Instruction Basics
National Autism Conference
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PaTTAN Autism Initiative

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.

PDE - Autism Initiative Report
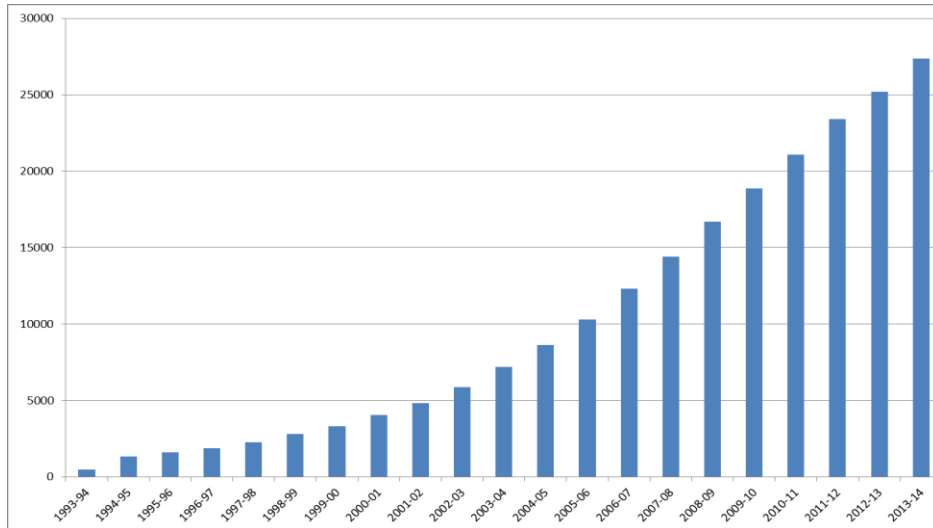
- – This increase suggests a need for an increasing number of educators who are skilled in providing effective instruction for students with autism.

  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   7

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 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

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, elicit, 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:
  1. MO: reduce motivation to engage in problem behavior
  2. Teach competing skills that serves the same purpose (manding v. problem behavior)
  3. Extinction: ensure problem behavior is ineffective and inefficient (does not contact reinforcement)

This topic covered in more detail by Mike Miklos at Behavior Basics session this afternoon.

Staff Training and Support

- Competency based: Results in staff knowing **what** to do and demonstrating **how** to do it.
- Should be efficient (short 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:

Date: _____   **Staff:** _____   **Observer:** _____

	YES	NO	N/A
1. Was instructional area neat and sanitized?			
2. Did instructor have all materials needed for instruction organized and ready?			
3. Did instructor have a variety of valuable reinforcers available?			
4. Did session begin with delivery of reinforcement or an opportunity to mand?			
5. Did instructor gradually fade in the demands/tasks presented?			
6. Did instructor use fast-paced instruction (no more than 2 seconds between student's response and your next instruction)?			
7. Did instructor mix and vary instructional demands (no more than 3 of the same operant/task in a row)?			
8. Were easy and difficult tasks interspersed at the appropriate ratio?			
9. Easy/hard ratio: _____			
10. Did instructor use a natural tone of voice?			
11. Did instructor reinforce at set VR schedule?			
12. VR: _____			
13. Did instructor use 0 second delay prompts for teaching targets?			
14. Did instructor re-present the instruction followed by a 0 second delay prompt when errors occurred?			
15. Did instructor prompt student if no response occurred within 2 seconds for a previously mastered item?			
16. Were prompted trials followed by a transfer trial, easy trial(s), and a check trial?			
17. Did instructor differentially reinforce (better reinforcement) target responses?			
18. Did instructor differentially reinforce (better reinforcement) quicker and more independent responding?			
19. If problem behavior occurred, did instructor not remove the demand and follow through by keeping the demand on?			
20. Did instructor deliver less reinforcement following run through's that required extinction (keeping demand on)?			
_____20= _____%			

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
  - Social Skills-Initiating and responding to social bids
  - 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

View Establishing Instructional Control Video Clip

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 of Reflexive Motivating Operation
("No work, no monkey")

How do we get there?

- Program competing reinforcers (e.g. promise reinforcers)
- 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.)

Session Duration

- Short sessions with lots of responding probably 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)

View Video of 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 out math book	Teacher smiles
Spoon on table	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 skill and communicative competence
- 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^Ds	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.)

View Video of Verbal Operants

Intensive Teaching and Discrete Trial Instruction

Video Model and IT Overview

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

ABCs and Instruction

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

Antecedent: 1. 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, police cars in rear view mirrors

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. Prompt

- We picks 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

7/27/2014

Selecting Prompts Video

Reinforcement:

- Reinforcement: consequences which effect future probability of response frequency
- Always **increases** 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

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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)

Errorless Teaching Video

The sequence of teaching on an errorless item is:

1. 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) will may 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.

(Videos: slow paced vs. fast paced)

What if an error occurs?

- Use **Error Correction Procedure**
- The error correction procedure is : When an ERROR occurs:
  1. 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 (S^D) after the error occurs.

Error Correction Procedure

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/know items, target items, and future target items for active programs
- **Cumulative Graph:** Provides a quick to reference graphic of the acquisition pattern for each active program

Name:				Week of:						

Weekly Probe Sheet

	Notes (previous yes')	# days active	Operant	Target Skill	Mon	Tue	Wed	Thur	Fri
1					Y N	Y N	Y N	Y N	Y N
2					Y N	Y N	Y N	Y N	Y N
3					Y N	Y N	Y N	Y N	Y N
4					Y N	Y N	Y N	Y N	Y N
5					Y N	Y N	Y N	Y N	Y N
6					Y N	Y N	Y N	Y N	Y N
7					Y N	Y N	Y N	Y N	Y N
8					Y N	Y N	Y N	Y N	Y N
9					Y N	Y N	Y N	Y N	Y N
10					Y N	Y N	Y N	Y N	Y N
11					Y N	Y N	Y N	Y N	Y N
12					Y N	Y N	Y N	Y N	Y N
13					Y N	Y N	Y N	Y N	Y N
14					Y N	Y N	Y N	Y N	Y N
15					Y N	Y N	Y N	Y N	Y N
16					Y N	Y N	Y N	Y N	Y N
17					Y N	Y N	Y N	Y N	Y N
18					Y N	Y N	Y N	Y N	Y N
19					Y N	Y N	Y N	Y N	Y N
20					Y N	Y N	Y N	Y N	Y N
21					Y N	Y N	Y N	Y N	Y N
22					Y N	Y N	Y N	Y N	Y N
23					Y N	Y N	Y N	Y N	Y N
24					Y N	Y N	Y N	Y N	Y N
25					Y N	Y N	Y N	Y N	Y N
26					Y N	Y N	Y N	Y N	Y N
27					Y N	Y N	Y N	Y N	Y N
28					Y N	Y N	Y N	Y N	Y N
29					Y N	Y N	Y N	Y N	Y N
30					Y N	Y N	Y N	Y N	Y N
31					Y N	Y N	Y N	Y N	Y N
32					Y N	Y N	Y N	Y N	Y N
33					Y N	Y N	Y N	Y N	Y N
34					Y N	Y N	Y N	Y N	Y N
35					Y N	Y N	Y N	Y N	Y N

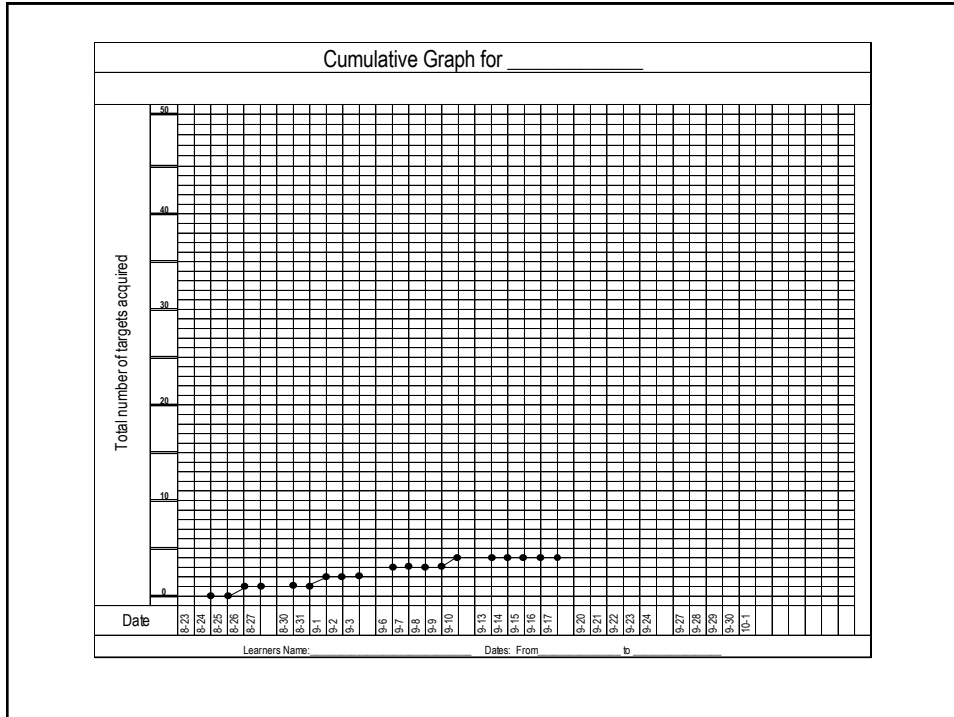Red: receptive ID   Green: Tact   Yellow: Echoic   Purple: Motor Imitation   Blue: intraverbal

Criteria for mastery: _____ consecutive yes'

If program change made, indicate by drawing a phase change line on the corresponding date of the applicable target.

Notes/Reminders:

Skill Tracking Sheet

Student Name: _____   Skill: _____

	Target	Date introduced	Date Mastered
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			

Cumulative Graph for _____

Total number of targets acquired

Date

Learners Name: _____ Dates: From _____ to _____

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

Mand Training

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

- Mand introduction video (Mand)
- Mand training (Guide)

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

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- 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

Mand Target Selection Video

- 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.

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.)

Teaching vocal mands and teaching sign mand videos

- 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.

Mand Transfer Trial Video

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

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 instruction (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"**).

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"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

Group Instruction Videos

Generalization Considerations

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