive Neuroscience
Director of Clinical Programs
Children’s Learning Institute
Our mission is to enhance children’s opportunities for successful living by providing them with individualized, research-based assessment and clinical services. Our programs target both struggling students as well as students seeking enrichment activities.
Dan L. Duncan Children’s Neurodevelopmental Clinic

The Duncan Clinic was created through the generosity of the Dan L. Duncan family and is part of the Department of Pediatrics at The University of Texas Health Science Center at Houston.
Dan L. Duncan Children’s Neurodevelopmental Clinic

Since 2008, provided services to over 19,000 children

Learning disorders, ADHD, autism spectrum disorders, brain injury, and psychological difficulties

Leader in the Houston area providing parents with answers and individualized guidance

Ensure each child has a successful educational journey.
Dan L. Duncan Clinical Programs

- Children's Neurodevelopmental Clinic
- Center for Autism and Related Conditions
- Duncan Academic Outreach Programs
- Neuropsychological Services for Neurological Conditions
Academic Outreach Programs
Dan L. Duncan Children’s Neurodevelopmental Clinic

Evidence-based interventions

School Based Initiatives –
Reading in English & Spanish
Math

Intensive Summer Intervention

Summer Camps
Critical Components of Reading and Math Instruction

Session Goals

• How Executive Functions and Attention Affect Learning
• Critical Components of Instruction in Reading and Math
• Personalized Approaches to Instruction
• Academic Intervention Programs provided by The Dan L. Duncan Children’s Neurodevelopmental Clinic
Executive Functions

Holding information in mind and mentally working with it

Working Memory

Resisting temptation and controlling attention, behavior, thoughts

Inhibition

Changing perspectives or approaches, adjusting or switching to new rules, demands, or priorities

Cognitive Flexibility
Attention Span is Shorter than You Think

Age 3: 3 to 8 minutes

Age 4: 15 minutes on a novel and engaging activity.

Adult: After 15 minutes, less than half of students or adults pay full attention.

Mind wandering

Kannass et al., 2010
Overlapping Academic and Attention/Executive Problems

- Math Disability: 5-8% (HISD: 10,750 – 17,200)
- Reading Disability: 5-9% (HISD: 10,750 – 19,350)
- Attention/Executive Function Problems: 3.5% (25% of the total)
Implications for Instruction of Children with Attention and Learning Differences

It’s a... .....thing

Executive Function/ADHD
Reading and Math

Key regions are often UNDERACTIVE in one or both sides of the brain
Weaker connections between key regions important for attention, reading, math

Development of brain networks measured using functional MRI
Brain Activity: ADHD

Functional MRI during working memory task
Red/Yellow = areas where children with ADHD show LESS activity than typical

Massat 2012
Brain Activity: Addition

Yellow = Areas less active during addition in children with math difficulties compared to typical learners

Ashkenazi 2012
Brain Activity: Learning to Read

Changes with Intervention

Kindergarten

First Grade
Implications for Instruction

Children with attention and learning problems often have underactivity in key brain regions.

Intensive, high quality, evidence-based interventions change brain structure and function.

Next speakers address instruction in core reading and math skills, as well as promoting executive functions, such as reflecting and monitoring.
Critical Components of Reading Instruction

Victoria Moss, M.Ed.
Project Manager
Children’s Learning Institute
Considerations For Effective Intervention Services

- Data
- Service Time
- Routines
### Assessments

<table>
<thead>
<tr>
<th>Time Of Year</th>
<th>Norm-Based</th>
<th>Fluency (WCPM)</th>
<th>Curriculum-Based</th>
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<tr>
<td>EOC</td>
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</table>
# Systematic Lesson Routine

## Overview

## Part I

<table>
<thead>
<tr>
<th>Step</th>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>1</td>
<td>5 minutes</td>
<td>Rhyming Words</td>
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<tr>
<td>2</td>
<td>5 minutes</td>
<td>Beginning Sound Pictures</td>
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<tr>
<td>3</td>
<td>5 minutes</td>
<td>Counting Words in Sentences</td>
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<tr>
<td>4</td>
<td>10-15 minutes</td>
<td>Teach Letter Names and Sounds</td>
</tr>
<tr>
<td>5</td>
<td>5-10 minutes</td>
<td>Bingo Game</td>
</tr>
</tbody>
</table>
Evidence-based Programs

- Phonemic Awareness
- Phonics
- Vocabulary
- Fluency
- Comprehension
Phonemic Awareness

What we know from research:

• **PA** instruction improves children’s knowledge of how spoken language is represented in print.
• **PA** training allows students to become better readers.
• **PA** helps preschoolers, kindergartners, and first graders learn to spell.
• Students with poor **PA** skills at the end of kindergarten are more likely to become poor readers than those with well-developed **PA** skills.

1TRA, 2002; KTRA, 2002; National Reading Panel, 2000; Vaughn & Linan-Thompson, 2004
What students need to learn:

• Words consist of individual sounds, or phonemes

• How words can be:
  
  — Segmented (pulled apart to help spell words) into sounds /h//a/ /t/

  — Blended (put back together to read words) hat

  — Manipulated (added, deleted, and substituted) hats, at, sat
# Phonological Awareness Continuum

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHONEMES</strong></td>
<td>Blending phonemes into words, segmenting words into individual phonemes, and manipulating phonemes in spoken words</td>
<td>/k/ /a/ /t/ /sh/ /i/ /p/ /s/ /t/ /o/ /p/</td>
</tr>
<tr>
<td><strong>ONSETS AND RIMES</strong></td>
<td>Blending or segmenting the initial consonant or consonant cluster (onset) and the vowel and consonant sounds spoken after it (rime)</td>
<td>/m/ /ice/ /sh/ /ake/</td>
</tr>
<tr>
<td><strong>SYLLABLES</strong></td>
<td>Blending syllables to say words or segmenting spoken words into syllables</td>
<td>/mag/ /net/ /pa/ /per/</td>
</tr>
<tr>
<td><strong>SENTENCE SEGMENTATION</strong></td>
<td>Segmenting sentences into spoken words</td>
<td>The dog ran away. 1 2 3 4</td>
</tr>
<tr>
<td><strong>ALLITERATION</strong></td>
<td>Producing groups of words that begin with the same initial sound</td>
<td>ten tiny tadpoles</td>
</tr>
<tr>
<td><strong>RHYME</strong></td>
<td>Matching the ending sounds of words</td>
<td>cat, hat, bat, sat</td>
</tr>
</tbody>
</table>
Teaching PA

Assessment

Progress Monitor

Easier to more difficult

Model/Teach

Variety of Activities
Sample Rhyme

Easier Task  More Difficult Task

1. hat, cat
2. dog, log
3. run, cat
4. ran, fan
5. sit, hit
Phonemic Awareness

Sample Alliteration

Winter lunch & learn
Phonics instruction taught early proved much more effective than phonics instruction introduced after first grade.
### Assessment

#### Student's Page

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#### Scoring Page

Student: Mark S.
Date: 9-29-16

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</table>

**Levels:**
- Level 1: Lessons for Level 1
- Level 2: Lessons for Level 2
Phonics Can Be Fun!
Phonics Sample

Amts
MAST
Vocabulary is the glue that holds stories, ideas and content together making comprehension accessible for children.

(Rupley, Logan & Nichols, 1998)
1. Include both definitional information and contextual information about each word’s meaning.

2. Involve children more actively in word learning.

3. Provide multiple exposures to meaningful information about the word.

(Stahl, 1999)
<table>
<thead>
<tr>
<th>Vocabulary words</th>
<th>I can define it</th>
<th>I have seen/heard</th>
<th>I don’t know</th>
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</table>
Instead of looking up words in a dictionary use a variety of activities when teaching vocabulary.

Some activity types include:

- Examples From Our Lives
- Multiple Meanings
- Examples and Non-Examples
- Practice Using the Word
- Make Connections
- Experience the Word

- Act Out the Word
- Synonyms and Antonyms
- Graphic Organizers
- Word Associations
- Homonyms
Vocabulary

Multiple Meanings

Jam
Why Fluency?

• Fluency instruction helps students:
  — Achieve automatic letter and word recognition
  — Transition from word-by-word reading to meaningful phrase reading
  — Comprehend and interpret text
<table>
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<th>Winter WCPM</th>
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Hasbrouck, J.E. & Tindal, g. (2005)
Activity

Students match letters of the alphabet to the Alphabet Arc in a timed activity.

1. Place the Alphabet Arc and set of letters on a flat surface. Place the timer at the center.
2. The student sets the timer for one minute. Chooses a letter, names it (e.g., "P"), and places it on the corresponding letter on the Alphabet Arc.
3. Continues until the timer goes off. Repeats the activity attempting to match all letters in less than one minute.
4. Self-check
Fluency Practices

• **Teacher-led Reading**: Students read along slightly behind as you are reading

• **Choral Reading**: Students read with you as you read aloud

• **Echo Reading**: Students read after you have read a section of the text

• **Books-on-Tape**: Students listen to and read with pre-recorded books at independent & instructional levels
—For **fluency** practice, students need to have text that is at their instructional (90-94% Accuracy) or independent level (95-100% Accuracy).
Fluency Graph

- Fluency graphs can be used for goal-setting
Almost any comprehension strategy used with reading comprehension can and should be used with listening comprehension.
## Making Connections

<table>
<thead>
<tr>
<th>Text Connections</th>
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<tbody>
<tr>
<td><strong>Text To Self</strong></td>
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<tr>
<td><strong>Text To Text</strong></td>
</tr>
<tr>
<td><strong>Text To World</strong></td>
</tr>
</tbody>
</table>

**Comprehension**
Which of these comes First? Next? Last?

Sequencing – A Foundation for Summarizing
Students can draw or write what happened at the Beginning, Middle and End for the story.
### Determining Main Ideas and Details

<table>
<thead>
<tr>
<th>Who or what. . .</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The most important thing about the who or what. . .</td>
<td></td>
</tr>
<tr>
<td>The main idea in ten words or less. . .</td>
<td></td>
</tr>
</tbody>
</table>

(D. Fuchs, Fuchs and Mathes, 1993)
Free Resources

www.tpri.org

- Click on resources
- Click on Teachers
- Quick Links- Click on Blackline Masters
Easy Directions and Printable Materials

GK-30 Initial Consonant Swap

Students practice substituting the initial consonant in words to make real and made-up words.

MATERIALS: Plastic/magnetic letters, index cards, marker

1. Write different sets of ending letters on index cards, one set per card. For ending letters suggestions, see the example below. Students can have their own set of letters or share with a partner.
2. Give each student an ending letters card.
3. Students add plastic letters to the beginning of their ending letters card to form words. Students read their words and tell whether they’re real or made-up.

EXAMPLE:

_EXTENSION: Turn the activity into a center by placing letter sets in pencil boxes or large envelopes.
Free Resources

http://www.fcrr.org/resources/resources_sca.html
Resources

Phonemic Awareness in Young Children

A Classroom Curriculum

This curriculum is an example of what we desperately need more of: research-based theory translated into field-tested materials that teachers can confidently and successfully use in the classroom.

—American Educator

Marilyn Jager Adams
Barbara R. Foorman
Ingvar Lundberg
Terri Beeler

Road to the Code

A Phonological Awareness Program for Young Children

Benita A. Blachman
Eileen Wynne Ball
Rochella Black
Darlene M. Tangel

Winter lunch & learn
Mathematics, Language, and Critical Components of Intensive Intervention

Matthew Foster, Ph.D.
Assistant Professor of Pediatrics
Children’s Learning Institute
Resources with an Evidence-Base

- What Works Clearinghouse (WWC) evidence of effectiveness
Outline

• Importance of mathematics achievement
• Mathematics and language
• Teaching recommendations – big ideas
• Critical components of intensive math intervention
IMPORTANCE OF MATH ACHIEVEMENT
IMPORTANCE OF MATH ACHIEVEMENT
Examples of Math Mistakes

1. Dr. Pepper advertisement with 10 bold tasting calories per can.
2. Rasmussen Poll report showing public opinion on scientific research and global warming.
3. Clearance sign indicating a price reduction from $52.99 to $47.99 with a savings of $12.

Winter lunch & learn
Individual and Societal Benefits

Pre-K & Kindergarten Math

Academic Outcomes

Employment Success

Benefits Society

Duncan et al. (2007)

Parsons & Bynner (2005); Rose & Betts (2004)

Butterworth et al. (2011)

Gross et al. (2009)
MATHEMATICS AND LANGUAGE
Importance of Language

• Language development is important to early math
  — Language is utilized to refine children’s understanding of math concepts (Spelke, 2003)
  — Language is the medium through which classroom instruction (i.e., math instruction) takes place (Foster et al., 2015)
• Children’s language skills are involved in solving many different types of math problems (e.g., Foster et al., 2014; 2015; Hooper et al., 2010; Purpura et al., 2011)
• Math language includes:
  — Quantitative terms, e.g., more, less, many, fewer
  — Spatial terms, e.g., before, above, near
Language Exposure and Adult-Child Interactions

• Low-SES children exposed to 20-30 million fewer words, which includes math language (e.g., Fuson, 1988; Hart & Risely, 1995)

• Parents from low-SES backgrounds engage in fewer and less complex mathematical interactions with their children (e.g., Vandermaas-Peeler et al., 2009)

• Children from low-SES backgrounds perform significantly lower than their peers from middle- and high-SES backgrounds on tests of:
  - General language (Hart & Risely, 1995)
  - Math language (Purpura & Reid, 2016)
  - Numeracy (Jordan et al., 1994; Starkey et al., 2004)
Math-Language Recommendations

• Foster children’s mathematical thinking from an early age

• Be conscientious of caregiver-child interactions (Ramani et al., 2015)
  – Foundational math terms, e.g., counting, number identification
  – Advanced math terms & concepts e.g., cardinality, ordinal relations, arithmetic

• Quality of early language input, not quantity (Boonen et al., 2011; Hirsh-Pasek et al., 2015)
Teaching Recommendations

PRESCHOOL, PREKINDergarten, AND KINDergarten
Areas of Focus

Mathematics Instruction

- Number and operations
- Geometry
- Data analysis
- Measurement
- Patterns
Teaching Recommendation 1

Teach number and concepts using a developmental progression

- Practice recognizing total number of objects in small collections & label them without counting
- Promote accurate one-to-one counting to identify total number of items in a collection
- Provide opportunities for children to use number words & counting to compare quantities
- Encourage children to label collections with number words & numerals
- Encourage them to solve basic problems
Teaching Recommendation 2

Teach geometry, patterns, measurement, & data analysis using a developmental progression

Help children recognize, name, & compare shapes, & then teach them to combine & separate shapes

Encourage children to look for & identify patterns, & then teach them to extend, correct, and create pattern

Teach children to make direct comparisons & use both, informal & standard tools

Help children to collect & organize information, & then teach them to represent that information graphically
Teaching Recommendations

PROBLEM SOLVING IN ELEMENTARY AND MIDDLE SCHOOL
Evidence-based Programs

Mathematics Instruction

- Problem Solving
- Number and operations
- Geometry
- Patterns
- Measurement
- Data analysis
Recommendation 1

Assist students in monitoring and reflecting on the problem-solving process

Provide students with a list of prompts to help them monitor & reflect
Monitoring and Reflecting on the Problem-solving Process

**Sample question list**

- What is the story in the problem about?
- What is the problem asking?
- Which information in the problem is relevant?
- In what ways is this problem similar to problems I have previously solved?
- Does the solution make sense? How can I verify the solution?

**Sample task list**

- Identify the givens & goals of the problem.
- Identify the problem type.
- Recall similar problems to help solve the current problem.
- Use a visual to represent & solve the problem.
- Solve the problem.
- Check the solution.
Recommendation 1

Assist students in monitoring and reflecting on the problem-solving process

Provide students with a list of prompts to help them monitor & reflect

Model how to monitor & reflect

Use student thinking about a problem to develop students’ ability
Assisting Students in Monitoring, Reflecting, & Thinking

**Model how to monitor & reflect**
- Introduce a problem-solving activity or a new concept.
- Say aloud the response to each prompt & the reasons why each step was taken.

**Use student thinking**
- Help students verbalize other ways of thinking about a problem.
- Guided questioning can help students clarify & refine their thinking.
One way to model monitoring and reflecting questions

What Works Clearinghouse Practice Guide: Improving Mathematical Problem Solving in Grades 4 Through 8, p. 20


Problem

Last year was unusually dry in Colorado. Denver usually gets 60 inches of snow per year. Vail, which is up in the mountains, usually gets 350 inches of snow. Both places had 10 inches of snow less than the year before. Kara and Ramon live in Colorado and heard the weather report. Kara thinks the decline for Denver and Vail is the same. Ramon thinks that when you compare the two cities, the decline is different. Explain how both people are correct.

Solution

TEACHER: First, I ask myself, “What is this story about, and what do I need to find out?” I see that the problem has given me the usual amount of snowfall and the change in snowfall for each place, and that it talks about a decline in both cities. I know what decline means: “a change that makes something less.” Now I wonder how the decline in snowfall for Denver and Vail can be the same for Kara and different for Ramon. I know that a decline of 10 inches in both cities is the same, so I guess that’s what makes Kara correct. How is Ramon thinking about the problem?

I ask myself, “Have I ever seen a problem like this before?” As I think back to the assignments we had last week, I remember seeing a problem that asked us to calculate the discount on a $20 item that was on sale for $15. I remember we had to determine the percent change. This could be a similar kind of problem. This might be the way Ramon is thinking about the problem.

Before I go on, I ask myself, “What steps should I take to solve this problem?” It looks like I need to divide the change amount by the original amount to find the percent change in snowfall for both Denver and Vail.

Denver: \( \frac{10}{60} = 0.166 \) or 16.6% or 17% when we round it to the nearest whole number

Vail: \( \frac{10}{350} = 0.029 \) or 2.9% or 3% when we round it to the nearest whole number

So the percent decrease in snow for Denver was much greater (17%) than for Vail (3%). Now I see what Ramon is saying! It’s different because the percent decrease for Vail is much smaller than it is for Denver.

Finally, I ask myself, “Does this answer make sense when I reread the problem?” Kara’s answer makes sense because both cities did have a decline of 10 inches of snow. Ramon is also right because the percent decrease for Vail is much smaller than it is for Denver. Now, both of their answers make sense to me.
Using student ideas to clarify and refine the monitoring and reflecting process

What Works Clearinghouse Practice Guide: Improving Mathematical Problem Solving in Grades 4 Through 8, p. 21

Recommendation 2

Teach students how to use visual representations

Select appropriate visual representations

Use think-alouds & discussions

Show students how to convert visual representations into math notation
Sample table & Sample strip diagram


*Tables help organize the known and unknown quantities presented in the problem.

*Strip diagrams use rectangles to represent quantities presented in the problem.
Sample percent bar & Sample schematic diagram

What Works Clearinghouse Practice Guide: Improving Mathematical Problem Solving in Grades 4 Through 8, p. 25


*Percent bars are strip diagrams in which each rectangle represents a part of 100 in the problem.

*Schematic diagrams demonstrate the relative sizes and relationships between quantities in the problem.
Critical Components

PROVIDING MATH INTERVENTION: TIER II
Personalize and Plan

1. Diagnostic assessment (standardized & teacher made tests)
   - KeyMath-3
   - Wide Range Achievement Test-4
   - Curriculum-based teacher made

2. Implementing
   - Evidence-based approach for small group or 1-on-1 instruction
   - Narrow focus to skills students experience difficulty
   - Incorporate instruction in foundational skills necessary to fill in knowledge gaps
     - e.g., weak whole number skills, difficulty with automaticity of number combinations, etc.
   - Continue teaching grade level content

3. Assessment
<table>
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<th>Results</th>
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<td>Progress Monitoring</td>
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<td>Daily/Weekly</td>
<td>Plan more practice to improve understanding of base ten concepts</td>
<td>Unit 1: Number and Operations in Base Ten (lessons 11-14)</td>
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Winter lunch & learn
Progress Monitoring

Unit 1: Number and Operations in Base Ten
Quiz (Lessons 11 to 14)

1. Fill in the blanks.
   a) 21, 22, __, __, __, __
   b) 86, 87, __, __, __, __

2. Write what comes next. Write what comes before.
   a) ___ 27 ___
   b) ___ 60 ___

3. 
   ______ tens blocks = ______ ones blocks

4. How many ones blocks?
   a) 5 tens blocks = ____ ones blocks
   b) 8 tens blocks = ____ ones blocks

5. Fill in the blanks.
   a) 
   b) 
   ______ tens = ____ ones
   ______ tens = ____ ones

6. Count by tens.
   10, 20, 30, __, __, __, __, __, __

7. Circle groups of 10.
   Write the number of ones blocks.
   a) 
   b) 
   ___ ones blocks
   ___ ones blocks

8. Tim buys 10 stickers each day.
   How many stickers does he have after 4 days?
   Day 1  Day 2  Day 3  Day 4
   ____  ____  ____  ____

BONUS: Write the 2 numbers that come before and after.
      ___, ___, 69, ___, ___
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<td>Reteach number decomposition</td>
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Curriculum-Based/Mastery

Unit 1: Number and Operations in Base Ten

Test (Lessons 11 to 27)

1. Write what comes next.
   Write what comes before.
   a) ___ 38 ___  b) ___ 29 ___  c) ___ ___ ___

2. Count by tens.
   10, 20, 30, ___ 40 ___ 50 ___ ___ ___

3. Tina buys 10 stamps each day.
   How many stamps does she have after 3 days?
   ___ ___ ___
   Day 1  Day 2  Day 3

4. Fill in the blanks.
   a) 32 is ___ tens and ___ ones.
   b) 57 is ___ tens and ___ ones.

5. Circle the largest number.
   a) 32  81  52  b) 27  62

6. Write the numbers in order from least to greatest.
   a) 27  92  5  b) 81  70  49

7. Circle yes or no.
   a) 87 > 19  b) 94 > 19  c) 31 > 52
   yes yes yes no yes no
   d) 42 < 19  e) 92 < 57  f) 62 < 80
   yes yes yes no yes no

8. Circle the correct sign.
   a) 27 > 2  b) 96 > 91  c) 81 > 53
   < < <

   107, 108, ___ ___ ___ ___ ___ ___

10. Add.
    a) 100 + 5 = ___  b) 100 + 7 = ___  c) 110 + 3 = ___
    d) 100 + 2 = ___  e) 110 + 8 = ___  f) 110 + 7 = ___

11. Explain how you know that 48 is greater than 38.

BONUS: Write the numbers in the correct places.
   a) 107  119  b) 118  112  c) 103  120
   ___ > ___  ___ > ___  ___ < ___

Winter lunch & learn
# Assessment

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<td>Achievement</td>
<td>Varies</td>
<td>Twice a year</td>
<td>Inform special education placement</td>
<td>KeyMath-3, Wide Range Achievement Test</td>
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Norm-Referenced Test
Math Achievement Example:
Math Fact Fluency

Pretest (18 items): 30th percentile

Posttest (37 items): 70th percentile
Summary

- Language is important to mathematics
- Developmental progressions
- Assist students in monitoring and reflecting on the problem-solving process
- Use visual representations
- More to come on the critical components of intensive intervention...
Contact Information

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Personalized Approaches to Instruction and the Dan L. Duncan Outreach Programs

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Winter lunch & learn
Activities

• Warm-up (2-3 minutes)
• Explicit instruction
  – Step-by-step modeling
  – Guided practice
  – Feedback (always specific)
    • Affirmative
    • Corrective
  – Connecting concepts and procedures
• Review (1-3 minutes)
• Motivation component
Intensification

- Smaller steps
- Precise language
- Repeated language
- Student explains
- Modeling
- Manipulatives

- Worked examples
- Repeated practice
- Error correction
- Fading support
- Fluency
Duncan Clinic Outreach Program

History

• Reading: Since 2007 we served over 1,500 students in school based, summer intensive tutoring, and academic camps
• Spanish: Beginning in 2012, served over 300 students
• Math: Program launched in 2016
School Year Program

- Students are tutored 1:1 or 1:2 in a pull-out format for 40-minutes a day, 4 days per week during school hours.
- Students are selected based on principal and teacher nominations.
- Children’s reading or math skills are tested with both curriculum-based and norm-based assessments before and after participating in the program.
- Based on assessment results and needs, a tailored instructional plan is implemented for each child.
- Using a response to intervention model, we also complete progress monitoring waves of assessments to inform instruction.
Dan L. Duncan English Program Results

Percentile Gains on Woodcock-Johnson Reading Tests
All English Speakers-Day Program Schools
289 students, average 48 sessions
Dan L. Duncan Spanish Program Results

Percentile Gains on Woodcock-Johnson Reading Tests
All Spanish Speakers-Day Program Schools
99 students, average 50 sessions
Math Program Results: 2016 Pilot

Percentile Gains on Woodcock-Johnson Math Tests
27 students, average 41 (45-minute) sessions

Math Fact Fluency
Pretest: 26  Posttest: 35

Applied Problems
Pretest: 14  Posttest: 21
Summer Slump

• Research shows that summer months are a critical time for at-risk students to avoid the “summer slump” — the regression of ability levels.

• On average, students lose the equivalent of one month of academic performance during the summer.

(Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996)
Avoiding the Summer Slump

Summer slump can be avoided or reversed by participating in high quality summer learning experiences in academic or home settings.

(Christodoulou and Hoeft, 2015)
Qualities to look for in a Summer Program

• **Small class sizes** (Cooper et. Al., 2000)

• **Individualized instruction** (Beckett, 2008; Boss & Railsback, 2002; Cooper et al., 2000)

• **High-quality instruction** (Bell & Carrillo, 2007; Boss & Railsback, 2002; Denton, 2002; McLaughlin & Pitcock, 2009)

• **Curricula consistent with academic goals** (Boss & Railsback, 2002; McLaughlin & Pitcock, 2009)

• **Engaging and rigorous programming** (Bell & Carrillo, 2007; Boss & Railsback, 2002; McLaughlin & Pitcock, 2009; Beckett, 2008)
Qualities to look for in a Summer Program

• **Maximized participation and attendance** (Borman, Benson, & Overman, ; Borman & Dowling, 2006; McCombs, Kirby, & Mariano, 2009)

• **Sufficient duration** (McLaughlin & Pitcock, 2009)

• **Involved parents** (Cooper et al., 2000)

• **Evaluations of effectiveness** (Bell & Carrillo, 2007; Boss & Railsback, 2002; Denton, 2002; McLaughlin & Pitcock, 2009; Beckett, 2008)
Dan L. Duncan Summer Intensive Program

• 1:1 tutor ratio
• Students are assessed pre/post
• Individualized programs based on need
• 4 days a week, two hours a day, for four weeks
• Parents are updated on progress
• Evaluation report
Summer Camps

• Weekly Academic Camps for Pre-K – grade 4.
• 2 hours a day for 5 days
• Parents sign up based on student grade and skills needed.
• Camps are designed to targeted set skills with hands on explicit activities.
• Each camp has a tutor routine.
Session Goals

• How Executive Functions and Attention affect Learning
• Critical Components of Instruction in Reading and Math
• Personalized Approaches to Instruction
• Intervention Programs provided by The Dan L. Duncan Children’s Neurodevelopmental Clinic
Question and Answer Session
This event was generously sponsored by Lakeshore Learning. Thank you for supporting the Children’s Learning Institute.
Thank you for coming!

A video of this presentation will be made available on our website soon.
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