Instruction Basics for Students with Autism

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Pennsylvania Training and Technical Assistance Network

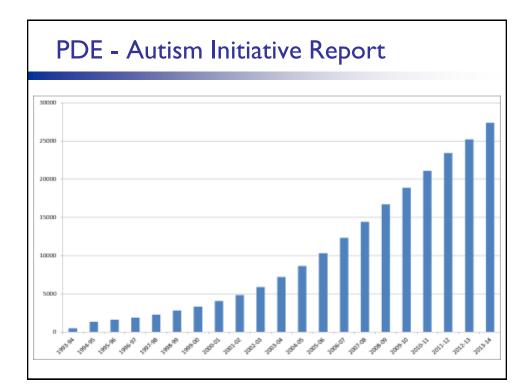
PaTTAN's Mission

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.

The rate at which students are provided special education services under the definition of autism in Pennsylvania continues to increase.



 This increase suggests a need for an increasing number of educators who are skilled in providing effective instruction for students with autism.

The good news...

• Evidence for effective instructional methods for students with autism has accumulated.

The National Standards Project (National Autism Center)

- Identified a need for a transparent process to evaluate the most recent research (up to the year 2007) and provide information about the strength and evidence supporting treatment options for both children and adolescents with autism.
- The National Autism Standards Report:
 - Initially reviewed 7,038 abstracts of research
 - Rigorous review process led to a total of 775 studies being retained for final analysis

Standards Report Identified 11 Effective Treatments

- Antecedent Package 99 studies
- Behavioral Package 231 studies
- Comprehensive Behavioral Treatment for Young Children 21 studies
- Joint Attention Intervention 6 studies
- Modeling 50 studies
- Naturalistic Teaching Strategies 32 studies
- Peer Training Package 33 studies
- Pivotal Response Treatment 14 studies
- Schedules 12 studies
- Self-management 21 studies
- Story-based Intervention Package 21 studies

Conclusions:

- Approximately two-thirds of the Established Treatments were developed exclusively from the behavioral literature (e.g., <u>applied</u> <u>behavior analysis</u>).
- Of the remaining one-third of the Established treatments, research support comes
 predominantly from the behavioral literature.
- This pattern of findings suggests that treatments from the behavioral literature have the strongest research support at this time

p.52 Standards Report

National Standards Project – Phase 2

- Much new research has been published since 2007, the end of the period evaluated by Phase I of the National Standards Project (or NSPI).
- The National Autism Center began working on the second phase of the National Standards Project (NSP2) in 2011.
- Provides up-to-date information on the effectiveness of a broad range of interventions for autism spectrum disorder (ASD).
- Project is designed to give educators, parents, practitioners, and organizations the information and resources they need to make informed choices about effective, evidenced-based interventions

National Standards Project – Phase 2

- Phase 2 (NSP2) evaluated studies published between 2007 and February of 2012.
- Released its new review and analysis on April 2, 2015.
- Phase 2 of the National Standards Project (NSP2)
 reinforces the findings of Phase 1. For children and
 adolescents under age 22, there is now even more
 empirical support for behaviorally based
 interventions.
- http://www.nationalautismcenter.org/resources/

Characteristics of Effective Programs for Students with Autism

- 1. Environment and Instructional Organization
- 2. Effective Management of Problem Behaviors
- 3. Staff Training and Support
- 4. Family Involvement
- 5. Systematic Instruction to Address Core Deficits:
 - Communication deficits
 - Social skill concerns
 - Repetitive and stereotyped behavior

Environment and Instructional Organization

- Learning environments should be arranged to facilitate, evoke, enhance, and support the acquisition of critical skills - including language, behavior, social interactions, and academics.
- Include:
 - Arrangement of the environment
 - Instructional materials organization
 - Data systems (progress monitoring)
 - Time management (schedule)

Effective Management of Problem Behaviors

- Function Based Positive Behavior Support Plan
- 3 components of the behavior support plan:
 - MO: reduce motivation to engage in problem behavior
 - 2. Teach competing skills that serve the same purpose (manding vs problem behavior)
 - 3. Extinction: ensure problem behavior is ineffective and inefficient (does not contact reinforcement)

Staff Training and Support

- Competency based: Results in staff knowing <u>what</u> to do and demonstrating <u>how</u> to do it.
- Should be efficient (short on time and few resources, but producing clear change in staff behavior)
- · Should include:
 - Conceptual understanding
 - Clear procedural descriptions/instructions
 - Modeling
 - Hands-on practice
 - Feedback (immediate as well as ongoing...role of treatment fidelity checklists)

Sample Fidelity Checklist

Intensive Teaching Treatment Fidelity Checklist:

Family Involvement

- Meaningful family involvement is associated with:
 - Better School Attendance
 - Higher Test Scores
 - Higher Grades
 - Better Social Skills
 - Better adaptation to School
 - Post Secondary Education more likely

Most importantly...

- Better student outcomes!!!
- Parental goals, perspectives and concerns should be considered in educational planning.

Systematic Instruction

- Identification of meaningful goals that are socially valid (what to teach).
 - Communication skills requesting wants and needs; language base
 - Social Skills initiating and responding to others during social interactions
 - Appropriate play/leisure skills
 - Self-help, completing independent activities

Systematic Instruction

- Goals individualized based on student needs (assessment) and relevant to their day-to-day lives.
- Consider modifications, accommodations, and supports as needed.
- Consider skill sequence component skills necessary to complete or learn other skills.

Systematic Instruction

- Instructional delivery (specific direct instructional procedures for teaching):
 - Effective discrete trial instruction
 - Errorless and error correction procedures
 - Natural teaching practices
 - Procedures to ensure generalization of skills
 - Procedures that result in high rates of student responding
- Procedures for monitoring effects of instruction and making adjustments based on data

As an instructor you should be reinforced by cooperative student behavior and by the student learning.

Don't Blame the Learner!

"It's never the student's fault."

(they are just doing what they know how to do)

"The organism is never wrong"

B.F. Skinner

"The student is never wrong"

Ogden Lindsley

Video – Establishing Instructional

Instructional Control and Motivation

- Problem behavior often occurs due to an escape function.
- In other words the student is motivated to avoid cooperation because cooperating may mean giving up ongoing reinforcement.
- Warning signal leads to value of terminating the warning signal and causes an increase in any behavior that might do so.

Video – Reflexive Motivating

How do we get there?

- Program competing responses
- Pairing and embedding the instructional environment with positive reinforcement
- Errorless instruction at the appropriate instructional level
- Stimulus demand fading

- Task variation
- Pace of instruction
- Neutralizing routines
- Choice making
- Interspersal instruction
- Task novelty
- Session duration

Research Summary provided by Carbone, et al, 2008

Competing Responses

- For many students this means teaching the mand (especially when problem behavior is maintained by socially mediated positive reinforcement).
- For many students, this will also mean beginning teaching processes (such as discrete trials, group instruction, independent task completion, social skills instruction) that provide dense schedule of instruction with high rates of active responding.
- Instructional responding results in high rates of reinforcement and reduces problem behavior.
- Teach instruction "set" (ready hands, etc.)

Pair Teaching with Improving Conditions (Carbone, 2002)

- · Pair instruction with positive reinforcement
- · Fade in demands gradually
- Low response effort at first
- · Immediate delivery of reinforcement
- Reduce learner errors
- Fast paced instruction (short time between intervals)
- Intersperse easy/hard tasks
- Mix and vary instructional demands
- Teach to fluency

Session Duration

- Short sessions with high rates of active responding are best.
- Longer sessions may result in more problem behavior.
- Beware of being reinforced by cooperation (may lead to more trials when student does well).

"Increasing the effectiveness of instruction results in less failure, more frequent social and other forms of reinforcement, and general improvements in the demand situation to the point where it may not be functioning as a demand, but rather as an opportunity"

Jack Michael

Back to basics: First know your ABCs

Consider all teaching interactions in relation to behavioral events:

A = Antecedents (what happens before behavior)

B = Behavior (observable/measureable)

C = Consequences (what happens after behavior)

Video – ABC Analysis

ABCs: examples

Antecedent	Behavior	Consequence
Something interesting happens	Look in that direction	Seeing the event
Need to go out and seeing a door knob	Turning the knob	The door opens
Student instructed to get his math book	Student reaches in backpack and pulls	Teacher smiles
Spoon on table	out math book Reaching toward it	Touching spoon

How does this relate to communication training?

THE VERBAL OPERANTS

Why the Verbal Operants

- Children with autism present differences in language skills and communicative competency.
- We can't change what a student "has."
- We can alter the environment to change how likely it is that students will respond to and use language effectively.
- A behavior analysis of language allows alterations in the environment to promote effective language instruction.

Verbal Operants

Verbal Operant	Antecedent	Behavior	Consequence
Mand	Motivative Operation (wants cookie)	Verbal behavior (says "cookie")	Direct reinforcement (gets cookie)
Tact	Sensory Stimuli (sees or smells cookie)	Verbal behavior (says "cookie")	Non-specific reinforcement (gets praised, for instance)
Intraverbal	Verbal stimulus (someone says:"What do you eat?")	Verbal behavior (says "cookie")	Non-specific reinforcement (gets praised, for instance)
Echoic	Verbal Stimulus (someone says "cookie")	Verbal behavior: repeats all or part of antecedent (says "cookie")	Non-specific reinforcement (gets praised, for instance)

Other Relevant Operants

Operant	Antecedent	Behavior	Consequence
Receptive (Listener Responding)	Verbal stimulus (someone says "touch cookie")* "in this case the cookie must also be present: all receptive discriminations involve 2 S ^p s	Non-verbal behavior (child touches cookie)	Non-specific reinforcement (gets praised, for instance)
Imitation Point to point correspondence a.k.a. Mimetic	Non-verbal behavior (person performs an action, etc.)	Non-verbal behavior with point to point correspondence (person imitates same action)	Non-specific reinforcement (example: praise; 'you're right!', ''great job!' high five, pat on back, etc.)
Match to sample	Non-verbal behavior (presentation of stimuli)	Non-verbal behavior (in presence of one stimuli, a second stimuli is selected with shared properties).	Non-specific reinforcement (example: praise; 'you're right!', ''great job!' high five, pat on back, etc.)

Video – Verbal Operants

Intensive Teaching and Discrete Trial Instruction

Intensive Teaching Overview

- Intensive Teaching (IT) is Discrete Trial Training (each trial involves one ABC)
- DTT has wide support in peer reviewed literature: see NAC Standards Report
- Will cover DTT first because so many of its characteristics are applicable to a variety of instructional methods

Video – Intensive Teaching

ABCs and Instruction

Antecedent	Behavior	Consequence
Motivation		Reinforcement
Discriminative stimuli (S ^D)	What the student does	Punishment
Prompts		

Antecedent: I. Motivation

- Motivation is the result of conditions in the environment
- Motivation is often affected by:
 - 1. Satiation and deprivation or
 - 2. Other changes in conditions.

Examples: screwdriver, pen, water

Antecedent: 2. Discriminative Stimuli (S^D)

- Antecedents that signal the availability of reinforcement are called discriminative stimuli (S^D).
 - Ripe berries on a bush
 - "Open" sign on store
 - Teacher's instructions to a student
- Discriminative stimuli can include pictures, verbal directions, and other materials related to instruction.
- · Can include more than one stimulus.

Antecedent: 3. Prompts

- We pick prompts because they are antecedents that have a strong history of getting the behavior to occur.
- Once the behavior occurs, it can be reinforced.
- Selected from known items (identified through assessment or existing data)
- Prompted trials involve multiple stimuli:
 - prompt
 - discriminative stimuli (that will eventually control response)

Selecting Prompts from other Domains

General rule: use known skills that can be reliably evoked and that share the same topography with target skill

	Sign	Vocal	
Mand	Imitation/intraverbal (for sign)	echoic/tact	
Tact	imitation	echoic	
Echoic	NA	earlier established skills (EESA)	
Intraverbal	signed tacts/imitation	tact/echoic	
Listener Responding	Imitation/match to sample	imitation/tact/echoic/ match to sample	

Video – Selecting Prompts

Reinforcement:

- Reinforcement: consequences which effect future probability of response frequency
- Always <u>increases</u> the future probability of behavior
- Reinforcement not a "thing" but a process (change in the environment that changes how often behavior occurs)
- Most effective when it immediately follows the behavior

Errorless Teaching Procedures

- Errorless teaching (reducing student errors or teaching without mistakes occurring).
- Errorless teaching is associated with faster learning and less problem behavior during instruction.
- Errorless procedures are used for target items (items being taught)

Video - Errorless Teaching

Errorless Teaching Procedures

The sequence of teaching on an errorless item is:

- I. PROMPT
- 2. TRANSFER
- 3. DISTRACT
- 4. CHECK.
- It's errorless because the first thing we do is prompt.
- The prompt helps prevent errors
- The transfer is from **prompted** to **unprompted**.

Interspersing easies with target items

- Provides opportunities to practice known skills (maintenance)
- Provides opportunities for successful responding
- High probability items (easy/known) may make it more likely that student will respond to low probability items (hard/targets)

Fast-Paced Instruction

Faster responding results in less problem behavior and/or off task behavior.

What if an error occurs?

- Use Error Correction Procedure
- The error correction procedure is: When an ERROR occurs:
 - I. END
 - 2. PROMPT
 - 3. TRANSFER
 - 4. DISTRACTER
 - 5. CHECK
- The reason "End" is included in this sequence is because we need to make sure to repeat the direction (SD) after the error occurs.

Video – Error Correction Procedures

Types of Errors

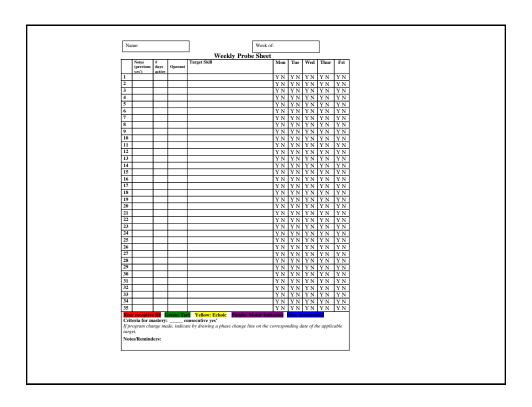
- Incorrect response
- No response
- Self Correction

Data for Monitoring Effects of Instruction

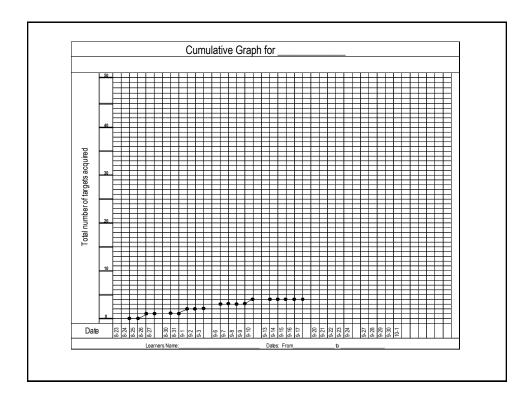
- Instructional decisions should be guided by student responding and data.
- Data systems need to be:
 - clear
 - accurate
 - efficient
 - provide the necessary information to guide decisions

Example of Data Systems for Intensive Teaching

- Cold Probe: to assess target items
- **Skills Tracking**: Running list of mastered/known items, target items, and future target items for active programs
- Cumulative Graph: Provides a quick visual depiction of the acquisition pattern for each active program



	Skill	Tracking Sheet	
Student Name:	Skill:		
	Target	Date introduced	Date Mastered
1			
2			
3			
4			
5			
6			
7			
8			
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10			
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Mand Training

Teaching students to make requests is a central focus of language training and social skills training

Video – Mand Training

Benefits of Mand Training

- Allows students to control their environment
- Mands benefit the speaker
- Mand training relies on the use of the student's interest and motivation
- Mand training is clearly a functional skill: it's practical!
- Mand skills develop early in child development and should naturally be a part of early language training
- Increases opportunities for social initiations
- It is a critical component of almost all social interactions

Mand and Motivation

- A mand is controlled by motivation. One can not ask for something unless the thing is wanted.
- When teaching a student to mand, teachers must always insure that the student wants the item or event that is the focus of training.
- Motivation (or "wanting something") is the result of events in the environment.

Where do we start?

- Before training a specific mand, you want to determine the student's response form: how will they ask for what they want (vocal, sign, selection based system)
- Before beginning mand training, establish a list of items that can be used for teaching.
- Best items:
 - Can be delivered quickly
 - Are consumable or allow only a brief period of contact
 - Can be teacher controlled
 - Are usually strongly motivating
 - The sign or word used to mand for the item is not too hard to produce

- Before beginning mand training, be sure the teacher is paired with delivery of reinforcers.
- The student should readily approach the teacher to receive reinforcers.
- Avoid in almost all cases delivering reinforcers when problem behavior occurs.
- Pair delivery of reinforcement with a model of the response form that the student will later be expected to emit. Say what you are delivering!
- Be sure you have consistent motivation and enough items or activities.

Procedures for Teaching the Mand

The steps in teaching a specific mand involve:

- Verify motivation is in place (capture or contrive if necessary)
- Model and pair response form and delivery of the item
- Prompt the mand as the student shows motivation
- If response occurs, deliver item or represent trial without prompt (this will dependent on student motivation and how hard the response is to produce)
- An alternative procedure can involve use of a time delay (establish motivation and then pause before delivering, if response occurs, reinforce. If no response occurs, follow prompt procedures or simply pair.)

Video – Teaching Vocal Mands
Video – Teaching Signed Mands

- You will need to teach more than one mand right from the start.
- Generalized mands can be a problem: avoid teaching more, please, and help. Also avoid teaching one mand that many serve to request many different things ("candy" serving as a request for many foods and activities.)

Keeping Reinforcers Strong

- Vary reinforcers used
- · Vary the way reinforcers are delivered
- Vary when reinforcers are delivered (predictability)
- Stop delivery before it loses value
- Avoid using too much at any delivery

Selecting Mand Prompts

- Same rule as intensive teaching applies: use known skills
 - If a student is strong at labeling, use tact to mand transfers.
 - If a student is good at repeating what has been said, use echoic to mand transfers
 - If a student has poor echoic skills and good imitation skills, use imitation to mand transfers.

Video - Mand Transfer Trials

Remember mand training does not end with teaching to ask for things that are immediately present or offered. Some other mand skill programs:

- mands under control of MO
- mands for actions
- mands for attention
- peer to peer mands
- yes/no mands
- mands for information

Teaching Social Skills: Skill Sequence

- May need to teach social skills with adults first
- Peers as conditioned reinforcers
- Manding to peers
- Responding to mands from peers
- Greetings
- Social play (engaging in a shared activity, joint attention, turn taking, cooperative play)
- Self awareness/Self management
- Conversations/advanced language
- Perspective taking

Teaching Social Skills: Considerations

- Teach right sources of control: what to do, when, and with who!
- Teach in conditions in which situations will be likely to occur (teach in natural environment)
- Consider issues related to generalization of skills

EFFECTIVE GROUP INSTRUCTION

Effective Instruction: direct instruction

- Rosenshine (1979) described a set of instructional variables relating teacher behavior and classroom organization to high levels of student performance (direct instruction):
 - Highly structured with an academic focus
 - Clear goals selected and controlled by teachers
 - Sufficient time allocated for instruction
 - Continuous instruction
 - Extensive content coverage
 - High rates of correct student responding
 - Immediate performance feedback
 - Materials at appropriate instructional level
 - Appropriate pacing of lesson.

direct instruction

 Systematic approach to instruction correlated with high levels of student performance.

direct **i**nstruction (di) or explicit instruction (Rosenshine, 1986)

- Present new material in small steps, using clear instructions and modeling ("I do").
- Provide repeated opportunities for students to practice with feedback ("We do"); monitor student learning through varied exercises.
- Continue with practice until independent performance ("You do").
- Provide review ("You do over time").

"direct instruction" Viewpoint on Improving Student Performance (Carnine, Silbert, Kame'enui, & Tarver, 2004)

Students will learn if we teach essential skills in the most effective and efficient manner possible; focus is placed on explicit and systematic teacher-led instruction.

Principals to Establish Instructional Control:

- · Seating arrangement, teacher can observe responding
- · Keep all students within "touching distance"
- Place lowest performers closer
- · Break "cliques"
- Introduce rules that the group is to follow right from the start
- · Get into the lesson quickly
- Present each task until children are firm (responding correctly and with little hesitation)
- Use clear teaching signals
- Pace tasks appropriately
- Reinforce good performance
- Use of individual turns as a tactical strategy
- Specific correction strategies for non-attending, non-responding and signal violations, response errors

Set-Up for Successful Teacher-Student Interactions

- Clear expectations (rules and routines)
- Materials organization
- Seating
 - Assign seating
 - Lower performers closest to teacher
 - All students can see the teacher/materials
 - Teacher can see all students in the group
 - Teacher can see independent workers



Basic Teaching Template: Instructional Format Model-Lead-Test-Verify

Frame: The teacher states the learning task at hand.

Model: The teacher provides the expected response verbally or through demonstration. If needed, the teacher repeats the model to make sure all students heard or saw it.

Lead: The teacher and students respond together—several times if needed to ensure that all students practice responding correctly with teacher.

Test/Check: Students perform the task independently, several times if needed to do it correctly.

Verification. The teacher provides specific praise—stating what the students learned.

Sample Format

Model	Teacher	"This letter makes the sound /mmm/"	"My turn to sound out this word. mmmaaannn"
Lead	Teacher and Students	"Say it with me, /mmm/"	"Sound it out with me, mmmaaannn"
Test	Students	"What sound?"	"All by yourselves, sound it out."
Verify	Teacher	"Yes, /mmm/"	"Yes, mmmaaannn"

Signals

- **Visual** or **auditory** cues that are used to control the timing of students' responses.
- Purpose of signals:
 - Increases the likelihood of ALL students initiating a response.
 - Allows ALL students to practice the task.
 - Allows the instructor to monitor every student.
 - Allows the instructor to hear incorrect responses and correct them immediately.

One example of error correction: Statement Corrections

All statement corrections start with "My turn" and end with "starting over"

Error Correction Template:

- Model: "My turn"
- Lead: "Say it with me"
- Test: "Your turn by yourself"
- Verify: "Yes, ____"
- Starting Over: Start at beginning of task

Video – Group Instruction

Specific Student Goals

- Specific student goals will vary based on individual student needs. Some individual goals may include:
 - Maintaining an attending posture: (ready hands, seated in chair, feet on floor, body/eye gaze toward teacher)
 - Generalization of targets previously taught in one-on-one conditions.
 - Tolerating peers in proximity.
 - Responding on signal
 - Responding when individual name is called
 - Not responding if another student's name is called

Generalization Considerations

- Explicit programming for generalization often required
- Teaching in the Natural Environment (NET): in circumstances as similar as those in which skills will be used.
- Multiple exemplar training
- Flexible responding: people, places, instructions (SDs), context.

The goal is for students to be able to use the skills learned independently when the opportunities or needs arise in their day to day lives.

You are all critical people in the lives of the students. The little things they learn minute by minute add up to better lives for the student, their family, and all of us.

Thank You for Your Participation!!!

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Commonwealth of Pennsylvania

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