Engagement Through Words:
Using the Common Core to Create a Core Vocabulary

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Allison Dennis, M.Ed.
Center for Literacy & Disability Studies
University of North Carolina at Chapel Hill
Disclosure Statement

• Allison Dennis is an employee of the University of North Carolina at Chapel Hill. The content of this talk is related to work she is conducting as part of a subcontract awarded to the University by the Dynamic Learning Maps project at the University of Kansas. The presentation was developed as part of grant 84.373X100001 from the U.S. Department of Education, Office of Special Education Programs. The views expressed herein are solely those of the authors, and no official endorsement by the U.S. Department should be inferred.
A Challenge and an Opportunity for Students with Complex Communication Needs (CCN)

• The Common Core State Standards
  – US national standards for English Language Arts and Mathematics
  – Finland, Singapore, and South Korea have employed similar systematic core curriculum standards with good outcomes
  – Focus is on college and career readiness for all students
  – Standards require critical thinking, building a foundation of information, and use of known information to develop new knowledge
The Common Core emphasizes:

- Learning that builds over time.
- Application of knowledge and skills.
- Active participation and interaction in learning activities.
- Collaboration and communication.
- Ongoing comprehensive instruction in reading, writing, speaking, listening, and language.
Challenges for students with CCN

• Access to adequate vocabulary to express new knowledge and increasingly complex ideas.
• The ability to express a variety of communicative functions.
• Adjusting to the communication demands of different contexts.
• Use of the alphabet for reading and spelling.
• Vocabulary that allows expansion of the semantic and syntactic complexity of expressive language.
Core Vocabulary: A Familiar Solution
Characteristics of a Core Vocabulary

- Limited set of highly useful words
- Words apply across settings
- Vocabulary is made up primarily of pronouns, verbs, descriptors, and prepositions
- Very few nouns are included in a core vocabulary
- Consistent location of vocabulary
Communication Benefits of a Core Vocabulary

• Variety of word classes included
• Vocabulary to express a variety of communicative functions
• Can be useful across a variety of settings
Core Vocabulary Research Studies

Adults:
- Stuart, Beukelman & King, 1997
- Balandin & Iacono, 1999
- Hill, 2001

Preschoolers:
- Beukelman, Jones, & Rowan, 1989
- Banajee, DiCarlo & Stricklin, 2003
- Trembath, Balandin, & Togher, 2007
- Marvin, Beukelman, & Bilyeu, 1994

None of these studies have examined the language of students in academic settings.
Learning from Oakland Schools
Oakland Schools (Michigan)

• Observations Before Implementing Core:
  • Inconsistent use of AAC systems
  • Limited use of all communicative functions
  • Heavy focus on fringe or expanded vocabulary rather than core
  • Minimal turn takes during communicative exchanges
  • Reduced communicative opportunities because current vocabulary did not occur frequently enough in classroom activities
Oakland Schools

- **GOAL:** Expansion of AAC service delivery model to include:
  - Universal and systematic use of “core vocabulary”
    - On manual display, low tech, or high tech devices
- Chose initial core by reviewing research & current solutions
- Included core for emergent language learners and when updating devices for current users
Oakland’s 32 Location
Core Vocabulary
Observations

• Increased investment by staff (SLPs embraced “core vocabulary”)

• Increased use of AAC systems
  • Multiple word phrases even without expanded vocabulary available
  • Use of words not easily represented and not taught specifically but rather embedded in daily communicative exchanges

• Increased expectations for students to use language in flexible ways

• Focus shifted from the device and programming to the language needed for communication
One Classroom Example

Specifically, ASD classrooms with many students using AAC systems saw change in 3-4 months:

– Increased use of a variety of communicative functions
– Increased use of target vocabulary
– Modeling of language use increased because vocabulary became familiar more quickly to staff
A Survey of Core Vocabulary Use in Oakland Schools (n=20)

What words does your student use?

<table>
<thead>
<tr>
<th>Word</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>help</td>
<td>10</td>
</tr>
<tr>
<td>all gone</td>
<td>9</td>
</tr>
<tr>
<td>I</td>
<td>9</td>
</tr>
<tr>
<td>no/not</td>
<td>9</td>
</tr>
<tr>
<td>open</td>
<td>9</td>
</tr>
<tr>
<td>stop</td>
<td>9</td>
</tr>
<tr>
<td>want</td>
<td>9</td>
</tr>
<tr>
<td>finished</td>
<td>8</td>
</tr>
<tr>
<td>more</td>
<td>8</td>
</tr>
<tr>
<td>turn</td>
<td>8</td>
</tr>
<tr>
<td>go</td>
<td>7</td>
</tr>
<tr>
<td>look</td>
<td>7</td>
</tr>
<tr>
<td>like</td>
<td>6</td>
</tr>
</tbody>
</table>

What communicative functions does your student exhibits when using the core system?

<table>
<thead>
<tr>
<th>Function</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making choices</td>
<td>92%</td>
</tr>
<tr>
<td>Requesting</td>
<td>92%</td>
</tr>
<tr>
<td>Rejecting</td>
<td>75%</td>
</tr>
<tr>
<td>Responding</td>
<td>75%</td>
</tr>
<tr>
<td>Commenting</td>
<td>50%</td>
</tr>
<tr>
<td>Gaining attention</td>
<td>42%</td>
</tr>
<tr>
<td>Greetings/Farewells</td>
<td>42%</td>
</tr>
<tr>
<td>Expressing feelings</td>
<td>33%</td>
</tr>
<tr>
<td>Initiating conversation</td>
<td>25%</td>
</tr>
<tr>
<td>Providing information</td>
<td>25%</td>
</tr>
</tbody>
</table>
Applying What We’ve Learned
Identifying the AAC Core

• Review of extant core vocabulary research
• Review of several existing core vocabulary sets
• Review of Clendon’s list of 150 most frequently used written words by K-4th graders
• Identify the u-score
  \[ u = \text{frequency} + \text{dispersion} \]
# AAC Core Comparison

<table>
<thead>
<tr>
<th></th>
<th>Vocabulary</th>
<th>U-Score</th>
<th>Sum</th>
<th>PRESCHOOL B</th>
<th>PRESCHOOL T</th>
<th>PRESCHOOL B</th>
<th>ADULT Stuart</th>
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<tbody>
<tr>
<td>2</td>
<td>you</td>
<td>7600</td>
<td>24</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>3</td>
<td>i</td>
<td>4443</td>
<td>23</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>more</td>
<td>2160</td>
<td>23</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>go</td>
<td>927</td>
<td>22</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>help</td>
<td>659</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>7</td>
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<td>9</td>
<td>in</td>
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<tr>
<td>10</td>
<td>like</td>
<td>1810</td>
<td>16</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>11</td>
<td>make</td>
<td>1264</td>
<td>16</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>12</td>
<td>that</td>
<td>10184</td>
<td>15</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>13</td>
<td>do</td>
<td>2102</td>
<td>15</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>14</td>
<td>don't</td>
<td>601</td>
<td>16</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
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</table>
Identifying the Academic Core

- Identified words that were specifically called out in the CCSS
- Identified open and closed sets of words
- Defined parameters
- Coded words according to parameters
What are closed sets?

• Search grade by grade to determine:
  – What specific vocabulary is clearly called out?
    • Question Words (what, who, when, where, why, how)
    • Shapes (plus words like flat, solid)
    • Personal and Possessive Pronoun (me, my, mine)
  – What word classes are clearly called out?
    • Pronouns, Nouns (singular, plural, irregular plural)
    • Verbs (with tense markers – irregular past tense)
    • Adjectives and adverbs
# Academic Core with Parameters

<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>ccss</th>
<th>U-Score</th>
<th>AAC Core?</th>
<th>Ask Questions</th>
<th>Define Author/Illustrator</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>L.1.1.h</td>
<td>24070</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>about</td>
<td>L.K.1.e</td>
<td>2556</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>after</td>
<td>RI.3.3</td>
<td>1131</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>all</td>
<td>L.1.1.d</td>
<td>3370</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>alliteration</td>
<td>RL.4.5.</td>
<td>0.5961</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>although</td>
<td>RL.1.9.</td>
<td>252</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>am</td>
<td>R.L.K.1.</td>
<td>195</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>an</td>
<td>L.1.1.h</td>
<td>3096</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and</td>
<td>L.1.1.g</td>
<td>27594</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>any</td>
<td>L.1.1.d</td>
<td>934</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>anybody</td>
<td>L.1.1.d</td>
<td>28</td>
<td>1</td>
<td></td>
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<td>anyone</td>
<td>L.1.1.d</td>
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<td>1</td>
<td></td>
<td></td>
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<tr>
<td>anything</td>
<td>L.1.1.d</td>
<td>270</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
AAC Core and Academic Core

- AAC core word list
- Academic core word list
- Overlap
- Weighting system
Prioritizing the Words

• Priority 1: Words that are specifically called out in the Common Core and appear in the AAC Core
• Priority 2: Words that are specifically called out in the Common Core but NOT in the AAC Core
• Priority 3: Additional words we select based on U-scores in written language, research from Sally Clendon and others, and other sources to make sure all word classes are represented in the final systems.
So, What are the Words?
3 Vocabulary Tiers
(Beck & McKeown, 1985)

• Tier 1 – The most basic words (e.g., baby, clock, happy, walk).
• Tier 2 – High frequency words for mature language use. These words are found across a variety of domains (e.g., absurd, steep, disaster)
• Tier 3 – Low frequency words used in specific domains (e.g., hemoglobin, lathe, escarpment)
How much instructional language do students need?

- **Character**
  - e.g., man in book; big, mad woman; sick animal
- **Setting**
  - e.g., hot dry there; down by water; at home
- **Subtraction**
  - e.g., take from
- **Addition**
  - e.g., put together
However: Equal and same are not equivalent concepts

- We will need to add some specific instructional vocabulary.
- Since this is a core vocabulary, these words need to apply across multiple settings (e.g., equal as a math concept, equal as it applies to measurement, equal as applied to fairness, equal as applied to the equal rights for all citizens)
AAC systems designed to meet the needs of a variety of students

- Core – 32, 24, 20, 12, 9, & 4 locations per page versions
- No matter how many symbols the student has per page, there will be 10 or 11 additional pages with an equal number of locations that include core words.
- Systems grow within and across grades.
- As locations are added to the static core, the relative location of previous icons/messages stays the same.
4 x 10 Location Core

Not  Go
Want  Like
### 12 x 10 Location Core

<table>
<thead>
<tr>
<th>Can</th>
<th>I</th>
<th>Not</th>
<th>Go</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is</td>
<td>You</td>
<td>Want</td>
<td>Like</td>
</tr>
<tr>
<td>Do</td>
<td>It</td>
<td>More</td>
<td>Stop</td>
</tr>
</tbody>
</table>

- **Can**
- **I**
- **Not**
- **Go**
- **Is**
- **You**
- **Want**
- **Like**
- **Do**
- **It**
- **More**
- **Stop**
## 20 x 10 Location Core

<table>
<thead>
<tr>
<th>Can</th>
<th>I</th>
<th>Not</th>
<th>Go</th>
<th>Cool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is</td>
<td>You</td>
<td>Want</td>
<td>Like</td>
<td>Oh!</td>
</tr>
<tr>
<td>Do</td>
<td>It</td>
<td>More</td>
<td>Stop</td>
<td>Question</td>
</tr>
<tr>
<td>This</td>
<td>That</td>
<td>Don’t understand</td>
<td>Try another page</td>
<td>Alpha/Num</td>
</tr>
</tbody>
</table>
## 24 x 10 Location Core

<table>
<thead>
<tr>
<th>Can</th>
<th>I</th>
<th>Not</th>
<th>Go</th>
<th>Cool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is</td>
<td>You</td>
<td>Want</td>
<td>Like</td>
<td>Oh!</td>
</tr>
<tr>
<td>Do</td>
<td>It</td>
<td>More</td>
<td>Stop</td>
<td>Question</td>
</tr>
<tr>
<td>This</td>
<td>That</td>
<td>Don’t understand</td>
<td>Try another page</td>
<td>Alpha/Num</td>
</tr>
<tr>
<td></td>
<td>Can</td>
<td>I</td>
<td>Not</td>
<td>Go</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Is</td>
<td>You</td>
<td>Want</td>
<td>Like</td>
<td>Oh!</td>
</tr>
<tr>
<td>Do</td>
<td>It</td>
<td>More</td>
<td>Stop</td>
<td>Question</td>
</tr>
<tr>
<td></td>
<td>This</td>
<td>That</td>
<td>Don’t understand</td>
<td>Try another page</td>
</tr>
</tbody>
</table>
Teaching and Modeling Vocabulary

• No student will be able to use this approach without teaching and modeling.

• Teaching:
  • Teach the **words** in the set you select.
  • Teach the **symbols** in the set you select.

• Modeling
  • Model the use of the vocabulary during instructional activities and all other communication activities.
  • Receptive input using the system is critical.
  • Create multiple systems and take advantage of peers.
Things to Remember

• Our goal is not to replace existing systems – We are trying to fill a void.

• Use this information to inform current vocabulary selection to insure it meets the demands of the Common Core.

• You are going to have to add vocabulary for the system to work across all environments (e.g., people, foods, what hurts?)
In the works

- We are still in the process of refining the weighting system
- Determining what if any vocabulary gets added at each new grade level
- Adding morphological markers
- Determining how to best provide access to large numbers
- Adding necessary symbols for punctuation and mathematics
Our Questions

Does this approach:

• Provide vocabulary that allows students to successfully develop language in academic settings?

• Support students in developing increasingly complex language and communication skills over time?

• Are there certain words that are necessary in academic instruction that we have not previously considered in existing core vocabularies?
To access this presentation, look for NCACA 2013 at:
https://www.med.unc.edu/ahs/cllds/resources/conference-handouts

Thanks!