Successful Beginning Communication: Building Toward It and Building Upon It

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Learning Objectives

Participants will be able to:

- Describe the three major transitions in typical language development
- Identify one evidence-based approach to implementing augmentative and alternative communication for beginning communicators
- Discuss at least three strategies for expanding successful beginning communication using visual scene displays toward more complex language expression using grid displays

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Speaker Disclosures

- **Kathryn Drager** works at and draws a salary from Penn State University, and has no other Financial or Non-Financial Relationships to disclose.
- **Christine Holyfield** works at and draws a salary from the University of Arkansas and has no other Financial or Non-Financial Relationships to disclose.
- **Jessica Caron** works at and draws a salary from Penn State University, and has no other Financial or Non-Financial Relationships to disclose.

http://aac.psu.edu

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Typically developing infants and toddlers acquire language with (seemingly) little effort

- During the first 5 years of life, typically developing children make a remarkable transition
  - Preintentional and presymbolic at birth
  - To school years:
    - Communicating for a variety of reasons
    - Learning a wide range of vocabulary words
    - Generating complex sentences to communicate thoughts and feelings
    - Learning conventional literacy skills

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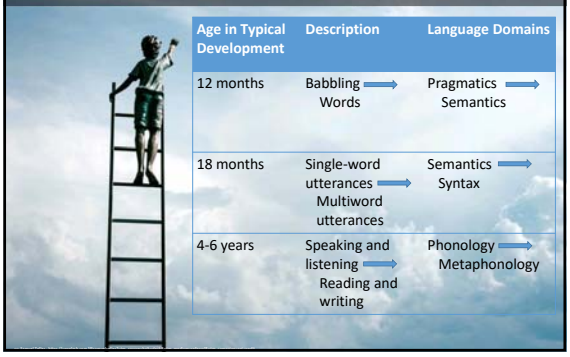
Major Transitions in Child Language (Paul, 1997)



Age in Typical Development	Description	Language Domains
12 months	Babbling → Words	Pragmatics → Semantics
18 months	Single-word utterances → Multiword utterances	Semantics → Syntax
4-6 years	Speaking and listening → Reading and writing	Phonology → Metaphonology

Individuals With Complex Communication Needs

- Individuals With Complex Communication Needs are at Significant Risk in All Aspects of Their Development
- AAC applications offer the potential to enhance communication and language development
- Unfortunately, this potential is not always fully realized, in part because many AAC systems are not appropriate for beginning communicators

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Beginning Communicators (Early language learners)

- Any individual at the early stages of language development
- Any individual with an intellectual and developmental disability (IDD) who, as a result of a variety of intrinsic and extrinsic factors, demonstrates limited communication and expressive language consistent with stages of early language
- Early language learners may be any age
- Early language learners may have multiple disabilities affecting their physical mobility, cognition, and/or sensory perception

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Phases of early language

Preintentional & presymbolic	Intentional, but presymbolic	Early symbolic
Communicator: • Not yet behaving with the goal of communicating • Demonstrating behavior for other purposes, but usually at low rates • Often demonstrating limited engagement with the world around him or her	Communicator: • Using behaviors with the goal of communicating • Behaviors usually contextual • Not yet using symbols to communicate • Still often demonstrating low levels of engagement	Communicator: • Using a small (e.g., <50), but growing, number of symbols expressively to communicate • Still using presymbolic behaviors with frequency to communicate
Partners: • Assigning communicative meaning to pre-communicative behaviors • Over-exaggerating to garner engagement	Partners: • Mapping language (i.e., a word or phrase) onto presymbolic communication • Over-exaggerating to garner engagement	Partners: • Expanding on single word use • Continuing to honor and map language on to presymbolic communication

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One critical component of AAC systems is the display

- A well designed display will enhance communication and outcomes
- A poorly designed display will impede communication and language development

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Design of Systems

- Too often, AAC systems are designed by adults without disabilities
- However, beginning communicators:
  - Are different ages
  - Have a difference in disability status
  - Have different cultural and ethnic backgrounds

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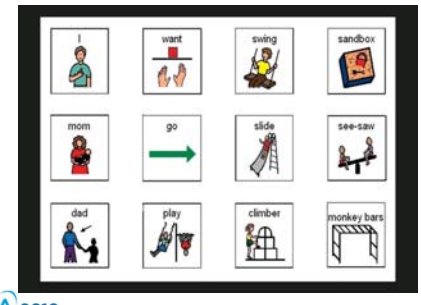
Traditional Grid Display



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Traditional Grid Displays

- Vocabulary represented by separate AAC symbols in "boxes"
- Vocabulary is de-contextualized
- Relationships between concepts are not explicit

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Visual Scene Display

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Visual scene displays

Visual scene display (VSD)

- Vocabulary embedded under "hot spots" in integrated visual scene
- Language is presented in meaningful context
- Scene is processed as an integrated unit
- Meaning is derived from the entire scene

VSD for "playing telephone"

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Visual Scene Displays (VSDs)

- Color photo depicting people in a life event
- More recognizable than icons
- Embeds vocabulary within naturally-occurring context, unlike icons
- Uses representation that is easier on visual-cognitive processing than icons
- Therefore, useful for early language learners
- Especially as, often, communication is highly-contextual

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VSDs May Be a Better Fit For:

- Infants
- Toddlers
- Preschoolers
- School-age children
- Adolescents
- Adults...
- Who are beginning communicators

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Research on the effect of type of display

- Studies with toddlers and preschoolers
  - 2 ½ year olds
    - Drager, Light, Curran-Speltz, Fallon, & Jeffries, 2003
  - 4 & 5 year olds
    - Light, Drager, McCarthy, Mellott, Parrish, Parsons, Rhoads, Ward, & Welliver, 2004
- Methods
  - Children asked to locate vocabulary using different types of displays & to use displays communicatively
    - VSDs
    - Traditional grid organized schematically (by event)
    - Traditional grid organized taxonomically (by category)

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What does research tell us?

- Toddlers were more accurate locating vocabulary using VSDs than grid displays (Drager, Light, et al., 2003)
- 4 & 5 year olds performed with similar accuracy locating vocabulary using VSDs or grid displays (Light, et al., 2004)

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Results / implications for designing AAC displays for beginning communicators

- Results suggest that VSDs may be better suited than grid displays for
  - Infants
  - Toddlers
  - Younger preschoolers
  - Other beginning communicators (under age 4 - 5 developmentally)
- Compared to traditional grid displays, VSDs
  - Attract more visual attention
  - Result in more accurate performance
  - May support more rapid lexical development /learning

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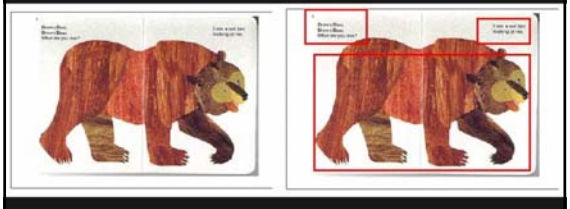
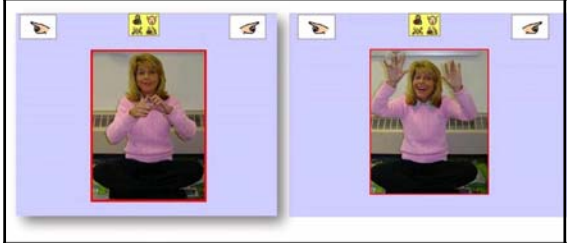
VISUAL SCENE DISPLAYS

PEEK A BOO

BROWN BEAR

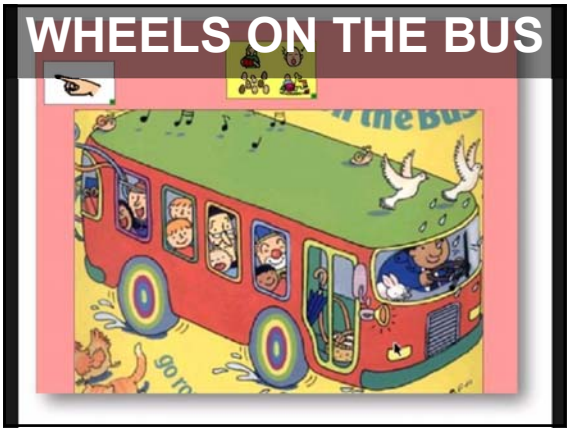


ITSY BITSY SPIDER




PLAYING TELEPHONE


OLD MACDONALD


WHEELS ON THE BUS


SLIDE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MARACAS


LITTLE PEOPLE FARM

Research with VSDs

- All participants have been able to use VSDs on initial introduction once use is modeled

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Language Development (Paul, 1997)

- Pragmatic
- Semantic
- Syntactic
- Phonologic
- Metaphonologic

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Visual scene displays

- VSDs are appropriate for individuals at the Pragmatic Stage of Language Development
  - Pragmatic
- And the early Semantic Stage
  - Semantic
- Language is presented in meaningful context
- The whole-scene nature of VSDs facilitates social interaction

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Visual scene displays

- However, later stages of language development are not well supported by VSDs
  - Semantic
  - Syntactic
  - Phonologic
  - Metaphonologic

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Visual scene displays

- However, later stages of language development are not well supported by VSDs

Semantic	•VSDs do not well support the combination of symbols or concepts to create new ones
Syntactic	•VSDs do not well support the formation of meaningful sentences and morphological markers
Phonologic	•VSDs are not designed to support phonological awareness and the beginnings of literacy
Metaphonologic	•VSDs are not designed to support conventional reading and writing

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Language Development

- In addition, as children become more sophisticated language users and acquire more vocabulary, they experience a shift in how they organize concepts conceptually

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Organization

- Schematic Organization
  - Organizing concepts according to event context (e.g., playing outside, breakfast)
  - Typically used by young children
- Taxonomic Organization
  - Organizing concepts in hierarchical categories (e.g., food, places)
  - Emerges 5-7 years of age

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Transitioning from VSDs

- It is important to recognize when an individual is ready and able to move to AAC system displays that can grow with their continuing language development

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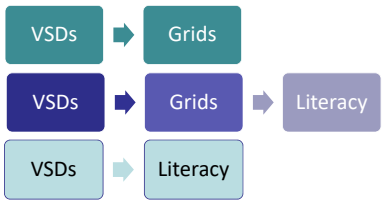
Transitioning from VSDs

- Options for transitioning out of VSDs



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Note: Grids refers to picture symbol-based grid displays

Transitioning from VSDs to Grids

- VSDs
  - Provide context
  - Represent realistic image
  - Maintain proportionality
  - Well-suited for social contexts
- Grids
  - Vocabulary can be in predictable locations
  - Depicts a larger number of concepts available at a time
    - Allows for more choices with decreased navigation demands
  - May facilitate combination of concepts

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Transitioning from VSDs to Grids

1. Hybrid displays
2. Using VSD photos as grid choices
3. VSDs with hotspots in grid locations
4. Using grids in different contexts/ environments
5. Pairing selections on VSDs with grid symbols

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1. Hybrid Displays

- Add grid elements to VSDs that the individual is already successfully using

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2. Using VSDs as Grid Choices

- Use the photos that served as VSDs as the options on a grid display
- Can use part of the photos by zooming in on relevant features

- Individuals who can scroll through VSD choices for navigation are already demonstrating the skills needed to use a grid display

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3. VSDs with Hotspots in Grid Locations

- Not all photographs function as VSDs
- However, individuals who are successful at using VSDs may be able to use other photographs that are like VSDs
  - Some of the naturalness of the context will be lost, but the context remains
- Photographs can be chosen that lend themselves to grid-like programming

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3. VSDs with Hotspots in Grid Locations

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3. VSDs with Hotspots in Grid Locations

- Over time, the hotspots can be converted to grid locations, keeping the meaning consistent

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4. Using Grids in Different Context or Environments

- Some individuals may be able to make the transition with little instruction
- As new contexts are introduced, some can be introduced using grid displays

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5. Pairing Selections on VSDs with Grid Symbols

- Upon selection of a hotspot, a 2-dimensional grid symbol can be dynamically displayed
  - Emerging from the photo and then disappearing during the speech output
- Systematically pairing the new symbol with the acquired representation may facilitate learning

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Transitioning from VSDs to Grids

- The choice between VSDs and Grid displays is not a forced choice
  - There may still be a reason to continue to use VSDs, especially those that the individual is successful at using

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Transitioning from Grids to Literacy

- Advantages of literacy
  - Facilitates educational achievement
    - content knowledge
    - note-taking, reporting information
    - assessment; displaying knowledge
  - Provides access to vocational opportunities
  - Fosters social contacts

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Transitioning from Grids to Literacy

- Added benefits of literacy for those who use AAC
  - Provides greater generative capacity in face to face interactions
  - Provides a channel to bypass limitations of face to face communication
  - Facilitates independence in daily life activities (ADLs)

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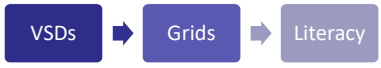
Transitioning from Grids to Literacy

1. Hybrid displays
2. Pairing selections with sight words (T2L)
3. Instructional considerations



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1. Hybrid Displays

- Just as with picture symbols, sight words can be added to a grid display

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2. Pairing Selections with Sight Words (Transition to Literacy: T2L)

- Upon selection of a symbol, the text can be paired with it, to provide exposure each time

RERC on AAC

https://rerc-aac.psu.edu/

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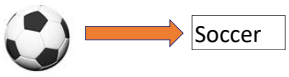
3. Instructional Considerations

- As student learns more sight words, add these to the system or change the representation in the system to the word



- Systematic instruction (http://aacliteracy.com)

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3. Instructional Considerations

- Ensure opportunities for writing
  - Keyboard page
  - Opportunities for story generation

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3. Instructional Considerations

- Create a folder of VSDs with audio output that encourages phonemic awareness, segmenting, blending, etc. (not for communication)

/b/---all

/b/---ag

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Transitioning from VSDs to Literacy

- Some individuals may be able to transition directly to literacy, which allows for the most generative language without the disadvantages of grids

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Transitioning from VSDs to Literacy

1. Pairing selections with sight words (T2L)
2. Instructional considerations

VSDs → Literacy

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1. Pairing Selections with Sight Words

- Just as with a grid display, a VSD display can have hotspots programmed to pair voice output with corresponding text appearance/disappearance (i.e., the T2L feature)
- With VSDs, the T2L feature embeds words within rich contexts representative of real life

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1. Pairing Selections with Sight Words

- The T2L feature is now included in multiple AAC apps that use VSDs
  - GoVisual™ from Attainment
  - SnapScene from Tobii Dynavox

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2. Instructional Considerations

- Create a folder of VSDs with audio output that encourages phonemic awareness, segmenting, blending, etc. (not for communication)

/b/---all

/b/---ag

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2. Instructional Considerations

- Provide access to instruction in early literacy skills adapted for participation without speech (http://aacliteracy.com)
- Just as you would when transitioning from grids to literacy

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2. Instructional Considerations

- Use familiar VSDs as illustrations for shared reading books

A mommy and baby _____.

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3. Instructional Considerations

- Literacy can be incorporated in many ways, even if it is not the current primary method of communication
- The choice between VSDs and Grid Displays and Literacy is not a forced choice

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Conclusions

- It is likely that there are multiple options for individuals who are transitioning out of VSDs as a primary display type for communication
- More research is necessary
  - Markers or characteristics that indicate readiness
  - Types of approaches that are a best fit for an individual
  - Ways to streamline instruction and capitalize on strengths of the individual
  - Taking advantage of advances in technology

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