PaTTAN’s Mission

The mission of the Pennsylvania Training and Technical Assistance Network (PaTTAN) is to support the efforts and initiatives of the Bureau of Special Education, and to build the capacity of local educational agencies to serve students who receive special education services.
PDE’s Commitment to Least Restrictive Environment (LRE)

Our goal for each child is to ensure Individualized Education Program (IEP) teams begin with the general education setting with the use of Supplementary Aids and Services before considering a more restrictive environment.

Agenda

- Overview of ABA and verbal behavior
- Selecting form of communication
- Vocal training
- “Speech Group”
Who are you?

WHAT ARE ABA AND VERBAL BEHAVIOR?
What is ABA?

**Applied Behavior Analysis (ABA)** is a science and a discipline devoted to understanding and improving human behavior.

Purpose: to improve *socially-significant behavior*

- language, academic skills, social skills, daily living, self care, recreation and leisure skills, etc.

ABCs of ABA

- **A=antecedent:** What happens before behavior
- **B=behavior:** What the individual does
- **C=consequence:** What happens after behavior
  - Reinforcement: increases behavior
  - Punishment: decreases behavior

*When analyzing teaching interactions in an ABA classroom, consider the antecedents, behavior, and consequences*
### ABCs: examples

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Behavior</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Something interesting happens</td>
<td>Look in that direction</td>
<td>See the Event</td>
</tr>
<tr>
<td>Need to go out and seeing a door knob</td>
<td>Turning the knob</td>
<td>Door opens</td>
</tr>
<tr>
<td>Driving and the traffic light turns red</td>
<td>Depress brake pedal</td>
<td>Car stops</td>
</tr>
</tbody>
</table>

### Language as Behavior

- Behavior is *anything* a person does that is:
  - Observable (can sense it)
  - Measurable (can count or time it)

- Communication is observable and measurable

- ABCs of ABA can be applied to communication
Verbal Behavior

**Verbal behavior** is the analysis of language according to ABCs. Premise:

- Language is controlled by antecedents and consequences
- Consequences are delivered by/through other people (social!)

### Verbal Behavior: Example

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Verbal Behavior</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Want water</td>
<td>Say “water”</td>
<td>Person delivers water</td>
</tr>
<tr>
<td></td>
<td>Sign “water”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Write “water”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Point to water</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exchange a picture</td>
<td></td>
</tr>
</tbody>
</table>
Functions of Communication

ABCs of language tell us *why we say what we say*

- To ask for what we want
- To label things
- To answer questions
- To repeat things we hear

Verbal Behaviors

<table>
<thead>
<tr>
<th>Function</th>
<th>Antecedent</th>
<th>Verbal Behavior</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mand (asking)</td>
<td>Motivation (wants cookie)</td>
<td>Verbal behavior (says “cookie”)</td>
<td>Direct reinforcement (listener gives cookie)</td>
</tr>
<tr>
<td>Tact (labeling)</td>
<td>Sensory Stimulus (sees or smells cookie)</td>
<td>Verbal behavior (says “cookie”)</td>
<td>Non-specific reinforcement (“It IS a cookie”)</td>
</tr>
<tr>
<td>Intraverbal (answering)</td>
<td>Verbal Stimulus (someone says “What can you eat?”)</td>
<td>Verbal behavior (says “cookie”)</td>
<td>Non-specific reinforcement (“Yes! You CAN eat a cookie”)</td>
</tr>
<tr>
<td>Echoic (repeating)</td>
<td>Verbal Stimulus (someone says “cookie”)</td>
<td>Vocal-verbal behavior: repeats all or parts of the antecedent (says “cookie”)</td>
<td>Non-specific reinforcement (“Cookie! You said cookie!”)</td>
</tr>
</tbody>
</table>
Other Relevant Behaviors

<table>
<thead>
<tr>
<th>Function</th>
<th>Antecedent</th>
<th>Behavior</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listener Response* (following directions)</td>
<td>Verbal Stimulus (someone says: “Touch the cookie.”)</td>
<td>Non-verbal behavior (touches cookie)</td>
<td>Non-specific reinforcement (“Great job touching the cookie.”)</td>
</tr>
<tr>
<td>Motor Imitation (imitating)</td>
<td>Non-Verbal Behavior (someone claps)</td>
<td>Non-verbal behavior: imitates all or part of the antecedent (imitates clapping)</td>
<td>Non-specific reinforcement (attention for imitating)</td>
</tr>
<tr>
<td>Match to Sample (matching)</td>
<td>Non-Verbal Stimulus (picture of a cookie)</td>
<td>Non-verbal behavior: selects a second stimulus with shared properties (picks up a similar picture of a cookie)</td>
<td>Non-specific reinforcement (“Nice matching.”)</td>
</tr>
</tbody>
</table>

What do our ABA-based classrooms look like?

- Instruction directly guided by assessment*
- Interprofessional collaboration*
- Common goals among team members*  
  *mutual focus on speech and language (verbal behavior)*

*See morning presentation
What do our ABA-based classrooms look like?

- Input from team members based on their respective strengths.
- Empirically-validated programs and teaching procedures derived from the principles of ABA

SLP in ABA Classroom:

**SELECTING FORM OF COMMUNICATION**
Selecting Form of Communication

• Challenges?
  Where to start?
  What assessments to use?
  Collaboration with team?
  Disagreements amongst team members?

Form vs. Function

• **Response form** is the general shape and physical characteristics of a behavior.

• **Response function** is the reason for the behavior (type of reinforcement).
### Form vs. Function

<table>
<thead>
<tr>
<th>Form</th>
<th>Function</th>
<th>Non-Verbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocal</td>
<td>Verbal communication! speech</td>
<td>non-social vocal noises ex: coughing</td>
</tr>
<tr>
<td>Non-Vocal</td>
<td>sign language/ gestures; writing; typing; selecting pictures</td>
<td>non-social body movements ex: crossing legs</td>
</tr>
</tbody>
</table>

### Selecting Form of Communication

Analyze and integrate two variables:

1. Learner profile
2. Characteristics of each form based on analysis and best available research
Selecting Form of Communication

Learner Profile

Form Characteristics

Form Selection

Learner Profile

What are the student’s baseline skills? *Team (teacher, SLP, OT, PT, etc.)* assesses:

- Mand, tact, intraverbal, listener skills*
- Spontaneous vocalizations*
- Imitation skills*
- Match-to-sample skills*
- **Echoic skills***
- History of Communication Skills
- Family/Team Member Input

*found in VB-MAPP and similar assessments
### Data Needed:

<table>
<thead>
<tr>
<th>Types of Assessment (circle if relevant)</th>
<th>Date:</th>
<th>Staff:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying Reinforcers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pairing Data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Preference Assessments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Reinforcer Assessments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocal Skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Vocalization Baseline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- EESA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Phonemic Inventory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Language Sample</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Imitation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Initial Eval/IEP data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Initial VB-MAPP Assessment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- IT Program Data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- OT/PT data collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual Perceptual/MTS Skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Initial Eval/IEP data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Initial VB-MAPP Assessment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- IT Program Data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- OT data collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response Effort</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Response Fluency for vocal, MI, MTS skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- OT/PT Input on physical skills/mobility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- OT input on fine motor skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of Communication Skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Initial Eval/IEP data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Initial VB-MAPP data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Input</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Notes from parent consults/meetings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Additional input to be added during IEP meeting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Modified from Devlin, Doran, Russ, Silveri-Hiller, & Willis, 2016

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## Selecting Form of Communication

- **Consider vocal first!**

- **Why?**
  - humans are evolved to speak
  - our vocal apparatus is always with us (portability)
  - largest community of speakers and listeners
### Selecting Form of Communication

<table>
<thead>
<tr>
<th>Vocal Programming</th>
<th>AAC + Vocal programming</th>
</tr>
</thead>
</table>
| • Readily attempts to echo instructor when asked  
  AND  
  • Speech generally intelligible to listeners  
  Level 2 echoics on VB-MAPP | • Does not attempt to echo instructor when asked  
  OR  
  • Speech largely unintelligible to listeners  
  Level 1 echoics on VB-MAPP |

### Form Characteristics

Jack Michael (1985) was the first person to make a clear distinction between two “categories” of verbal behavior.

- Topography-based
- Selection-based
## Topography vs. Selection-Based

<table>
<thead>
<tr>
<th>Definition</th>
<th>Some Types</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topography-Based Responding</strong></td>
<td>• Speech</td>
<td>Saying “cat” vs. “dog”</td>
</tr>
<tr>
<td></td>
<td>• Sign language</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Writing</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Selection-Based Responding</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Motor movements for each meaningful unit look and/or feel different</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Picture/symbol-based</strong> systems</td>
<td>Pointing to vs. Pointing to</td>
</tr>
<tr>
<td></td>
<td>• PECS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Core boards</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Picture-based SGDs</td>
<td></td>
</tr>
</tbody>
</table>
Topography vs. Selection-Based

**Form Characteristics**

**“The Big 5”**
- Fast: response efficiency
- Easy
  - Simple discrimination vs. complex discrimination
  - Ease of motor movement
- Cheap
- Effective
  - Listener community
  - Communicate across verbal functions
- Always accessible: across all environments

**Other Considerations**
- Facilitation of speech
- System maintenance

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*Esch, 2010 as cited in Carbone, 2016
**= Carbone, 2016

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*Forbes, 2014

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<table>
<thead>
<tr>
<th>Communication Modality</th>
<th>M Auditory (Speech)</th>
<th>T Auditory (Labeling)</th>
<th>Interoral (Answering questions)</th>
<th>Kineic (Visually Initiating)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sign Language</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Writing</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>PECS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Core Board</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picture-based Voice Output</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Forbes, 2014
Selecting Form of Communication

• Consider **vocal** (speech) first!

• If AAC is needed (weak echoic skills, unintelligible speech), consider:
  – Learner profile
  – Form characteristics
    • Topography vs. Selection-Based
    • Big 5: Fast, Easy, Cheap, Effective, Accessible
    • Facilitation of Speech
    • System Maintenance

Changing or Adding Modality

• Learner profile always changing
  – Constantly assessing modality
  – Data based decision making

• Multimodal communication (**video**)
DO NOT GIVE UP ON SPEECH!

• AAC should almost always be viewed as a temporary “fix” for a vocal communication deficit.

• If a learner has few spontaneous vocalizations, does not attempt to echo on request, and/or has poor speech intelligibility, the learner requires a **vocal training program**.
Vocal Training

• Challenges?
  Where to start?
  What assessments to use?
  How to determine an appropriate program?
  How to select targets?

Steps in Vocal Training

1. Assess
2. Analyze
3. Select Treatment
Assessment

Assessment should answer the following questions:

- Is the student talking?
  - 1-word level?
  - Combining words?
  - Intelligibility?

- Is the student making sounds?
  - How often?
  - What sounds?

- Is there echoic stimulus control?

Kinds of Speech Assessments

★ Vocalization baseline (Esch, 2014)
★ Early Echoic Skills Assessment (Esch, 2008)
★ Intelligibility assessment of tact and mands
  - Speech sample and/or phonemic inventory
  - Standardized articulation assessments, such as:
    – Goldman-Fristoe Test of Articulation 3 (Goldman & Fristoe, 2015)
    – Arizona-4 Articulation Proficiency Scale (Fudalla & Stengall, 2017)
Record all vocalizations in one or more 30-minute “free operant” (play) settings.

Take a vocalization baseline when learners:
- vocalize/babble infrequently
- have limited sounds in their repertoire
- do not yet have vocal-verbal behavior (speech)
- instructor has poor echoic stimulus control
Vocalization Baseline

What can vocalization baseline tell you?
• Are vocalizations automatically reinforcing?
  – Does the student spontaneously vocalize?

• Is the student getting a lot of practice through natural contingencies?
  – How often does the student spontaneously vocalize?

• What “raw materials” do we have to work with?
  – Is the student vocalizing a variety of sound and syllable combinations?
Early Echoic Skills Assessment (EESA)

5 groups of words
1-3 syllables
p, b, m ,n, h, w, k, g, t, f,
s, ng, vowels
word stress and intonation

Administer EESA* to:

Any student who readily approaches you and stays with you to access reinforcement.

Do not place repeated echoic demands if you are not paired with reinforcement!

*See VB-MAPP for administration instructions
Early Echoic Skills Assessment (EESA)

What can the EESA tell you?
• Is there formal echoic stimulus control?
  – Does the child consistently follow instructions to vocally imitate?

• Can the child correctly imitate early syllable structures—moving from simple to complex?
  – Only reflects articulation development up to 30 months of age!

• Can the child imitate speech prosody?

Intelligibility Assessment

Assess intelligibility of tacts and mands when:

...student readily approaches and stays with instructor
  and
...there is echoic stimulus control
  and
...student has some varied “raw material”
  (~Group 1 and at least some of Group 2 on EESA, but not above a total score of 90)
Intelligibility Assessment

- Present various tact and/or mand opportunities.
- Compile 3 different lists of items:

<table>
<thead>
<tr>
<th>Known Items</th>
<th>Future Targets (mand/tact)</th>
<th>Echoic Shaping Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response is correct and intelligible</td>
<td>Response is incorrect or unintelligible, but correct and</td>
<td>Response remains unintelligible, even with an echoic prompt.</td>
</tr>
<tr>
<td></td>
<td>and intelligible given echoic prompt.</td>
<td></td>
</tr>
</tbody>
</table>

Intelligibility Assessment Activity

(3 year old student)
Intelligibility Assessment

What can an intelligibility assessment tell you?

• How intelligible is the learner to familiar and unfamiliar listeners?
  – Percent intelligibility

• What types of errors is the learner making in functional communication?

• What are some functional speech targets?

What assessments would you consider?

Video
Assessment Analysis

Into which profile does the learner fit best?

Profile 1
- vocalizations infrequent
- limited repertoire/reduced variability in vocals
- no echoic behavior

Profile 2
- echoic stimulus control
- limited sound repertoire (e.g., limited vowels) and sound combinations

Profile 3
- echoic stimulus control
- variety of sounds and sound combinations
- poor intelligibility

Profile 4
- echoic stimulus control
- generally intelligible
- age-inappropriate articulation errors

*Modified from Esch, 2015
Vocal Training

Profile 1

- Vocalizations infrequent
- Limited repertoire/reduced variability in vocals
- No echoic behavior

Program goals:
- Increase frequency of spontaneous vocalizations
- Increase variability in vocalizations
- Establish echoic stimulus control

Vocal Training

<table>
<thead>
<tr>
<th>Treatment Options</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reinforce all vocalizations</td>
<td>Increase frequency of spontaneous vocalizations</td>
</tr>
<tr>
<td>• Differentially reinforce all vocalizations during manding</td>
<td></td>
</tr>
<tr>
<td>• Stimulus-stimulus pairing (SSP)*</td>
<td></td>
</tr>
<tr>
<td>• Vocal variability training (VV)*</td>
<td>Increase variability in vocalizations</td>
</tr>
<tr>
<td>• Rapid motor imitation antecedent (RMIA)*</td>
<td>Establish echoic stimulus control</td>
</tr>
</tbody>
</table>

*Modified from Esch, 2015
Vocal Training

Profile 2

• echoic stimulus control
• limited sound repertoire (e.g., limited vowels) and sound combinations

Program goals:
• Strengthen echoic responding
• Increase speech sound repertoire and sound combinations

Vocal Training

Profile 2

• echoic stimulus control
• limited sound repertoire (e.g., limited vowels) and sound combinations

<table>
<thead>
<tr>
<th>Treatment Options</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| • Differentially reinforce better vocalizations during manding  
• RMIA*  
• Echoic program for simple sounds and sound combinations* | • Strengthen echoic responding  
• Increase repertoire of sounds and sound combinations |

*Modified from Esch, 2015
Profile 2 Vocal Training Video

Video

Vocal Training

Profile 3

- echoic stimulus control
- variety of sounds and sound combinations
- poor intelligibility

Program goal:
- Increase intelligibility of functional communication
Vocal Training

Profile 3
- echoic stimulus control
- variety of sounds and sound combinations
- poor intelligibility

<table>
<thead>
<tr>
<th>Treatment Options</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Differentially reinforce better vocalizations during manding and tacting</td>
<td></td>
</tr>
<tr>
<td>• Echoic program for shaping tacts and mands*</td>
<td>Increase intelligibility of functional communication</td>
</tr>
</tbody>
</table>

*Modified from Esch, 2015

Vocal Training

Profile 4
- echoic stimulus control
- generally intelligible
- age-inappropriate articulation errors

Program goal:
- Developmentally-appropriate speech
**Vocal Training**

**Profile 4**

- echoic stimulus control
- generally intelligible
- age-inappropriate articulation errors

<table>
<thead>
<tr>
<th>Treatment Options</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| • Differentially reinforce better vocalizations during manding and tacting  
• Echoic program for shaping speech sounds*  | Developmentally-appropriate speech             |

*Modified from Esch, 2015

**Profile 4 Note:**

“Typically developing children have several hundred spoken words across all verbal functions before they are expected to begin fine-tuning their speech (around age 3), and they have several thousand spoken words before they are expected to acquire adult articulation (around age 8-9). Often, it will be more beneficial for the teacher to shape speech to an intelligible level, rather than an age-appropriate level, if it means that the student will be able to acquire spoken communication faster.”

(PaTTAN, n.d.)
Vocal Training Considerations

• Teaching Procedures
  – Treatment Integrity
• Target Selection
• Frequency of Practice

Vocal Training Consideration: Frequency of Practice

• Esch (2015) explains that in order to resemble typical acquisition practice, arrange opportunities for speech practice as follows:
  – Many opportunities (100+)
  – Brief sessions (2-3 minutes)
  – Throughout the day

• “We teachers and parents have to decide: Where is speech acquisition in the ranking of skill and instructional priorities?” (Esch, 2015)
SLP in ABA Classroom:  
“SPEECH GROUP”

“Speech Group”

- Why is it important to deliver speech & language therapy in a group?

- What does speech group look like?

- What are your barriers to providing effective intervention in a group?
“Speech Group”

• Challenges
  – Slow progress
  – Lots of problem behavior
  – Poor generalization outside of therapy

• Solutions
  – Use principles of ABA
  – Choose specific, appropriate targets
Speech Group: Theme/Activities

• Choose age-appropriate, relevant topics at the appropriate instructional level

• Theme may be repeated daily or weekly for multiple opportunities to practice the skills in the natural environment across settings, instructors, and exemplars

Speech Group: Theme/Activities

• Use your knowledge of student motivation to help with theme & activity selection
    – Songs
    – Books
    – Cooking
    – Gross motor
    – Fine motor
    – Sensory
    – Play
Speech Group: Reinforcement

• Reinforcement is anything that is provided or removed after a behavior that increases the probability of that behavior occurring again under similar circumstances

• A variable ratio (VR) schedule of reinforcement requires the completion of a variable number of responses to produce a reinforcer

Speech Group: Reinforcement

• Individualize: 3 Vs
  – VR
  – VERMI
  – Variety

• Reinforce target skills and appropriate “group” behaviors
• Systematically fade reinforcement
Speech Group: Selecting Targets

• Clear instructional targets for each student
• Guided by assessment
• Functional
  – Transfer to general education setting, home/community daily life
  – Teach across verbal & related operants
Emerging communicators--focus here!

Speech Group: Student-Specific Goals

- **Novel Targets**
  - Acquiring new behaviors not previously taught in 1:1 conditions

- **Generalization Targets**
  - Generalization of skills previously taught in 1:1 conditions
Speech Group: General Goals

- High rates of responding/engagement

- Social behavior
  - Waiting/Turn-taking
  - Attending
  - Peer interaction

VB-MAPP Levels 2 & 3 = 18-48 months
### Speech Group: Progress Monitoring

- Cold probe (Yes/No) data collection sheet
  - At least 2 targets per student
- Frequency recording data collection sheets
- Skills tracking sheets
- Graphs

| Student: 1
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Target (operand)</td>
</tr>
<tr>
<td>Leaf (T)</td>
</tr>
<tr>
<td>Raking (T)</td>
</tr>
<tr>
<td>How old are you? (IV)*</td>
</tr>
</tbody>
</table>

| Student: 2
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Target (operand)</td>
</tr>
<tr>
<td>Drop leaf (MI)</td>
</tr>
<tr>
<td>Rake (M)</td>
</tr>
<tr>
<td>Give (LR)*</td>
</tr>
</tbody>
</table>
Video
**Skills Tracking Sheet**

**Target:** Novel Skills Acquired in Group

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Date Introduced</th>
<th>Current off</th>
<th>Date</th>
<th>Rote/Lead/Mastered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Snail (+)</td>
<td>5/16/17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Indicates a bird as (+)</td>
<td>X</td>
<td>PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Root (+)</td>
<td>5/15/17</td>
<td></td>
<td>5/26/17</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Stem (+)</td>
<td>5/15/17</td>
<td></td>
<td>5/26/17</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Traces (+)</td>
<td>5/15/17</td>
<td></td>
<td>5/26/17</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Bare (+)</td>
<td>5/30/17</td>
<td></td>
<td>6/7/17</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Dinosaur (+)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Graph for May 2017**

Date: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Weekend
### Responses per Minute Recording Sheet: record for one minute

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R+</td>
<td>Correct response</td>
</tr>
<tr>
<td>R-</td>
<td>Incorrect response</td>
</tr>
<tr>
<td>ONR</td>
<td>Opportunity with no response</td>
</tr>
</tbody>
</table>

**Circle per Occurrence**

<table>
<thead>
<tr>
<th>R+</th>
<th>R-</th>
<th>ONR</th>
</tr>
</thead>
<tbody>
<tr>
<td>R+</td>
<td>R-</td>
<td>ONR</td>
</tr>
<tr>
<td>R+</td>
<td>R-</td>
<td>ONR</td>
</tr>
<tr>
<td>R+</td>
<td>R-</td>
<td>ONR</td>
</tr>
<tr>
<td>R+</td>
<td>R-</td>
<td>ONR</td>
</tr>
<tr>
<td>R+</td>
<td>R-</td>
<td>ONR</td>
</tr>
<tr>
<td>R+</td>
<td>R-</td>
<td>ONR</td>
</tr>
<tr>
<td>R+</td>
<td>R-</td>
<td>ONR</td>
</tr>
<tr>
<td>R+</td>
<td>R-</td>
<td>ONR</td>
</tr>
</tbody>
</table>

**Totals:**

| R+   | R-   | ONR  |

---

### Following Group and Direct Instructions

**Child:**

<table>
<thead>
<tr>
<th>Date/Initials</th>
<th>Group Instruction</th>
<th>Prompts:</th>
<th>Direct Instruction</th>
<th>Prompts:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>I G V P</td>
<td>I G V P</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>I G V P</td>
<td>I G V P</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>I G V P</td>
<td>I G V P</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>I G V P</td>
<td>I G V P</td>
<td></td>
</tr>
</tbody>
</table>

---

*Pattan, n.d.*
• For targets, use errorless teaching and error correction procedures
  – When presenting a target skill, use the errorless teaching procedure (Prompt-Transfer-Distract-Check)
  – If student errors, run the error correction procedure (End-Prompt-Transfer-Distract-Check)
• For knowns, use 2s time delay & error correct as needed

Videos
Speech Group: Mastery Criterion

- **Novel Targets**
  - 3 consecutive “yes” cold probes
    - Adjust as needed for individual students/skills
    - If student probe masters a skill, choose a different target and do NOT plot on your graph

- **Generalization Targets**
  - Probe Mastered (PM) if “yes” on first cold probe
  - 3 consecutive “yes” cold probes if “no” on first cold probe

---

**GROUP SPEECH DATA: Beach/Ocean 2017**
Criteria for mastery: 3 consecutive “yes” probes
*indicates generalization probe from individual therapy

### Student: Drew

<table>
<thead>
<tr>
<th>Target (operant)</th>
<th>Prev.</th>
<th>7/11/17</th>
<th>7/13/17</th>
<th>7/18/17</th>
<th>7/20/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>swimming (fact action)</td>
<td>0</td>
<td>Y N</td>
<td>Y N</td>
<td>Y N</td>
<td>Y N</td>
</tr>
<tr>
<td>digging (fact action)</td>
<td>0</td>
<td>Y N</td>
<td>Y N</td>
<td>Y N</td>
<td>Y N</td>
</tr>
<tr>
<td>um-bweh wah (Echoloc)</td>
<td>2</td>
<td>Y N</td>
<td>Y N</td>
<td>Y N</td>
<td>Y N</td>
</tr>
</tbody>
</table>

### Student: Zach

<table>
<thead>
<tr>
<th>Target (operant)</th>
<th>Prev.</th>
<th>7/11/17</th>
<th>7/13/17</th>
<th>7/18/17</th>
<th>7/20/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>touch-computer button (LR)</td>
<td>0</td>
<td>Y N</td>
<td>Y N</td>
<td>Y N</td>
<td>Y N</td>
</tr>
<tr>
<td>*touch-shovel (LR)</td>
<td>0</td>
<td>Y N</td>
<td>Y N</td>
<td>Y N</td>
<td>Y N</td>
</tr>
<tr>
<td>fish (Mand)</td>
<td>0</td>
<td>Y N</td>
<td>Y N</td>
<td>Y N</td>
<td>Y N</td>
</tr>
</tbody>
</table>
Speech Group: Data Based Decision Making

- Review data on a regular basis to determine need for instructional change
- If a student is demonstrating difficulty with mastery:
  - Adjust prompts or reinforcement
  - Increase frequency of instruction
  - Provide more practice in discrete trial instruction across multiple exemplars
  - Re-examine assessment/target selection
Speech Group: Other Keys to Success

- Clear expectations (rules and routines)
- Organized materials & reinforcers
- Group size/composition/duration/location
- Fade-in demands and end with success
- Fast-paced instruction
- Allocate sufficient time for teaching targets
- Make participation easy (80/20 ratio)
- Fidelity checks
- Managing support staff
- Family engagement

Videos
### GROUP INSTRUCTION

**Procedural Fidelity Checklist**

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are students sitting quietly and appropriately with eyes directed toward the group leader?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Are students seated and focused.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Are students speaking up and participating?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Are students physically engaged and visibly engaged in the activity?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Are students进步ing quietly and appropriately with their eyes directed toward the group leader?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Is the group leader always present and visible?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Are students engaged and participating in the activity?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Is the group leader always present and visible?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Are students seated and focused.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Are students physically engaged and visibly engaged in the activity?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

Pattan, n.d.

---

### NATURAL ENVIRONMENT TEACHING

**Procedural Fidelity Checklist**

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is the instructional area neat and tidy?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Are all materials organized and ready?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Does the instructor greet students?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Does the instructor follow the lesson plan?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Are the students engaged and participating?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Does the instructor use appropriate tone of voice?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Does the instructor use appropriate volume?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Does the instructor use appropriate volume and tone?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Does the instructor use appropriate tone and volume?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Are the lesson activities sequenced?</td>
<td></td>
<td></td>
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<tr>
<td>11. Are the lesson activities sequenced?</td>
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<tr>
<td>12. Are the lesson activities sequenced?</td>
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<tr>
<td>13. Are the lesson activities sequenced?</td>
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<tr>
<td>14. Are the lesson activities sequenced?</td>
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<tr>
<td>15. Are the lesson activities sequenced?</td>
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<tr>
<td>16. Are the lesson activities sequenced?</td>
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<tr>
<td>17. Are the lesson activities sequenced?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Are the lesson activities sequenced?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Are the lesson activities sequenced?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Are the lesson activities sequenced?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

Pattan, n.d.
### Group Speech Notes

**Receptive Language**
- Picture Identification
- Action Identification
- Naming
- Pointing
- Following Directions
- Use of Visual Schedule

**Expressive Language**
- Handling/Requesting
- Labeling/Describing
- Incomplete Sentences
- Incomplete Sentence Length
- Asking Questions

**Pragmatic Language**
- Taking Turns
- Sharing
- Active Listening

### Our Theme This Week:

- Books we Need:
- Songs we Sang:
- Activities we Completed:
- Special Snack:

### Other Notes:
During speech we followed the theme Apples while with the following activities:
- Read book: "Ten Red Apples" by Pat Hutchins
  - Labeled vocabulary in the book: farmer, apple, farm animals (e.g., horse, cow, pig, sheep)
  - Answered yes/no questions (e.g., who lives on the farm? What is on the tree?)
  - Took turns following directions to "feed the animals" an apple
- Sang "Way Up High in the Apple Tree"
  - Practiced counting (1-6)
  - Followed directions to act out the song (shaking)

Ideas for at-home practice:
- Sing "Way Up High in the Apple Tree" together. Find it online on YouTube.
- There are many apple and fall related activities that you can do with your child. For example, you can go to an apple orchard to pick apples, bake an apple pie, visit a pumpkin patch or go on a hay ride. Try to embed as much language as possible into these activities. To work on expanding vocabulary, label and talk about the things that you see. Describe what you are doing and what is happening around you (e.g., picking apples, cutting apples, rolling dough). Follow simple directions (e.g., put apple in bucket) or more complex directions (e.g., first wash the apple, then put it on the table).

<table>
<thead>
<tr>
<th>INDIVIDUAL SPEECH NOTES</th>
<th>GROUP SPEECH NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Receptive Language</strong></td>
<td><strong>Expressive Language</strong></td>
</tr>
<tr>
<td>□ Picture ID</td>
<td>□ Requesting/modeling</td>
</tr>
<tr>
<td>□ Action ID</td>
<td>□ Fill-ins</td>
</tr>
<tr>
<td>□ Vocabulary (e.g., apple, farm, question, body parts, etc.)</td>
<td>□ Answering questions</td>
</tr>
<tr>
<td>□ Follow directions</td>
<td>□ Asking questions</td>
</tr>
<tr>
<td>□ Identifying motor movements</td>
<td>□ Increase sentence length</td>
</tr>
<tr>
<td>□ Labeling</td>
<td>□ Labelling</td>
</tr>
<tr>
<td>□ Picture Identification</td>
<td>□ Nonverbal/imitating</td>
</tr>
<tr>
<td>□ Vocabulary (e.g., apple, farm, question, body parts, etc.)</td>
<td>□ Increase sentence length</td>
</tr>
<tr>
<td>□ Action Identification</td>
<td>□ Asking questions</td>
</tr>
<tr>
<td>□ Following directions</td>
<td>□ Asking questions</td>
</tr>
<tr>
<td>□ Identifying motor movements</td>
<td>□ Following directions</td>
</tr>
<tr>
<td>□ Labelling</td>
<td>□ Labelling</td>
</tr>
<tr>
<td><strong>Articulation</strong></td>
<td><strong>Pragmatic Language</strong></td>
</tr>
<tr>
<td>□ Speech</td>
<td>□ Turn talking</td>
</tr>
<tr>
<td>□ Syllables</td>
<td>□ Sharing</td>
</tr>
<tr>
<td>□ Words</td>
<td>□ Active listening</td>
</tr>
<tr>
<td>□ Phrases</td>
<td>□ Breathing</td>
</tr>
<tr>
<td>□ Sentences</td>
<td></td>
</tr>
<tr>
<td>□ Conversation</td>
<td></td>
</tr>
<tr>
<td><strong>Other Notes</strong></td>
<td><strong>Other Notes</strong></td>
</tr>
</tbody>
</table>
Speech Group: Activity

- Theme/Activities:
  - Activities
  - Materials
- Reinforcers:
  - Classification
  - Schedule
- Goals:
  - Targets
  - Data collection
- Other Keys to Success:
  - Group size/duration
  - Staff/Student expectations
SLP in ABA Classrooms: Conclusion

- Empirically-validated treatments and teaching procedures
- Measurable outcomes
- Faster progress
- Consistency with AAC
- Carryover of skills outside of “therapy”
- Less problem behavior

Special Thanks…

- Special thanks to Heather Forbes, Jenn Russ, Allison Walton, Stacie Musilli, Brielle Guidone, Meredith Shah, Monica Zangrilli, Jessica Corbett and their students for sharing their knowledge and materials and starring in our videos!
Contact Information

- Liz Willis
  elizabethwi@cciu.org
- Courtney Devlin
  courtneyd@cciu.org
- Heather Forbes
  c-hforbes@pattan.net
- Debi Namey
  dnamey@pattan.net
- Jaime Baker
  c-jbaker@pattan.net
- Sheri Saurer
  ssaurer@pattan.net
- Amy Foor
  c-afoor@pattan.net

Commonwealth of Pennsylvania
Tom Wolf, Governor

References


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courteynd@cciu.org
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- Sheri Saurer
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- Amy Foor
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