From Discrete Trial to Real Life Applications

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National Autism Conference

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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.
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.
Objectives

- Participants will be able to identify:
  - Methods as described in the literature for promoting the generalization of skills in the classroom
  - Considerations for programming, target selection, lesson plan development, and goal setting to support students in generalizing skills from discrete trial instruction to real life applications
  - Barriers to implementation when moving from discrete trial instruction to real life applications
Today’s Agenda

- Myths and Dimensions of ABA
- History of DTT and Generalization
- Technical Analysis of Atomic Repertoires
- Real Life Applications of Adaptive Behavior
- Integrated System of Instruction
- Staff and Parent Training
- Classroom Examples
- Barriers to Implementation
- Ethical and Cultural Considerations
- Getting Started
Word Cloud Activity

What word comes to mind when you hear: GENERALIZATION

Respond at PollEv.com/nac129

Text NAC129 to 22333 once to join, then text your message
Myth #1 ABA is Only for Children with Autism

Applied behavior analysis (ABA) is a science. It is often referred to as an intervention for children with autism. Actually, teaching approaches based on ABA are effective for everyone.

- Organizational behavior management
- Gerontology
- Health/fitness
- Animal behavior
- Gambling
- Environment/sustainability

Implications of an Advice-Giving and Teacher Role on Language Production in Adults With Dementia

Katinka Diikstra, PhD,1 Michelle Bourgeois, PhD,2 Gina Vousman, PhD,2 and Adrienne Hancock, PhD2

Purpose: The purpose of the two studies described in this paper was to assess whether adults with dementia could assume an advising role (Study 1) and a teacher role (Study 2) despite their cognitive impairments. So far, no research on adults with dementia has compared language production in a social conversation condition with that in an advising/teaching condition.

dementia successfully taught students to prepare the recipes. However, the experimenter needed to prompt the adults with dementia more often than they did the older adults without dementia in order to get them to finish the cooking task. Implications: Both studies demonstrate that preserved discourse and role-related abilities in adults with dementia may allow

(Ward, 2015)
Myth #2 DTT is Only for Young Children

1:1 instruction or “DTT” often includes discrete trials. Discrete trials are just one of many types of procedures for arranging behavioral contingencies. They have a long history in applied behavior analysis, experimental psychology and the experimental analysis of behavior.

(Hetzler, 2016)
Myth #3 ABA (DTT) is Done at a Table

Applied Behavior Analysis is not restricted to one environmental area. On the contrary, Applied Behavior Analysis is inherently concerned with individuals’ ability to generalize information; which is often accomplished by varying the location and manner in which skills are taught.

(Ward, 2015)
Myth #4 ABA Techniques are Too Simplistic

ABA is not only for basic, simple responding. ABA can accommodate enriched and complex responding that’s structure becomes looser as learners progress.

(DiFalco, 2016)
Myth #5 ABA Only Use Edibles as Reinforcers

Primary reinforcers - unlearned
Conditioned reinforcers - learned, by being paired with a primary reinforcer
Social reinforcers - involve other people

(Kelly, 2008)
7 Dimensions of ABA

**Generality** - skills/behavior occur in environments other than where they were discretely taught.

**Effective** - interventions are monitored to evaluate the impact on the target behavior.

**Technological** - procedures are described clearly and concisely so that other may implement accurately.

**Applied** - socially significant behaviors are selected.

**Conceptually Systematic** - interventions consistent with principles demonstrated in the literature.

**Analytic** - decisions are data based.

**Behavioral** - observable and measurable behaviors are targeted.

(Baer, Wolf, & Risley, 1968; Cooper, Heron, & Heward, 2007)
Skinner’s Vision

Vilardaga (2009) suggests that ABA is in “many ways more influential, but it’s scope and vision have narrowed.”
A History of Discrete Trial ... 

Discrete = small unit of instruction; a method for “individualizing and simplifying instruction.”

- Precise format
- Clarifies teaching situation
- Has a beginning and an end

(Smith, 2001)
DTT: Benefits and Limitations

Benefits:
- Use of prompts in the antecedent condition
- Increased desired behavior
- Strengthen incompatible behavior
- Arranging a reinforcing enriched environment
- Stimulus Control of learner repertoires
- High number of training trials
- Progressive steps in curriculum

Limitations:
- Mainly teacher initiated
- May generate rote responding
- Requires procedures to ensure generalization
- Lack of powerful and immediate reinforcers readily available
- All operants are not easily contrived (Mand, IV)
- Non-naturalistic setting

(Sundberg & Partington, 1999; Smith, 2001; Dib & Sturmey, 2007)
A History of Generalization ...


- Concept Formation (Keller & Schoenfeld)
- Science and Human Behavior (Skinner)
- Some Current Dimensions of Applied Behavior Analysis (Baer, Wolf & Risley)
- Stimulus Equivalence (Murray Sidman)
- An Implicit Technology of Generalization (Stokes & Baer)

(Cooper, Heron, & Heward, 2007)
Train and Hope

- It is usually “hoped” that some generalization may occur, which will be welcomed yet not explicitly programmed (p. 351).
- Almost 50% of applied literature in 1977 uses this intervention for generalization probes.
Sequential Modification

Once generalization probes occur AND if generalization is found to be absent or deficient, procedures are then initiated systematically in every non-generalized condition.

• An extension of train and hope
• But a systematic one
• Focus on the consequence condition

(Stokes & Baer, 1977)
Choosing those behaviors to generalize that will contact reinforcement that is naturally maintained elsewhere.

(Stokes & Baer, 1977)
Behavior Traps

- Identify your prey
- Find powerful bait
- Set the trap
- Maintain your trap
- Appraise your catch

(Stokes & Baer, 1977; Alber & Heward, 1996)
Train Sufficient Exemplars

- One exemplar, then another, then another
- Stimulus generalization
- Response generalization

Example:
- Teach sufficient examples of antecedent stimuli
- Practice a wide variety of responses

(Stokes & Baer, 1977; Bord, Sidener, Reeve, & Sidener, 2017)
Train Loosely

Vary noncritical aspects of the instruction setting during and across teaching sessions

Example:

- Change position
- Change tone of voice
- Change facial expression
- Dress differently
- Vary lighting, temperature, noise

(Stokes & Baer, 1977)
Use Indiscriminable Contingencies

The learner cannot discriminate whether the next response will produce reinforcement (p. 636).

Example:

- Intermittent schedules of reinforcement
- Delayed rewards – no clear stimuli in the environment
- Intermittent Grading – randomly selected 25% papers to grade – bonus point to class contingent on graded papers

(Stokes & Baer, 1977; Cooper et al., 2007)
Program Common Stimuli

Including typical features of the generalization setting into the instructional setting (p. 632).

• Identify & incorporate “mock” social setting i.e. audition, race, apartment
• Observe or use critical people (socially validate)
• Use natural environment assessments or contingencies

(Stokes & Baer, 1977; Williams & Cuvo, 1986; Cooper et al., 2007)
Mediate Generalization

Examples include:

• Following multiple step directions

• Self-management skills

(Stokes & Baer, 1977)
Train to Generalize

Treat “to generalize” as a behavior itself. Placing some sort of contingency on “generalize” itself.

Example:
- Problem solve a social problem
- Block design (Stokes & Baer, p. 362)
- Multiple ways to solve a math problem

(Stokes & Baer, 1977)
Technology of Generalization

Train to Generalize
  - Train Loosely
  - Program Common Stimuli
  - Behavior Traps

Sequential Modification
  - Naturally Maintaining Contingencies
  - Train Sufficient Exemplars

Mediate Generalization
  - Use Indiscriminable Contingencies

(Stokes & Baer, 1977)
Atomic Repertoires and Autism

- Common Issues:
  - Failure to use skills taught in novel ways or under novel circumstances
  - Failure to transfer responses to novel exemplars
  - Responding to a very limited number of cues in the environment

Slide Used with Permission (Dipuglia, 2016)
“Elementary units of behavior”

“...a set of fine-grained units of behavior, each under control of a distinctive stimulus, that can be evoked in any permutation by the arrangement of corresponding stimuli” (p. 61)
Technical Analysis: Complex Behavior

• Complex behaviors:
  – Are rarely shaped bit by bit
  – Arise from other behaviors that have been shaped

(Palmer, 2012)
Examples of Atomic Repertoires

- Imitation
- Echoic
- Transcriptive Behavior
- Tact
- Textual Behavior

(Palmer, 2012)
Importance of Atomic Repertoires

• Valuable and efficient
  – Atomic repertoires can be brought together to teach complex skills
  – Result in more generalized and generative responding
  – Maintained by natural contingencies

(Palmer, 2012)
Adaptive Behavior

- **Personal independence**
  - Age
  - Cultural expectations
  - Social group
  - Environment

"...Quite simply, everything we do that is not purely academic in nature" (Gerhardt, Zawacki, & Satriale, p. 159)

(Heward, 2005)
Complex Behavior: Independent Living

Visual Perception
- Eye Contact
- Scanning

Textual Behavior
- Street Signs

Math
- Counting Backwards

Tact
- Traffic Signs
- Crosswalk
- Driver Cues/Hand Signs
- Actions
- Sounds

Listener Responding
- Traffic Signs
- Crosswalk
- Driver Cues/Hand Signs
- Push Button

Crossing the Street
Complex Behavior: Personal Care

Styling Hair

- Imitation (Novel Repertoire)
- Mand (Items, Missing Items)
- Visual Perception (Matching (Style))
- Tact (Items (Style, Materials), Actions, Adjectives)
- Listener Responding (Items (Style, Materials), Actions)
Complex Behavior: Schools Skills

- **Mand**
  - Items
  - Missing Items
  - Yes/No

- **Imitation**
  - Novel Repertoire

- **Textual Behavior**
  - Menu

- **Visual Perception**
  - Eye Contact
  - Scanning

- **Tact**
  - Items
  - Actions
  - Absence of Items

- **Listener Responding**
  - Items
  - Actions

**Purchase Food from Lunch Line**
Complex Behavior: Job Skills

- Joint Control
- Echoic
  - Words
  - Phrases
  - Self Echoic Rehearsal
- Visual Perception
  - Scanning
- Textual Behavior
  - List
  - Labels on Items
- Listener Responding
  - Items
  - Aisle Signs
- Tact
  - Items
  - Absence of Items
  - Aisle Signs
- Math
  - Early Numeracy
  - 1:1 Correspondence
  - Counting Objects from a Larger Set

Filling A Purchase Order
Complex Behavior: Leisure Skills

Textual Behavior
- Letters & Their Sounds

Visual Perception
- Scanning

Tact
- Items
- Actions
- Prepositions
- Pronouns
- Adjectives

Intraverbal
- Rotating Questions
- Delayed Responding
- Webbing

Share Comments or Answer Questions about a Movie/Book
Parent Interviews: Quality of Life

• What skills are relevant to promote the quality of a meaningful life, including those that are most important for your child’s future?
### Parent Interviews: Summary

<table>
<thead>
<tr>
<th>Elementary Student, age 8</th>
<th>Sophomore Student, age 16</th>
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<tbody>
<tr>
<td><strong>Meaningful Life</strong></td>
<td><strong>Meaningful Life</strong></td>
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<tr>
<td>– Flexibility/ transitions</td>
<td>– Independent life skills</td>
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<td>– Vocabulary</td>
<td>– Communication/social skills</td>
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<tr>
<td>– Toileting/community outings</td>
<td>– Cooking/safety skills</td>
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<td><strong>Anticipated Changes</strong></td>
<td><strong>Anticipated Changes</strong></td>
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<td>– Flexibility/job skills</td>
<td>– Greater independence</td>
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<tr>
<td>– Have a real friend</td>
<td>– Community member</td>
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<tr>
<td><strong>Post Graduation</strong></td>
<td><strong>Post Graduation</strong></td>
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<td>– Follow directions</td>
<td>– Initiate communication</td>
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<tr>
<td>– Read</td>
<td>– Have job/follow job rules</td>
</tr>
<tr>
<td>– Independence</td>
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<td><strong>Parent Training</strong></td>
<td><strong>Parent Training</strong></td>
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<td>– Person to person</td>
<td>– Face to face</td>
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<tr>
<td>– Specific topics</td>
<td>– Collaborative brainstorming</td>
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<td>– Video skills</td>
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An Integrated System of Instruction

- Assessment
- Program/Target Selection
- Teaching Procedures
- Organization
- Data Systems
- Staff Training/Treatment Fidelity

Slide Used with Permission (Dipuglia, 2016)
An Integrated System of Instruction

- Assessment
- Program/Target Selection
- Teaching Procedures
- Organization
- Data Systems
- Staff Training/Treatment Fidelity
Methods of Assessment

Indirect

- Interview
- Checklist
- Survey
- Rating scale

Direct

- Tests
- Direct observation
- Standardized exams
- Portfolio

(Cooper et al., 2007)
Assessment Examples
Considerations for Assessment

• Assessments should:
  – Be efficient
  – Yield the necessary information to determine what skills need to be taught

(Teach For America, 2011)
Considerations for Assessment

- Criteria are intended for assessment purposes and do not imply mastery of the skill sets
- Check for generalization of skills
- Check for prerequisite skills needed to teach complex behaviors

(Killion, 2003; Partington & Mueller, 2012)
**Assessment Criteria Example**

Listener Response 11:
Performs 5 activities of dressing or personal hygiene when directed to do so

### Should-have Listener Responses

<table>
<thead>
<tr>
<th>NA</th>
<th>LR12. Completes five activities of dressing or personal hygiene when directed to do so</th>
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<td>IA  IM -SA -DC  -RP  FP  PP  MP  Ind  2S  2P  Det</td>
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<tr>
<td>5</td>
<td>IA  IM -SA -DC  -RP  FP  PP  MP  Ind  2S  2P  Det</td>
</tr>
</tbody>
</table>

(McGreevy, Fry, & Cornwall, 2014)
Assessment Criteria Example

Tact Milestone 8: Tacts (Labels) 10 actions when asked, for example, “What am I doing?”

(Sundberg, 2008)
Listener Response 16:
Performs 5 household chores or chores at work when directed to do so

(McGreevy et al., 2014)
Generalization of Skills Example

**Skill #1 Listening:**
Teacher, parent, & student rate use of skill across various situations

(McGinnis, 2012)
Imitation Milestone 10: Imitates any novel motor action modeled by an adult with and without objects

(Sundberg, 2008)
Generalization of Skills Example

**Mand Milestone 3:**
Generalizes 6 mands across 2 people, 2 settings, and 2 different examples of a reinforcer

(Sundberg, 2008)
Generalization of Skills Example

Demonstrates Transfer Between the Verbal Operants Without Training:

Example: Tact → Mand

(Sundberg, 2008)
Pre-Requisite Skills Example

Adaptive Behavior Skills 64: Regulate water temperature

Vocational Skills 63: Clean food preparation items

Adaptive Behavior Skills 73: Wash and rinse own hair

(Killion, 2003)
Pre-Requisite Skills Example

Impaired Scanning Skills: Match-to-sample, listener discriminations, and listener responding by feature, function, class require scanning skills

(Sundberg, 2008)
Pre-Requisite Skills Example

Shopping 40:
Locates or identifies store departments or service locations

(Partington & Mueller, 2012)
Pre-Requisite Skills Example

Applied Academics 4:
Reads and follows simple instructions to do actions

(Adapted from Partington & Mueller, 2012)
Assessment

**Generalized imitation repertoire**
- Labels items with sign
- Selects items from field with similar stimuli
- Follows multi step directions

**VB-MAPP Master Scoring Form**

<table>
<thead>
<tr>
<th>Key</th>
<th>Score</th>
<th>Date</th>
<th>Color</th>
<th>Tester</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st test</td>
<td>45.5</td>
<td>9/1/16</td>
<td>Sk</td>
<td></td>
</tr>
<tr>
<td>2nd test</td>
<td>75</td>
<td>2/17/17</td>
<td>Sk</td>
<td></td>
</tr>
<tr>
<td>3rd test</td>
<td>52.5</td>
<td>2/20/18</td>
<td>Sk</td>
<td></td>
</tr>
<tr>
<td>4th test</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Child's name:** KS
**Date of birth:** 1-3-2000
**Age at testing:** 1 2 3 4
An Integrated System of Instruction

- Staff Training/Treatment Fidelity
- Assessment
- Program/Target Selection
- Teaching Procedures
- Organization
- Data Systems
Programming

- Teach basic repertoires
- Unite atomic repertoires to teach complex skills
- Sequence of instruction
  - Unite intermediate steps with the end goal

(Lagomarcino, Reid, Ivancic, & Faw, 1984; Dipuglia, 2016)
Teaching Concepts

• Teach concepts
  – Multiple exemplars (full range)
  – Teach critical features
  – Generalized to novel examples

• Teach recombination and novel responding

• Teach students to respond to all relevant stimuli

• Directly teach complex skills
  – E.G. Joint control


Slide Adapted with Permission (Dipuglia, 2016)
Target Selection

• Select targets/ programs that are:
  – Socially significant
  – Relevant
  – Valuable to the student
  – Common in day-to-day life
  – Tied to the general education curriculum
  – Promote and facilitate social initiations/ interactions
  – Promote independence
  – Prerequisite skills

http://www.pattan.net/category/Educational%20Initiatives/Autism/blog/
What_should_I_teach_An_Introduction_to_Target_Selection.html

(Dunn-Naccarelli, 2016)
IEP Goals and Objectives

• Align goals with the ultimate target behavior
  – Does the behavior change have generality?

• Examples:
  – Across at least X novel exemplars
  – Across at least X novel situations
  – Across at least X instructors and environments

(Baer et al., 1968; BACB, 2017)
Target Selection

Filling Orders at Dunkin Donuts

- Tact with Sign
- LR Selection with Joint Control
- CRA Math
Teacher Interview
An Integrated System of Instruction

- Staff Training/Treatment Fidelity
- Program/Target Selection
- Data Systems
- Organization
- Teaching Procedures

Assessment
Technology of Generalization

(Stokes & Baer, 1977)
LR Selection with Joint Control

Teaching Procedures:

1. Teach Tacts i.e. “sprinkles, cinnabons”

2. Probe LR Selection with new items i.e. “give me sprinkles, chocolate, and cinnabons.”

3. If student is able to do all of the LR Selection above, consider working on the skill of selecting multiple within item (without giving numbers) i.e.: “give me sprinkles, sprinkles, chocolate, and chocolate.”

4. Eventually, teach the concept of # + item “give me 2 sprinkles and 2 cinnabons.”

Actual set of instructions for staff for this particular learner. May differ on learner.

(Lowenkron, 1991)
CRA Math

- Concrete | Representational | Abstract
  - Concrete: counting while manipulating items (tact items)
  - Representational: counting while drawing pictures (tact pictures)
  - Abstract: counting while working with symbols only (intraverbals)
- Thousands of basic tacts—across exemplars—builds the groundwork for math-like reasoning
- Subitize = tact quantity WITHOUT counting

(Campbell & Hozella, 2015)
CRA Math

Teaching Procedures:
TARGET SKILLS 29-33: Tact Various Atypical Dice Pattern (on card)
Show each card individually
STAFF: “How many?” (Show for about 1-second and then cover/remove)
STUDENT: "(Tacts how many)"

TARGET SKILLS 34-38: Tact Various Atypical Dice Pattern (with objects)
Place objects in atypical pattern on desk
STAFF: “How many?” (Show for about 1-second and then cover/remove)
STUDENT: "(Tacts how many)"

TARGET SKILLS 39-43: Tact Dice Pattern (on card) in discrimination
Show each card individually
STAFF: “How many black? (Show for about 1-second and then cover/remove)
STUDENT: “(# of black dots on card)"

TARGET SKILLS 44-48: Tact Dice Pattern (with objects) in discrimination
Show objects in array
STAFF: “How many (1 colored counter)? (Show for about 1-second and then cover/remove)
STUDENT: “(# of colored counter)"

If a student begins to point and count each dot, cover the card up.
Student Skills
An Integrated System of Instruction

Staff Training/Treatment Fidelity

Assessment

Program/Target Selection

Data Systems

Teaching Procedures

Organization
Organization

- Allocation of instruction
  - Schedule DTT and NET
  - Across people, locations, time presented

- Materials organization
  - Common stimuli
  - Multiple exemplars
    - Close in/ far out

(Stokes & Baer, 1977)
Materials Organization
Sign Language Book

Laundry

Kelsy’s Approximation Ms. Perry’s Sign

NURSE

Kelsey’s Approximation Ms. Perry’s Sign
Student Skills
An Integrated System of Instruction

- Staff Training/Treatment Fidelity
- Assessment
- Program/Target Selection
- Teaching Procedures
- Data Systems
- Organization
Data Systems

- Data systems should help check for generalization
  - Test examples different from those presented to teach the concept

Skills Tracking Sheet

<table>
<thead>
<tr>
<th>Target</th>
<th>Date introduced</th>
<th>Date acquired</th>
<th>Generalization Data</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Engelmann & Carnine, 1982)
Data Systems: Tact with Sign

Skill Tracking Sheet

<table>
<thead>
<tr>
<th>Target</th>
<th>Date introduced</th>
<th>Date Mastered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special coffee cup</td>
<td>3/15/18</td>
<td>4/29/18</td>
</tr>
<tr>
<td>Bagels</td>
<td>1/22/18</td>
<td>1/30/18</td>
</tr>
<tr>
<td>Donut</td>
<td>1/30/18</td>
<td>2/19/18</td>
</tr>
<tr>
<td>Syrup</td>
<td>4/10/18</td>
<td>4/14/18</td>
</tr>
<tr>
<td>Cinnamon sugar</td>
<td>4/29/18</td>
<td>5/16/18</td>
</tr>
<tr>
<td>Strawberry PEANUT</td>
<td>4/12/18</td>
<td>4/19/18</td>
</tr>
<tr>
<td>WHIP</td>
<td>4/29/18</td>
<td>5/16/18</td>
</tr>
<tr>
<td>Cinnamon swirl</td>
<td>4/29/18</td>
<td>5/23/18</td>
</tr>
<tr>
<td>Pancakes</td>
<td>5/14/18</td>
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</tr>
<tr>
<td>Pizza</td>
<td>5/14/18</td>
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</tr>
<tr>
<td>Whisk</td>
<td>5/14/18</td>
<td>5/10/18</td>
</tr>
<tr>
<td>Broom</td>
<td>5/14/18</td>
<td>5/10/18</td>
</tr>
<tr>
<td>Glue</td>
<td>5/14/18</td>
<td>5/10/18</td>
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Cumulative Graph for: Tact w/ Sign

Student: KS
Month: April 2018
### Skill Tracking Sheet

**Student Name:** Ks  
**Skill:** LR: Multiple Step Directions (Joint Control)

<table>
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<th>Date Mastered</th>
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<td>9/3/17</td>
</tr>
<tr>
<td>14</td>
<td>9/3/17</td>
<td>9/3/17</td>
</tr>
<tr>
<td>15</td>
<td>9/3/17</td>
<td>9/3/17</td>
</tr>
</tbody>
</table>
Data Systems: CRA Math

Skill Tracking Sheet

<table>
<thead>
<tr>
<th>Student Name:</th>
<th>KS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill: Early Numeracy Skills</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Target</th>
<th>Date Introduced</th>
<th>Date Mastered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Echo: &quot;two&quot;</td>
<td>2/21/16</td>
<td>4/21/16</td>
</tr>
<tr>
<td>2. Echo: &quot;two&quot;</td>
<td>2/21/16</td>
<td>4/21/16</td>
</tr>
<tr>
<td>3. Echo: &quot;two&quot;</td>
<td>2/21/16</td>
<td>4/21/16</td>
</tr>
<tr>
<td>4. Echo: &quot;three&quot;</td>
<td>2/21/16</td>
<td>4/21/16</td>
</tr>
<tr>
<td>5. Echo: &quot;three&quot;</td>
<td>2/21/16</td>
<td>4/21/16</td>
</tr>
<tr>
<td>6. Echo: &quot;three&quot;</td>
<td>2/21/16</td>
<td>4/21/16</td>
</tr>
<tr>
<td>7. Echo: &quot;four&quot;</td>
<td>2/21/16</td>
<td>4/21/16</td>
</tr>
<tr>
<td>8. Echo: &quot;four&quot;</td>
<td>2/21/16</td>
<td>4/21/16</td>
</tr>
<tr>
<td>9. Echo: &quot;six&quot;</td>
<td>2/21/16</td>
<td>4/21/16</td>
</tr>
<tr>
<td>10. Echo: &quot;six&quot;</td>
<td>2/21/16</td>
<td>4/21/16</td>
</tr>
<tr>
<td>11. Echo: &quot;ten&quot;</td>
<td>2/21/16</td>
<td>4/21/16</td>
</tr>
<tr>
<td>12. Task: Typical Dice Pattern on card or dice: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Task: Typical Dice Pattern on card or dice: 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Task: Typical Dice Pattern on card or dice: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Task: Typical Dice Pattern on card or dice: 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Task: Typical Dice Pattern on card or dice: 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Task: Typical Dice Pattern on card or dice: 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Lib:select: Typical Dice Pattern: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Lib:select: Typical Dice Pattern: 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Lib:select: Typical Dice Pattern: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Lib:select: Typical Dice Pattern: 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Lib:select: Typical Dice Pattern: 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Lib:select: Typical Dice Pattern: 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Build: Dice Pattern: 1 25/16 - 2/16 25/16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Build: Dice Pattern: 2 25/16 - 2/16 25/16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Build: Dice Pattern: 3 25/16 - 2/16 25/16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Build: Dice Pattern: 4 25/16 - 2/16 25/16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Build: Dice Pattern: 5 25/16 - 2/16 25/16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cumulative Graph for: CRA Math

Student: Kely
Month: April 2018
An Integrated System of Instruction

- Staff Training/Treatment Fidelity
- Assessment
- Program/Target Selection
- Teaching Procedures
- Data Systems
- Organization
Behavioral Skills Training (BST)

- **Instructions**: Provide a description & rationale
- **Modeling**: Demonstrate how to perform the skill
- **Rehearsal**: Allow trainee to practice
- **Feedback**: Provide constructive feedback

(Parsons, Rollyson, & Reid, 2012)
Staff Training & Treatment Fidelity

Many failures in consultation and interventions probably can be attributed to the fact that intervention plans are not implemented as intended. (Gresham, 1989, p. 137)

GENERALIZATION INTEGRITY CHECKLIST

Leader(s) ____________________________________________

Group ______________________________________________ Date(s) of review ____________________________

INSTRUCTIONS: This self-rating checklist is designed to assist group leader(s) in enhancing generalization of student skill learning. While a numerical score is not computed, leader(s) may use this checklist to both plan instruction and evaluate the emphasis placed on generalization following instruction.

Skillstreaming

(McGinnis, 2012)
Parent Training: Lafasakis & Sturmey, 2007

- **Behavior Skills Training**
  - Train parents to use DTT
- **Increased student correct responding**
  - Purple = vocal imitation
  - Green = gross motor imitation

*Figure 1. The percentage of correct implementation and generalization of discrete-trial teaching for parents and correct gross-motor and vocal imitative responses for children during instructions baseline and posttraining.*
**Parent Training & Communication**

- Newsletters
- Communication logs
- Videos to send home
- Mini trainings in IEP meetings

(Cavalari, Gillis, Kruser, & Romanczyk, 2015)
# Parent Training & Communication

<table>
<thead>
<tr>
<th>Intensive Teaching</th>
<th>Brief Definition</th>
<th>Sample SD’s</th>
<th>Current Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tact</strong></td>
<td>Student labels something they see, hear, smell, taste, or feel and gets non-specific reinforcement (such as praise or toy)</td>
<td>What is this? This is a _____ It’s a _______ Tell me what this is What do you see?</td>
<td></td>
</tr>
<tr>
<td><strong>Listener Responding (Receptive)</strong></td>
<td>Following directions and or receptive identification (discrimination). Reinforcement is non-specific.</td>
<td>Point to the ____ Show me the ____ Can you find the ____ Where’s the ____? Touch the ____ Give me the ____ Find the ____</td>
<td></td>
</tr>
<tr>
<td><strong>Motor Imitation</strong></td>
<td>Copying someone else’s motor movement. Reinforcement is non-specific</td>
<td>“Do This” “Can you do this”? “Try this one” ‘Do what I do” “You do this”</td>
<td></td>
</tr>
<tr>
<td><strong>Echoic</strong></td>
<td>Repeating (vocally) what someone else says. Reinforcement is non-specific</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Intraverbal</strong></td>
<td>Saying, signing, writing something related to what someone else said or answering questions (fill-in responses, word associations, conversation). Reinforcement is non-specific</td>
<td>Which one do you ____ with? You _____ with a ______ Something you ____ is a ____ Tell me the one that has ____ The (animal) says ____ What does the (animal) say?</td>
<td></td>
</tr>
</tbody>
</table>

**Manding - Requesting**

<table>
<thead>
<tr>
<th>Brief definition</th>
<th>Current Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asking for something you are motivated for (student gets reinforced with what they asked for)</td>
<td></td>
</tr>
</tbody>
</table>
What can I do at home? - Tacting

- Opportunities for tacting should be built into your child’s everyday life.
- You can help your child generalize the mastered tacts by asking them to label items in their natural environment (home, restaurants, playgrounds, stores, etc.).
- You should vary the way you present the question:
  - Tell me what you see
  - This is a _____
  - It’s a _____
  - What’s this?
  - Tell me what this is
- If your child makes an error, be sure to provide him with the correct response. Ideally, re-present the question so the child can respond correctly.
- Remember to REINFORCE your child for correct responses!!
Staff Training: BST

- **Instruction**
  - Description/rationale

- **Modeling**
  - Modeled in person and took video @ January consult

- **Rehearsal**
  - Learner practiced skill in-vivo
  - Treatment fidelity

Feedback … Next Page
Staff Training: Feedback April Consult

- Feedback
  - Increase motivation during instructional times
  - Isolate a reinforcer
  - Variety of different reinforcers
  - Build some behavior momentum

<table>
<thead>
<tr>
<th>TEACHING LR SELECTING MULTIPLE PICTURES</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the instructional area neat and sanitized?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the instructor have all materials needed for instruction organized and ready?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the instructor have a variety of valuable reinforcers available?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were baseline data collected to determine the initial target?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was a skill sequence developed and listed on the skill-tracking sheet?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>After a target is mastered, does the instructor probe the next target?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the instructor collect cold probe data on the first trial of the day?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the instructor present known pictures in an array?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the instructor direct the student to select a different set of known pictures for each trial?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the instructor look at the student without providing additional prompts (e.g., making facial expressions, nodding head, looking at pictures)?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the instructor keep his/her hand out for 2-3 seconds after the student gives the last picture?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the instructor use a 2 second time delay for cold probe and known trials?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the instructor use a 0 second delay prompt for the teaching target using the echoic rehearsal joint control procedure?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If an error occurs, does the instructor end the trial, represent the §0 and prompt with a 0 second time delay using the echoic rehearsal joint control procedure?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For error correction and errorless teaching, does the instructor continue to have the student rehearse the echoic until responding is strong?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percentage of Y’s: 9/10
90%
An Integrated System of Instruction

- Assessment
- Program/Target Selection
- Teaching Procedures
- Organization
- Data Systems
- Staff Training/Treatment Fidelity
Some Additional Examples...
Early Learner: Imitation Skills
Early Learner: Imitation Skills

- Imitation Skills in Context
  - Bathroom
  - Self-care
Discrete Trial Teaching

- LR multiple selection with joint control procedures
Natural Environment Learning

- Classroom Jobs
  - Snack Prep
  - Snack Facilitator

<table>
<thead>
<tr>
<th></th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>UA</td>
<td>Change Cycle Day</td>
<td>Snack Prep Change Cycle Day</td>
<td>Snack Change Cycle Day</td>
<td>Change Cycle Day</td>
<td>Snack Change Cycle Day</td>
</tr>
<tr>
<td>MP</td>
<td>Calendar</td>
<td>Snack Calendar</td>
<td>Snack Prep Calendar</td>
<td>Calendar</td>
<td>Snack Prep Calendar</td>
</tr>
<tr>
<td>WB</td>
<td>Snack prep</td>
<td>Sharpen pencils</td>
<td>Snack Prep</td>
<td>Sharpen Pencils</td>
<td>Sharpen Pencils</td>
</tr>
</tbody>
</table>
Vocational Learning

- Woodshop to Etsy Shop
Manding

- Mand for Items and Actions
Real Life Technology

- Using the Echo Dot/Alexa: Alexa Skills Project

- Component Skills
  - Echoic skills
  - Following directions
  - Tacting equipment
“Alexa, roll the dice!”

“Alexa, tell me a knock, knock joke!”

“Alexa, set an alarm for 8:30 am.”

“Alexa, spell summer.”

“Alexa, play red light, green light.”
Barriers to Implementation
Prerequisite Skills

- Pre-teaching relevant components
  - Tact
  - LR
  - Echoic
  - Imitation
  - Intraverbal
  - Textual
Fading Prompts

- Discuss selecting the level of prompt that is right for the student
- Discuss prompt fading judiciously
Not Enough Exemplars

How many tacts do you need to read this book?
Not Enough Exemplars

“Inferences matter because writers omit a good deal of what they mean.”

“For example, take a simple sentence pair like this: ‘I can’t convince my boys that their beds aren’t trampolines. The building manager is pressuring us to move to the ground floor.’ To understand this brief text the reader must infer:

- Jumping would be noisy for downstairs neighbors
- Neighbors complained about it
- Building manager is motivated to satisfy the neighbors
- No one would hear the noise if family lived on the ground floor.”

(Willingham & Lovette, 2014)
Mastery to Novel

- Setting criteria apriori to include generalization and novel responses
- Making the whole team aware and taking age into consideration; quality of life
- Creating a culture of generalization
Relevance

Does anybody use a World Book Encyclopedia?

• Teaching to the relevance
• 7 Dimensions: Applied, Analytic, Behavioral, Conceptually Systematic, Effective, Generality, & Technological
Environmental Competition

- Other competing factors that make completion of a task a challenge
  - Time
  - Effort
  - Staffing numbers
  - School/community climate
  - Admin support
Staff & Admin Training

- Teachers: Special Ed, Gen Ed
- Educational Staff: Paraeducator, RBT, TSS
- Professional Staff: SLP, PT, OT
- Administration: Principals, Supervisors, Directors

• Procedural drift: In her work on false memory, Elizabeth Loftus suggests memory is constructed and reconstructed

(Loftus, 2013)
Insufficient Reinforcement
1.01 Reliance on Scientific Knowledge

- Conceptually systematic
  - Interventions consistent with principles demonstrated in literature

- Technological
  - Procedures described clearly & concisely
  - Others can implement accurately

(BACB, 2017)
2.09 Treatment/Intervention Efficacy

- **Effective**
  - Interventions are monitored for impact on behavior

- **Analytic**
  - Decisions are data based

- **Behavioral**
  - Observable
  - Measurable

(BACB, 2017)
Ethical Considerations

4.03 *Individualized Behavior-Change Programs*

- **Applied**
  - Socially significant behaviors selected

- **Generality**
  - Behavior occurs in environments other than where taught

(BACB, 2017)
Cultural Awareness

**Client**
- Understand effects of environment
- Identify cultural values & contingencies
- Select socially meaningful goals and targets

**Practitioner**
- Consider values & preferences
- Seek educational & training experiences
- Evaluate biases & effects on relationship

(From Fong, Catagnus, Brodhead, Quigley, & Field, 2016)
Start with the End in Mind

- Start with the end in mind
  - Harry Potter
Word Cloud Activity

What word comes to mind when you hear: GENERALIZATION

Respond at PollEv.com/nac129

Text NAC129 to 22333 once to join, then text your message
Thank You!

This presentation would not have been made possible without the following dedicated people:

Kim Booz, Carolyn Snyder, Nicole Verbos, Colleen Levinson, Roseanna Fabii, Alessandra Wynne, Maria Overturf, Steve Kowal, TaQuisha Perry, Students in Downingtown School District, Students in Great Valley School District, and Students in West Chester School District
References

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Commonwealth of Pennsylvania
Tom Wolf, Governor