Individualizing Student Instruction: Helping All Children Learn

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Current Trends in Literacy Research

- Early individual differences
- Multiple sources of influence
- Sources interact
- Variable early schooling experiences
Sources of Variability in the Transition to School

Before Children Get to School

- Dimensions of Parenting
  - Family learning environment
  - Warmth/Sensitivity
  - Control/Discipline

- Preschool and Childcare
  - Amount
  - Quality

- Sociocultural Factors
  - Socioeconomic disadvantage
  - Parent education
  - Income
  - Race/Ethnicity

Once Children Start School

- Teacher Qualifications
  - Teachers’ Education
  - Teachers’ Experience
  - Teacher Credential

- Dimensions of Instruction
  - Explicit vs. Implicit
  - Teacher vs. Child Managed
  - Code Focus vs. Meaning Focus
  - Change over time
  - Teach-Child Interactions
    - (Warmth/Sensitivity)
    - Control/Discipline

- Children’s
  - Language
  - Literacy
  - Self-regulation
  - Motivation

- Children’s Ongoing Achievement
Once Children Start School

- **Beyond the Reading Wars**
  - Morrison, Bachman, & Connor (2005)
  - Rayner et al. (2001)

- **Balanced Instruction**
  - Morrison et al. (2006)

- **Child by Instruction Interactions**
  - Foorman et al. (1998) – Phonological Awareness
  - Juel & Minden-Cupp (2000) – Reading skill group
Dimensions of Instruction

- Teacher- vs. Child-Managed
- Code- vs. Meaning-Focused
- Explicit vs. Implicit
- Change over the school year
Child Factors

- Letter Knowledge and Word Decoding
- Comprehension
- Vocabulary
- Oral Language skills
- Phonological Awareness
- Self Regulation/Executive Functioning
Research with First Graders

- 107 First Grade Children
  - 44% girls
  - 62% were European American; 38% were African American
  - IQ (Stanford-Binet)
    - Mean = 101 (15.0)

- 44 Teachers
  - Schools located in mid-sized city
Classroom Observations

- Three day-long observations
  - Fall, Winter, and Spring

- Written narratives recording minute by minute teacher and child actions by type of activity
  - 18 specific language arts types of activities identified and number of minutes recorded

- Activities grouped by dimensions of instruction
  - Variables represent number of minutes per day

- School district reported that they utilized Whole Language reading instruction through the early grades (data collected during mid to late 1990s)
## First Grade Dimensions of Instruction

<table>
<thead>
<tr>
<th></th>
<th>Teacher Managed</th>
<th>Child Managed</th>
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</thead>
<tbody>
<tr>
<td><strong>Code Focused</strong></td>
<td>• Alphabet activities</td>
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<td></td>
<td>• Letter Sight-Sound</td>
<td>• Spelling</td>
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<td></td>
<td>• Initial Consonant Stripping</td>
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<td></td>
<td>• Word Segmentation</td>
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<td><strong>Meaning Focused</strong></td>
<td>• Vocabulary</td>
<td>• Student Read Aloud</td>
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<td></td>
<td>• Teacher Read Aloud</td>
<td>• Individual Sustained Silent Reading</td>
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<td></td>
<td>• Student Read Aloud</td>
<td>• Reading Comprehension Worksheets</td>
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<td>• Choral Group Writing</td>
<td>• Student Individual Writing</td>
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<td>• Writing Instruction</td>
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<td>• Model Writing</td>
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<td></td>
<td>• Listening Comprehension</td>
<td></td>
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<td></td>
<td>• Discussion</td>
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</tbody>
</table>
First Grade Fall Decoding by Teacher Managed Code Focused Amount

Percentiles from Norm Tables  Grade Equivalent 1.9 = Raw Score 34.5
Fall Vocabulary by Child Managed Meaning
Focused Amount and Slope

![Graph showing the relationship between Child Managed Meaning Focused minutes of instruction/day and Spring Decoding score. The graph includes two lines: one for Vocabulary 90th and another for Vocabulary 25th.]

![Graph showing the relationship between Child Managed Meaning Focused slope (minutes per month) and Spring Decoding score. The graph includes two lines: one for Vocabulary 90th and another for Vocabulary 25th.]
Replications

- Third Grade Reading Comprehension
- Preschool Literacy Development
Implications

- Reconceptualizing “high quality” and “balanced instruction”
- Importance of early and ongoing assessment
- Individualizing instruction?
Intervention Study

“Child-Instruction Interactions in Early Reading: Examining Causal Effects of Individualized Instruction”

Carol McDonald Connor, PI

Funding from IES and NICHD
10 Schools
Develop A2i

Treatment 1
• Technology
• Professional Development
• Stipend
• Computer

Control
• Stipend

Treatment 2
• Technology
• Professional Development
• Stipend
• Computer

7 Schools
Develop A2i v 2
ISI/KNOW

Treatment 1
• Technology
• Professional Development
• Stipend
• Computer

Control
• Stipend

Treatment 2
• Technology
• Stipend
• Computer

2004-2005

2005-2006

2006-2007

2007-2008

2008-2009

2009-2010

7 Schools
Develop A2i v 2
ISI/KNOW

Treatment 1
• Technology
• Professional Development
• Stipend
• Computer

Control
• Stipend

Treatment 2
• Technology
• Stipend
• Computer

Treatment 1
• Technology
• Professional Development
• Stipend
• Computer
Participants 2005-2006

- 10 Schools – FARL 24-96%
- 47 Teachers – no differences between groups for years of experience and years of education
- 616 Children
  - 59% eligible for free or reduced priced lunch
  - 54% African American, 37% White
  - A subset of 411 (12 per classroom) were randomly selected for the classroom observation protocol
Procedures

- **Student Assessments**
  - 3 times during the school year – fall, winter, and spring
  - Woodcock Johnson-III

- **Classroom observation**
  - Video-taped
  - 3 times per year – fall, winter, and spring

- **Compare results of treatment and control groups**
  - Instruction
  - Student outcomes
The Intervention

➢ **Instruction**
  - Dedicated and uninterrupted language arts block of at least 90 minutes
  - Conceptualize instruction multi-dimensionally
    - TM Instruction in small groups or individually using homogenous skill based groups
    - Attending to the assessed skill levels of the group
  - Provide A2i algorithm recommended amounts***

➢ **Professional Development**
  - 2 workshops and bi-weekly meetings
  - Classroom-based support bi-weekly

➢ **Laptop computer**
A2i Software

- Uses the algorithms from our research backwards
  - We know how well we want students reading in the spring
    - Grade level or 1 school-year growth
  - We assess children’s vocabulary and letter-word reading skills in the fall
- A2i Computes amounts of
  - TM-CF and CM-MF
- Recommends homogeneous ability groups
- Embedded in planning software
- Feedback on students’ assessed progress
<table>
<thead>
<tr>
<th>Group</th>
<th>Name</th>
<th>Teacher Managed</th>
<th>Child Managed</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Meaning-Focused</td>
<td>Code-Focused</td>
<td>Recommended</td>
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<tr>
<td>Group 1</td>
<td>Acre, Omari</td>
<td>19</td>
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<td>24</td>
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<td>Addison, Tadarius</td>
<td>19</td>
<td>41</td>
<td>20</td>
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<td>Bailey, Essence</td>
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<td>20</td>
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<td>Recommended Minutes</td>
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<td>40</td>
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<td>Addarley, Lothario</td>
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<td>Agosto, Nathan</td>
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<td>30</td>
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<td>Pitt, Brad</td>
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<td>29</td>
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<td>Recommended Minutes</td>
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<td>15</td>
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<td>19</td>
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<td>33</td>
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<td>Child, Test</td>
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<td>Johnson, Damion</td>
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<td>9</td>
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<td>Recommended Minutes</td>
<td>20</td>
<td>10</td>
<td>30</td>
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</table>

Update

Reset to Recommended Groupings

Done

Internet
# Literacy Minutes Manager (Monday)

**School:** Ramapo HS  
**Classroom:** Mr. Demo's Classroom  
**Status:** Active

<table>
<thead>
<tr>
<th>Group Breakdowns</th>
<th>Teacher Managed</th>
<th>Child Managed</th>
<th>Summary</th>
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<tbody>
<tr>
<td></td>
<td>Meaning-Focused</td>
<td>Code-Focused</td>
<td>Assigned/Recommended</td>
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<tr>
<td>Group 1</td>
<td>0/20</td>
<td>35/40</td>
<td>55/95</td>
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<tr>
<td>Group 2</td>
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<td>Group 3</td>
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<td>Total Assigned/Rec.</td>
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<tr>
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<table>
<thead>
<tr>
<th>Total Assigned/Recommended</th>
<th>Child-Managed Assigned/Rec.</th>
<th>Teacher-Managed Assigned/Available</th>
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<tbody>
<tr>
<td></td>
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<td>60/240 Edt</td>
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<td>60/240</td>
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</table>

Total Available Minutes/Recommended: 240/125+
Activities Planned For: Monday, October 10, 2005

Classroom: Mr. Demo's Classroom
School: Ramapo HS
# of Groups: 3

Start Time: 10:00 am

<table>
<thead>
<tr>
<th>Group</th>
<th>Instr.</th>
<th>Source</th>
<th>Level</th>
<th>Activity</th>
<th>Unit</th>
<th>Lesson</th>
<th>Page #</th>
<th>Dur.</th>
<th>Teacher</th>
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<tbody>
<tr>
<td>1</td>
<td>TM-CF</td>
<td>Open Court</td>
<td>Level 1</td>
<td>About Words and Sentences</td>
<td>3</td>
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<td>T41</td>
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<td>Level 1</td>
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<td>Introduce R/I</td>
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<td>Level 1</td>
<td>Initial R/I</td>
<td>3</td>
<td>2</td>
<td>T39</td>
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<td>2</td>
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<td>2</td>
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<td>Find a Word Game</td>
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<td>3</td>
<td>CM-MF</td>
<td>Open Court</td>
<td>Level 1</td>
<td>Concept/Question Board Lesson 2</td>
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<td>2</td>
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Start Time: 11:00 am

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<th>Unit</th>
<th>Lesson</th>
<th>Page #</th>
<th>Dur.</th>
<th>Teacher</th>
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<td>3</td>
<td>TM-CF</td>
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<td>Phonics About Words and Sentences</td>
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<td>Level 1</td>
<td>Phonics Developing Oral Language</td>
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<td>T24</td>
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Start Time: 1:00 pm

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<th>Activity</th>
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<th>Dur.</th>
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</table>
Fidelity of implementation

Number of teachers

Fidelity Score

Bar chart showing the distribution of teachers across different fidelity scores.
Mean scores controlling for fall vocabulary, passage comprehension, letter-word reading, curriculum, FARL, and Reading First status. 464 = GE 1.8, 468 = GE 2.0, n = 616 students
Passage Comprehension

- Lower fall vocabulary scores
- Higher fall vocabulary scores
Holding school SES, child initial skills, and TMCF DFR slope constant at their means. Model explains 59% of total spring PC variance.
Conclusions

- Strive to individualize
- Early and on-going assessment
- Cross-grade continuity: taking development seriously
- Closing the gap? Tracking?
Next Steps

- Replication and extension to other grades
- Finding the “active ingredients”
- Understanding professional development
Letter-word Reading

![Graph showing the relationship between spring letter-word score and A2i use (total minutes).]
**Passage Comprehension**

**Vocabulary-by-Fidelity Score Interaction.** The points represent the fitted mean for first-graders in the control group whereas the lines represent fitted mean scores for children in the treatment group, which varied by fidelity score. The red point and line represent fitted mean scores for students who began first grade with fall vocabulary scores falling at the 75th percentile of the sample (W = 486, Age Equivalent = 8 years) whereas the blue point and line represent fitted scores for first graders with lower fall vocabulary scores falling at the 25th percentile of the sample (W = 474, Age Equivalent = 6 years).

Graph created using HLM version 6.03.
### Preschool Dimensions of Instruction – Classroom Level

<table>
<thead>
<tr>
<th>Explicit Decoding</th>
<th>Teacher Managed</th>
<th>Teacher-Child Managed</th>
<th>Child Managed</th>
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</thead>
<tbody>
<tr>
<td>Code Focused</td>
<td>TCM-MFcl</td>
<td>Spelling</td>
<td></td>
</tr>
<tr>
<td>Implicit Language/Vocab Code Focused</td>
<td>Phonological Awareness</td>
<td>Alphabet Activity</td>
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<td>Letter-Sound</td>
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<td>Correspondence</td>
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<td>Initial Consonant Stripping</td>
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<td>Implicit Decoding</td>
<td>TM-MFcl</td>
<td>Chorale reading aloud</td>
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<td>Code Focused</td>
<td></td>
<td>Discussion</td>
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<tr>
<td>or Explicit</td>
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<td>Teacher Read-aloud/Discussion combined</td>
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<tr>
<td>Language/Vocab</td>
<td></td>
<td>Conventions of Print</td>
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<td>Meaning Focused</td>
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<td>Vocabulary activities</td>
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<td></td>
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<td>Other language arts activities</td>
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<tr>
<td></td>
<td></td>
<td>Sharing</td>
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<td>Implicit Decoding</td>
<td>TCM-MFcl</td>
<td>Teacher read-aloud</td>
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<td>and Implicit</td>
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<td>Chorale reading aloud</td>
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<td>Language/Vocab</td>
<td></td>
<td>Discussion</td>
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<td>Conventions of Print</td>
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<td>Other language arts activities</td>
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<td>Sharing</td>
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<td>Implicit Decoding</td>
<td>CM-MFcl</td>
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<td>Meaning Focused</td>
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# Preschool Dimensions of Instruction – Student Level

<table>
<thead>
<tr>
<th>Explicit Decoding Code Focused or Implicit Language/Vocab Code Focused</th>
<th>Teacher Managed</th>
<th>Teacher-Child Managed</th>
<th>Child Managed</th>
</tr>
</thead>
</table>
| Explicit Decoding Code Focused or Implicit Language/Vocab Code Focused | TCM-CFst  
- Alphabet Activity  
- Handwriting practice | TCM-CFst  
- Teacher Read-aloud/Discussion combined  
- Discussion  
- Conventions of Print  
- Vocabulary activities  
- Other language arts activities  
- Sharing  
- Scaffolded Sustained silent reading | CM-CFst  
- Handwriting  
- Alphabet Activity |
| Implicit Decoding Code Focused or Explicit Language/Vocab Meaning Focused | TM-MFst  
- Teacher read-aloud | TCM-CFst  
- Teacher Read-aloud/Discussion combined  
- Discussion  
- Conventions of Print  
- Vocabulary activities  
- Other language arts activities  
- Sharing  
- Scaffolded Sustained silent reading | CM-MFst  
- Writing (invented spelling)  
- Small Group Sustained silent reading  
- Individual Sustained silent reading |
| Implicit Decoding and Implicit Language/Vocab Meaning Focused | | | CM-MFst-play  
- Play |
Mean Minutes PS activities

Minutes per day

- Literacy
- Play
- Math
- Science
- Art
- Music
- Ritual
- Orient
- Transition
- Other

- class
- student
Mean Minutes PS Literacy Instruction

Minutes per day

TCM-CF  TM-MF  TCM-MF  CM-CF  CM-MF  CM-MF-Play

Student  Class
Higher fall vocabulary score

Lower fall vocabulary score
Broadening the Scope

- Teacher-child dimension
- Whole class versus small group
- Non-instructional activities (e.g. play)
Participants

- 156 student participants
  - 3-4 years of age in fall 2002

- 34 classrooms taught by 24 teachers
  - Lead teachers hold Early Childhood Credential
  - Head-Start, State supported and Fee-for-service licensed preschools/daycare
    - Typically developing children
  - Full and half day programs

- School District – Urban Fringe Transitioning
Higher fall letter-word recognition score

Lower fall letter-word recognition score
Higher fall letter-word recognition score

Lower fall letter-word recognition score
Spring Vocabulary Score

Higher fall vocabulary score

Lower fall vocabulary score

TCM-MF-Play-cl