Strategies to Increase Beginner Classroom Participation Skills: Teaching Methods in Application

By Michele LaMarche, BCBA

With Morgan Aue, BCBA and Miranda Schehr, BCABA

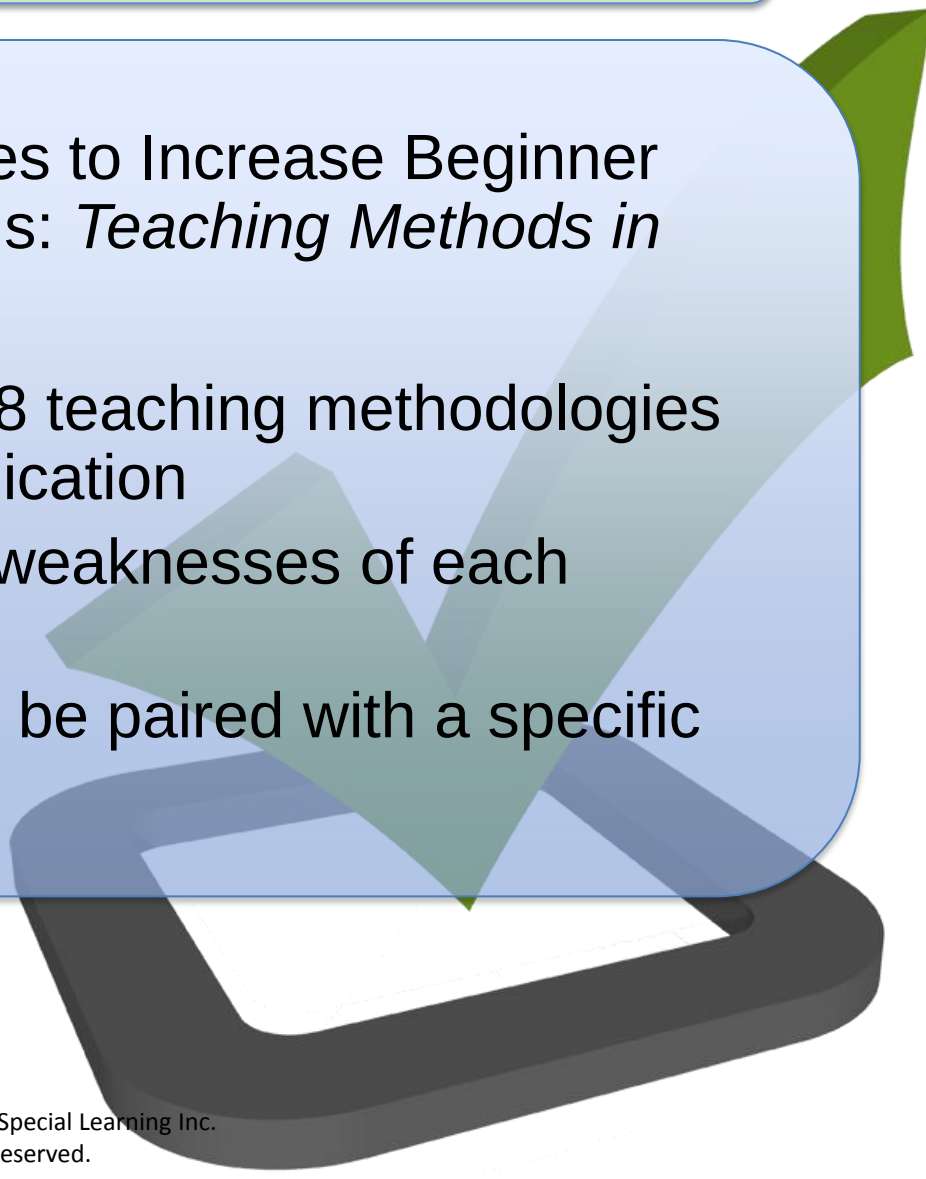
Today's Presentation

- Review of practice and methodology
- **Designed for:**
  - Teachers
  - Paraprofessionals
  - BCABA's and BCBA's working with autism and/or supervising direct treatment staff; those with limited experience using different teaching methodologies
  - Other professionals working in a classroom environment with children with autism and related disorders

Today's Objectives

- Upon completion of Strategies to Increase Beginner Classroom Participation Skills: *Teaching Methods in Application,* participants will:

  1. Identify and select from 8 teaching methodologies for use in treatment application
  2. Describe strengths and weaknesses of each teaching methodologies
  3. Identify possible skills to be paired with a specific teaching methodology



8 Common Teaching Methodolgies

- Discrete Trial Training (DTT)
- Natural Environment Teaching (NET)
- Mix & Vary (task interspersal)
- Verbal Behavior Programming (VB)
- Pivotal Response Training (PRT)
- Fluency-Based Instruction (FBI)
- Direct Instruction (DI)
- Peer-Mediated Intervention

The Discrete Trial

- Everything starts with the discrete trial
- It is the basic component of any ABA programming method

SD → R ← SR

Discriminative Stimulus → Response ← Reinforcing Stimulus

Discrete Trial Training (DTT)

- Modeled after Dr. Ivar Lovaas'work
- Community may label it "DTT," "Traditional programming," or "Lovaas Therapy"
- Phases of teaching:
  - Mass Trial (MT/Isolation Trial)
  - Distracter Trial (DT)
  - Expanded Trial (ET)
  - Random Rotation (RR)

Mass Trial (MT)

- Concept is to train a skill repeatedly over a mass number of trials – “massed practice”
  - Target behavior is repeated multiple times with little or no rest between responses
  - Example – ask the student to “touch nose” 10 times in a row
- Isolation Trial – what does that mean?
- Prompts still provided and systematically withdrawn

Distracter Trial (DT)

- Focus is beginning *discrimination* training
  - Teaching discrimination between objects/items
- Process:
  - Target item is presented with secondary (neutral) stimulus
  - Student is asked about the target item only, never the secondary stimulus
  - Massed practice applied
- Ensures discrimination between multiple stimuli presented *simultaneously*

Distracter Trial (Continued)

- Types of secondary stimulus
  - Blank stimulus
  - Neutral stimulus (unknown to the student)
  - Known stimulus
- Quantity of secondary stimulus (Field of View)
  - May increase before moving to next phase
- Distracter Trial Phase not always applied
  - Based upon individual student needs

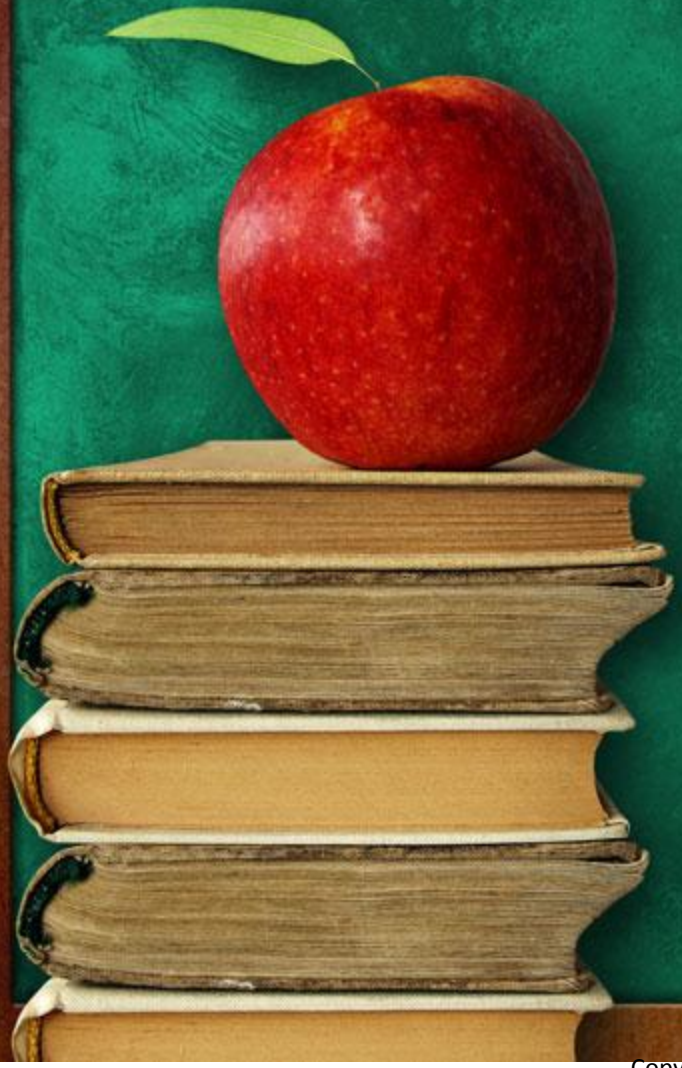
Expanded Trial (ET)

- Based on dissertation work of Dr. Tristram Smith
- Application modified from his methodology
- Purpose is to build *retention* of a skill by gradually increasing the interval between trial presentations
- Expanded Trial Phase not always applied
  - Based upon individual student needs

Expanded Trial continued

- Process:
  - Target skill is presented systematically with mastered skills
  - Number of mastered skills between target skill is gradually increased
  - There is approximately 1 second between each discrete trial
  - Massed practice is still assumed
  - Can be applied within same program or with different program skills

Example ET Sequence



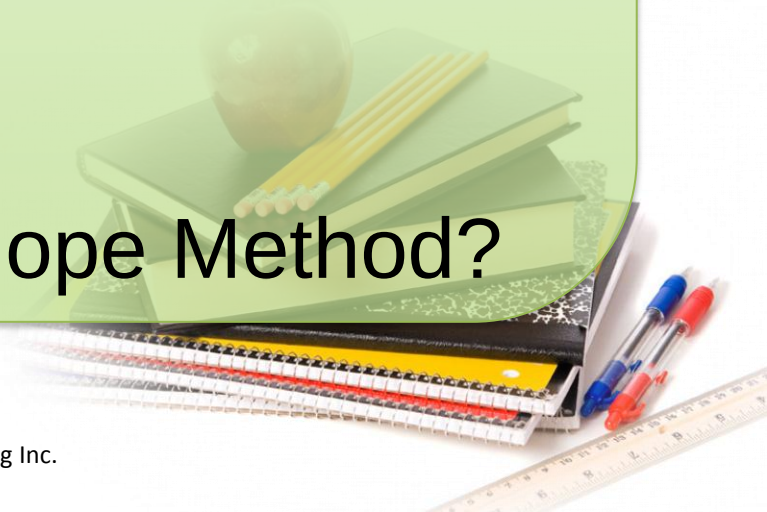
- ET1 → ET2 → ET3
  - Target item
  - Mastered item
  - Target item
  - Mastered item
  - Mastered item
  - Target item
  - Mastered item
  - Mastered item
  - Mastered item
  - Target item

Random Rotation (RR)

- Teaches the student to fully discriminate and thus truly test mastery
- Process:
  - Target skill presented along with mastered skills
  - Behavioral momentum
  - Variable schedule/*Random* presentation between target and mastered, asking for responses to all targets both acquisition and mastered
  - Statistically significant outcomes – total number of trials presented vs. number of acquisition trials

Maintenance & Generalization

- Maintenance schedules
  - Example: Rule of 3 then probe
- Generalization
  - Stimuli
  - Vocal instruction or presentation
  - Persons
  - Environment
  - Time
- What is the Teach & Hope Method?



DTT Data Collection

- Accuracy; percent correct
- Data is taken on the total number of correct and incorrect responses – trial by trial data
- Mastery criteria
  - Commonly applied at 80% or higher across a minimum of 2 persons
  - How do you determine %? Is 80% high enough? Why or why not?
  - Why across 2 or more persons?
- Prompted responses are not considered correct responses for data purposes

Skills to Teach with DTT

- New behaviors requiring high repetition
- Imitation skills
- Receptive language
- Echoic skills

Natural Environment Training (NET)

- Based on incorporating the student's motivating operations in your teaching
  - Increases or decreases the value of the reinforcer in the moment
- Intervention variables are considered which may affect motivation:
  - Setting variables
  - Task variables
  - Reinforcement variables
- Training is done in the natural environment

Key Components of NET

- Motivation
- Reinforcement
- Pairing
- Errorless Learning
- Building behavior momentum
  - Interspersal trials
- Contrive opportunities

Common NET Data Collection Methods

- First response
  - Of the session
  - Of the day
- Mastery Criteria

Skills to Teach with NET

- Mand training
- Listener responding
- Tact – label
- Echoic behavior
- Intraverbal skills
- Imitation
- Other

Mix & Vary Teaching

- Strategically intersperse, or mix, varied skills and tasks *(task interspersal teaching)*
- Errorless Learning
- Build behavior momentum and responding
  - High number of mastered skills around acquisition
- Typically done as part of or within other methods:
  - NET
  - Verbal behavior programming

Mix & Vary

- Higher level of discrimination required from the start
- Requires continued attending skills
- Pace of presentation
- Increased number of trials per sitting; attend for longer periods
- May reduce the need for training generalization in separate sessions

Common Mix & Vary Data Collection Methods

- 1st response
  - Of the day
  - Of the session
  - Of the sitting
- Correct and incorrect piles

Skills to Teach with Mix & Vary

- Imitation
- Listener responding
- Echoics
- Tact
- Intraverbals
- Mands

Verbal Behavior

- Formal vs. Functional properties of language
- Both speaker and listener behavior
  - Speakers gain access to reinforcement and control their environment through the behavior of listeners
  - Listeners must learn how to reinforce the speaker's verbal behavior, meaning that listeners are taught to respond to words and interact with speakers

Cooper, J.O., Heron, T.E., & Heward, W.L. (2007)
Chapter written by Mark L. Sundberg

Verbal Operant

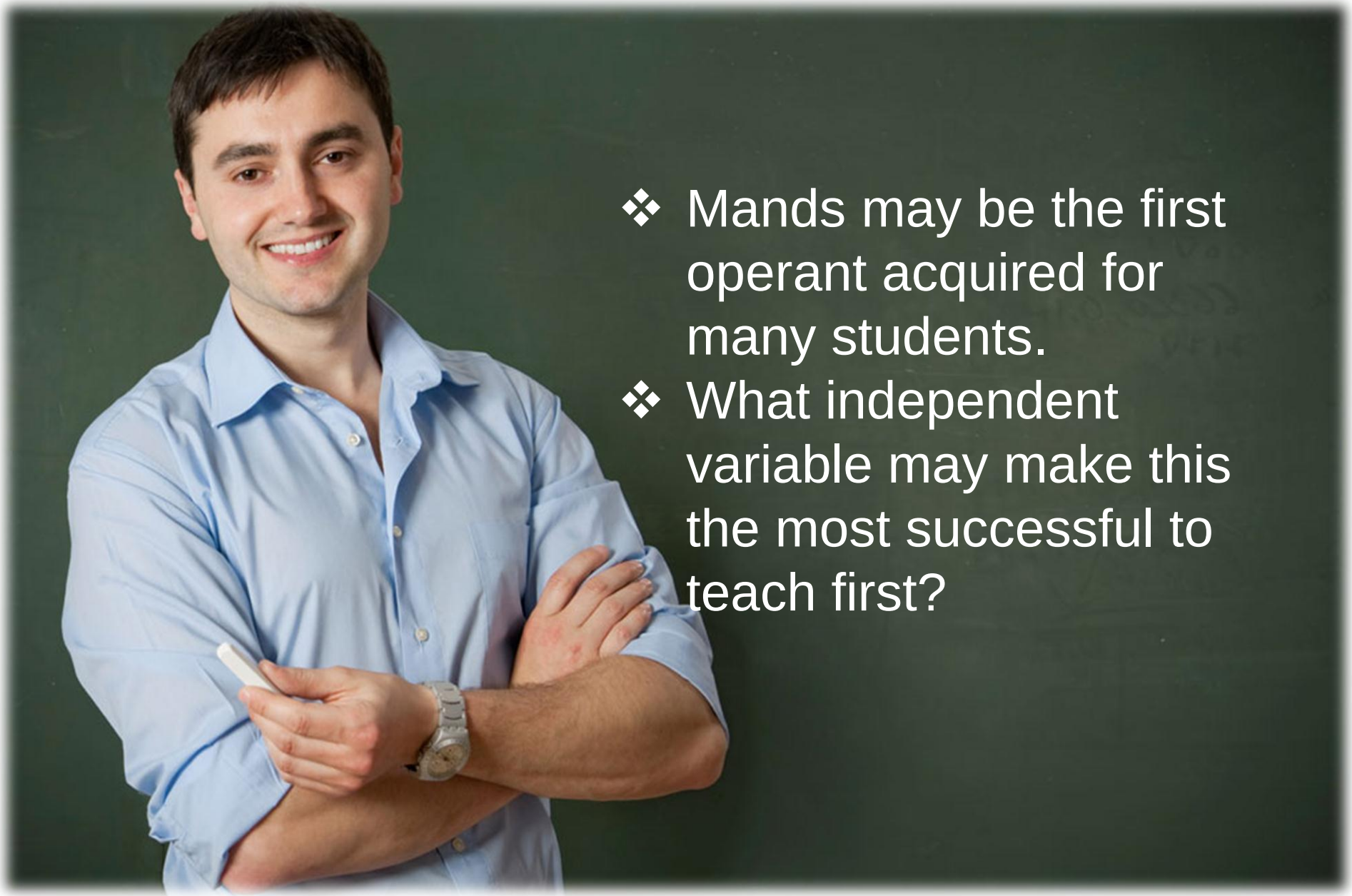
- Unit of analysis = Verbal Operant
- Functional relationship between responding and IVs that control behavior:
  - Motivating operations
  - Antecedent stimuli
  - Consequences

Elementary Verbal Operants

- Mand
- Tact
- Echoic
- Intraverbal
- Textual
- Transcription

Verbal Behavior Programming (VB)

- Teach child to respond appropriately to verbal stimuli AND how to behave verbally as a speaker
- A key component of successful language training for students with autism is teaching students to use particular words across the many conditions in which the word may be needed.
- This simply means that the student will need to learn to use words appropriately as mands, tacts, echoics, and intraverbals as well as to respond to the word as a listener when someone else speaks it.
- Keep in mind that simply because the learner can label a ball does not mean that it will be used when the student wants to ask for a ball.
  - Because the student can tact “ball” when a ball is present does not mean that the student can respond “ball” as an intraverbal when asked, “What do you bounce?”



- Mand -verbal behavior wherein a *motivating operation* occurs in the antecedent condition, the response specifies its reinforcer, and the response is maintained by consequences that involve direct reinforcement (delivery of what has been specified). Dipuglia, A. and Milklos, M. (2003)

The Mand

- Asking questions, calling out for attention, making choices, or saying “stop that” are all mands.
- Although mands often result in tangible reinforcement, mands can also be reinforced by events such as obtaining attention or information.

Dipuglia, A. and Milklos, M. (2003)

The Mand

Antecedent	Behavior	Consequence
No specific antecedent (discriminative stimulus) Or Specific Motivative Operation	Verbal behavior: Specifies Reinforcer	Direct Reinforcement (The speaker receives whatever they asked for)
Student wants juice.	Student says “juice.” Student exchanges an icon of “juice”	Student gets juice.

Dipuglia, A. and Milklos, M. (2003)

The Tact

- Some examples of tacts are: saying “juice” when you see juice; saying “juice” when you smell juice; or, saying “juice” when you taste juice.
- When we label actions or features of objects, we are also emitting tacts.
  - Examples: running, laughing, swimming, wheels, windows, etc.

Dipuglia, A. and Milklos, M. (2003)

The Tact

- So, when one says “juice” when seeing juice, it may be followed by “that’s right, it is a juice.”
- Reinforcement may be attention from a listener, such as eye contact, head nods, or as tangible as receiving a bit of food.

Dipuglia, A. and Milklos, M. (2003)

The Tact

Antecedent	Behavior	Consequence
Sensory stimulus serves as discriminative stimulus. Seeing, hearing, feeling, touching, tasting, smelling.	Verbal behavior: Usually involves “labeling”	Non-Specific Reinforcement
Student sees (smells, tastes, or hears) juice.	Student says “juice.”	Student gets reinforced by some non-specific event, like praise or attention.
	Dipuglia, A. and Milklos, M. (2003)	

The Echoic

- Echoic behavior is repeating what someone else says
- The antecedent for the echoic is someone else's vocalization and the response is also vocal. The response duplicates features of what is said.
- Echoic behavior is useful for teaching other forms of verbal behavior such as mands, tacts, and intraverbals. Dipuglia, A. and Milklos, M. (2003)

The Echoic

Antecedent	Behavior	Consequence
Vocal Verbal Stimulus	Verbal behavior: Usually involves a vocal duplication of the verbal antecedent stimulus (The person repeats all or part of what has been said)	Non-Specific Reinforcement
Student hears someone say “juice	Student says “juice.”	Student gets reinforced by some non-specific event, like praise or attention.

Intraverbal

- Conversational responses and answering questions are common terms used to describe intraverbal behavior.
  - "what's you address?" "what's your favorite movie"
  - In other words, the response is not the same as the stimulus. Common names for intraverbal responses may include answering questions, word- associations, fill-ins, conversational responses, etc. Dipuglia, A. and Milklos, M. (2003)

Intraverbal

- Conversational responses and answering questions are common terms used to describe intraverbal behavior.
  - "what's you address?" "what's your favorite movie"
  - In other words, the response is not the same as the stimulus. Common names for intraverbal responses may include answering questions, word- associations, fill-ins, conversational responses, etc. Dipuglia, A. and Milklos, M. (2003)

Intraverbal

Antecedent	Behavior	Consequence
Verbal Stimulus (For intraverbal, both antecedent and response verbal behavior can be in any form: does not have to be vocal)	Verbal behavior: Does not duplicate the verbal antecedent stimulus (does not share point to point correspondence) The speaker answers questions, fills in statements, makes word associations, etc.	Non-Specific Reinforcement
Someone asks a question, i.e., “What do you drink?”	Student says “juice.”	Student gets reinforced by some non-specific event, like praise or attention.

Dipuglia, A. and Milklos, M. (2003)

Listener Responding (Receptive)

- Listener responding generally involves people following directions.
  - A common name for listener responding is receptive language.

Dipuglia, A. and Milklos, M. (2003)

Listener Responding (Receptive)

- For example, standing up following someone saying or “stand up” is a listener response.
  - Other examples of listener response or receptive behavior include touching a picture or object when it is named, looking at an item when it is named, or following simple one-step directions or multiple component directions.

Dipuglia, A. and Milklos, M. (2003)

Listener Responding (Receptive)

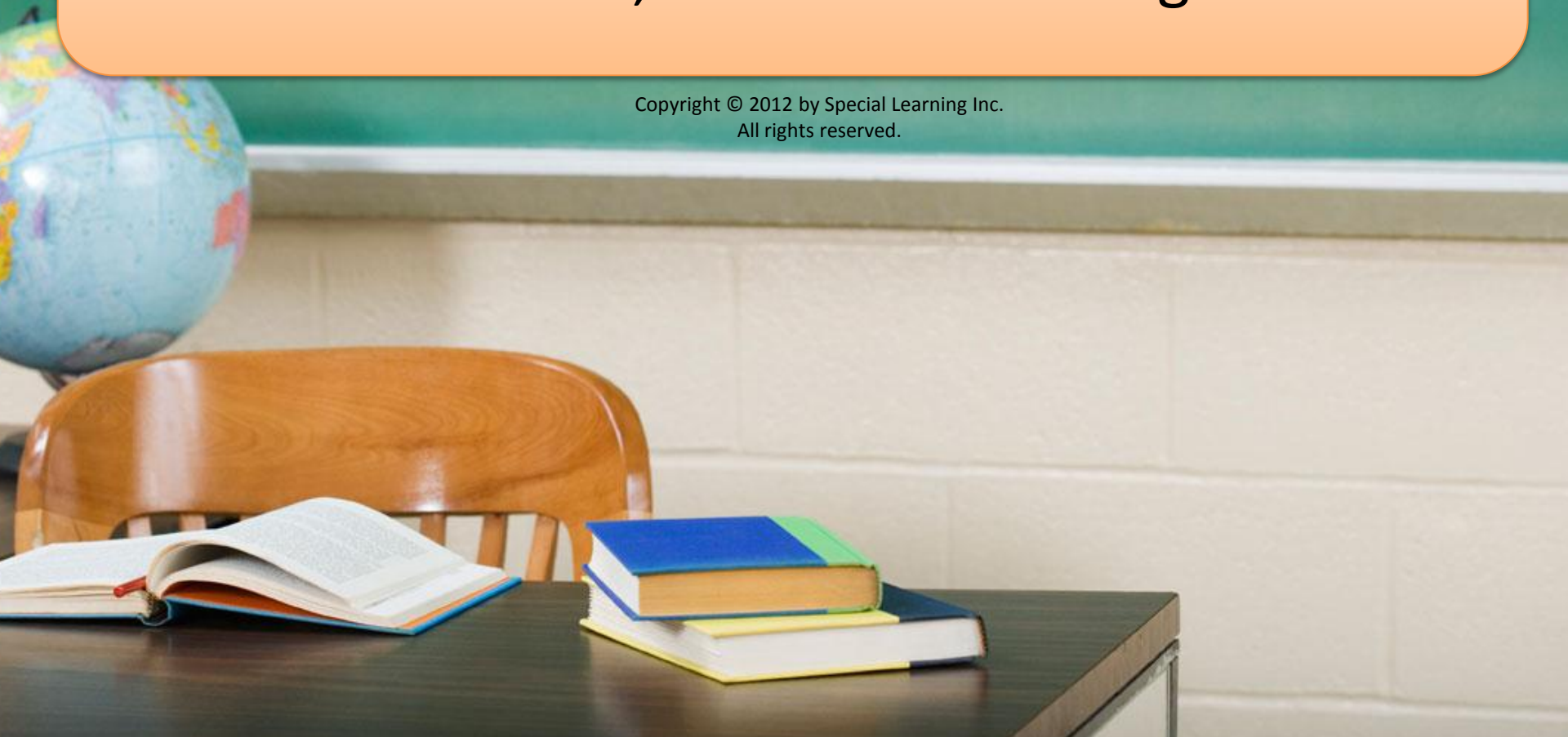
Antecedent	Behavior	Consequence
Vocal Verbal Stimulus	Non-Verbal behavior: Usually involves following directions or conditional discrimination (a selection response: touching something when it is named)	Non-Specific Reinforcement
Student hears someone say “juice	Student touches a picture of a juice.	Student gets reinforced by some non-specific event, like praise or attention.

Dipuglia, A. and Milklos, M. (2003)

Trial	Instuctor SD	Learners Response	Verbal Operant	Data Collection
1	What are these?	Scissors	Tact	+/- or Prompt level used
2	Tell me something you eat	Fruit snacks	Interverbal	+/- or Prompt level used
3	Say “green”	green	Echoic	+/- or Prompt level used
4	Show me your ears	Touches ears	Receptive	+/- or Prompt level used
5	What’s this?	cat	Tact	+/- or Prompt level used
6	A flower has a_____	stem	Intraverbal	+/- or Prompt level used
7	Show me clapping	clapping	Receptive	+/- or Prompt level used
8	A bird says _____	Tweet tweet	Intraverbal	+/- or Prompt level used
9	What do you carry when it rains?	Umbrella	Intraverbal	+/- or Prompt level used

Pivotal Response Training (PRT)

- "Pivotal" in that the behavior learned appears to result in widespread positive changes in a number of areas, even those untaught.



Pivotal Behaviors

- Motivation
- Self-initiation (approaching others)
- Responding to multiple cues
- Self-Regulation

PRT Behavioral Procedures

- Behavior interventions applied include:
  - Series of “opportunities” to teach:
    - 3 steps
      - Antecedent
      - Behavior
      - Consequence
  - Prompts
  - Reinforcement
    - Reinforcer effectiveness – DISC

Pivotal Behavior = Motivation

- Motivation procedures:

1. Getting your child's attention and providing clear prompts
2. Contingent and immediate reinforcement
3. Natural reinforcers – direct response-reinforcer relationship
4. Reinforcing attempts – successive approximations
5. Interspersing maintenance and acquisition – build behavioral momentum
6. Shared control – follow child's lead, opportunities during natural activities

Sample Target Skill = Learning 1st Words

- 2 Goals
  - Communicative Intent
    - Request
  - Specific Labels
    - Commenting
- Single words
- Spontaneous and independent
  - Child initiations predict more favorable outcomes

Goal of PRT procedures is to increase child's motivation to engage in functional, verbal communication

Skills to Teach with PRT

- Initial communication skills
- Appropriate & symbolic play skills
- Complex social behaviors
- Self-management

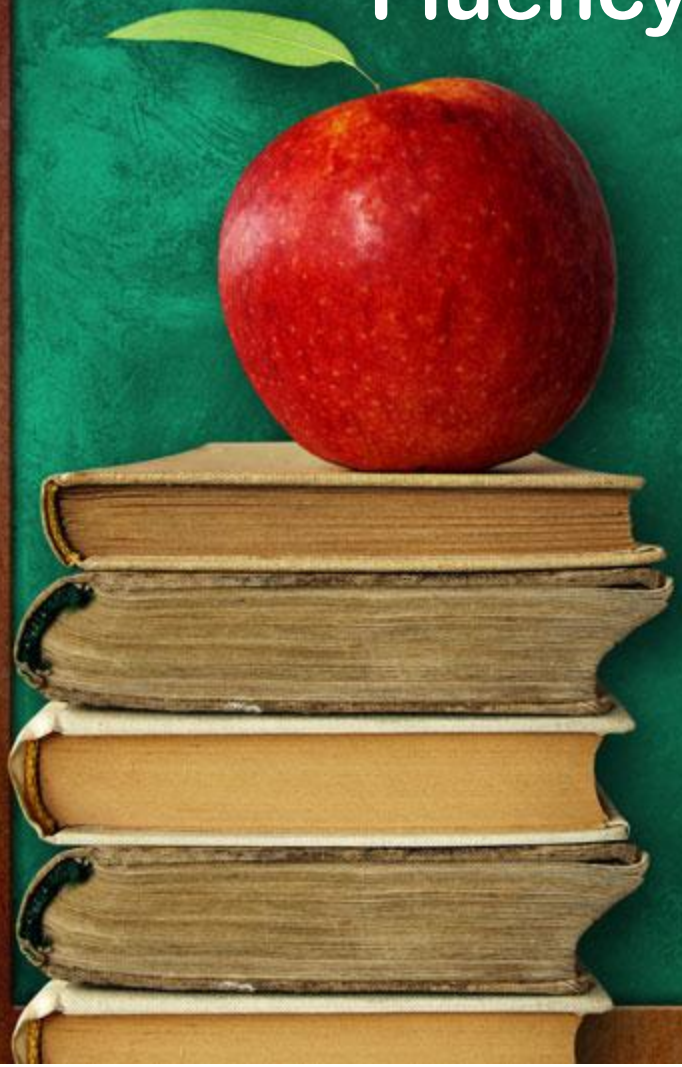
Fluency-Based Instruction (FBI)

- Definition: responding accurately, quickly, and without thinking about it = automaticity
- Grew out of Precision Teaching in ABA
- Regularly applied in education
- Increases practical application of skills
- Increases ability to learn more advanced skills
  - Component skills vs composite skills

RESSA

- Retention
  - Retention = no opportunity to emit behavior
  - Maintenance = opportunity to emit behavior to produce reinforcement
- Endurance (sustained performance)
- Stability (with distraction)
- Application (maintain rates in novel situations)
- Adduction (creation of new skills)

Components of a Fluency-Based Program



1. Build accuracy
2. Daily practice under timed conditions
3. Charting and decision-making
4. Teach to reach aim
5. Test (RESAA)

Session Process

- Process:
  - Skill baseline taken
  - Fluency aim identified (performance aim)
  - Short instruction periods (10 seconds) that gradually increase until you reach aim
  - Coaching provided during instruction

Performance Standards

- Fluency Aims – Performance Standards
  - Based on assessment of neurotypical performance abilities
  - Kubina, R.M. (2002)
  - http://www.precisionteachingresource.net/psfluencyaims.pdf

FBI Data Collection

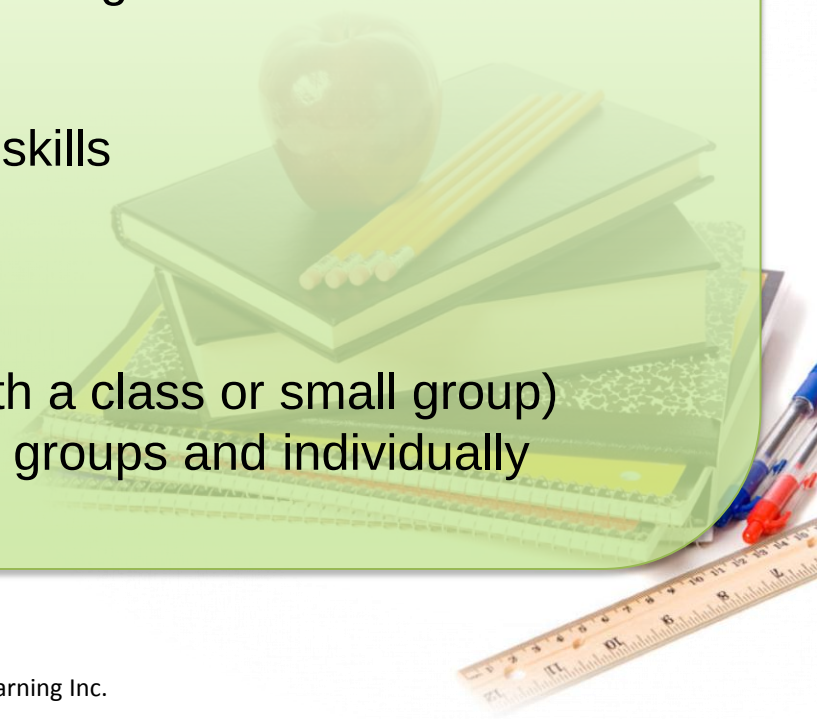
- Rate = Accuracy & Speed
- Correct and error responses are recorded separately
- Standard Celeration Chart (SCC)
  - Ongoing decision-making tool
  - Data failing to accelerate or decelerate prompts change in intervention
- Incorporate the student
  - Show them their progress
  - Show them their aims prior to the sitting
  - Move to self-tracking

Skills to Teach within Fluency-Based Instruction

- Core motor skills
  - The Big 6
  - The Big 6 Plus 6
- Response latency
- Communication
- Interacting with others
- Executive function abilities
- Others

Direct Instruction (DI)

- Is a scientifically validated, explicit, intensive instructional teaching method based on the theory that clear instruction eliminates misinterpretations and that will greatly improve and accelerate learning
- Components include
  - A systematic scope and sequence designed around small learning increments
  - Clearly defined teaching tasks
  - Repetition built in to help maintain skills
  - Frequent assessment
  - Clearly defined scripts
  - Ability grouping
  - Choral responding (when using with a class or small group)
- Can be used with a whole class, small groups and individually



Background on Direct Instruction

- Created by Siegfried “Zig” Engelmann and Dr. Wesley Becker in the 1960’s as part of Project Follow Through
- Based on 2 principles
  - All students can learn when taught correctly, regardless of past history and background
  - All teachers can be successful, given effective teaching materials and presentation techniques
- DI was their attempt to merge rule learning with the principles of Applied Behavior Analysis
- Substantial empirical research supports DI’s effectiveness
  - See end of powerpoint for research details

The 3 Keys to a Direct Instruction Curriculum

- **Design**
  - Concepts are broken down into manageable steps
  - Clear, concise language is used
  - Skills and steps are first modeled
  - Then guided practice allows learners to be successful
  - Multiple examples are provided
  - Previously learned skills are integrated for frequent repetition and maintenance
  - Continuous assessment
- **Delivery**
  - Ensure learners begin at an appropriate level by administering placement tests
  - Follow the scripted lessons
  - Quick pacing and group response
  - Built-in correction procedure (model, lead, test)
  - Positive reinforcement
- **Documentation**
  - One of the only scientifically validated curriculums

How to implement a Direct Instruction Curriculum

1. Determine which curriculum will address the learners needs
2. Administer the placement test.
   - ❖ Placement tests are usually in the instructor's guides and also available on-line through MHEonline.com by searching by the tests name. This is helpful before purchasing!
3. Group students for instruction (if whole group)
4. Review the instructor's guide and scripts prior to beginning instructoin
5. Begin instruction using the scripts from the Presentation Book.
   - ❖ If there is too much language for the learner, can modify the script to meet the learner's needs. Visual and auditory signals/cues are used to elicit choral responding
6. Take data
7. Assess the learner's progress with the mastery tests, approximately every 10 lessons for many of the curricula.

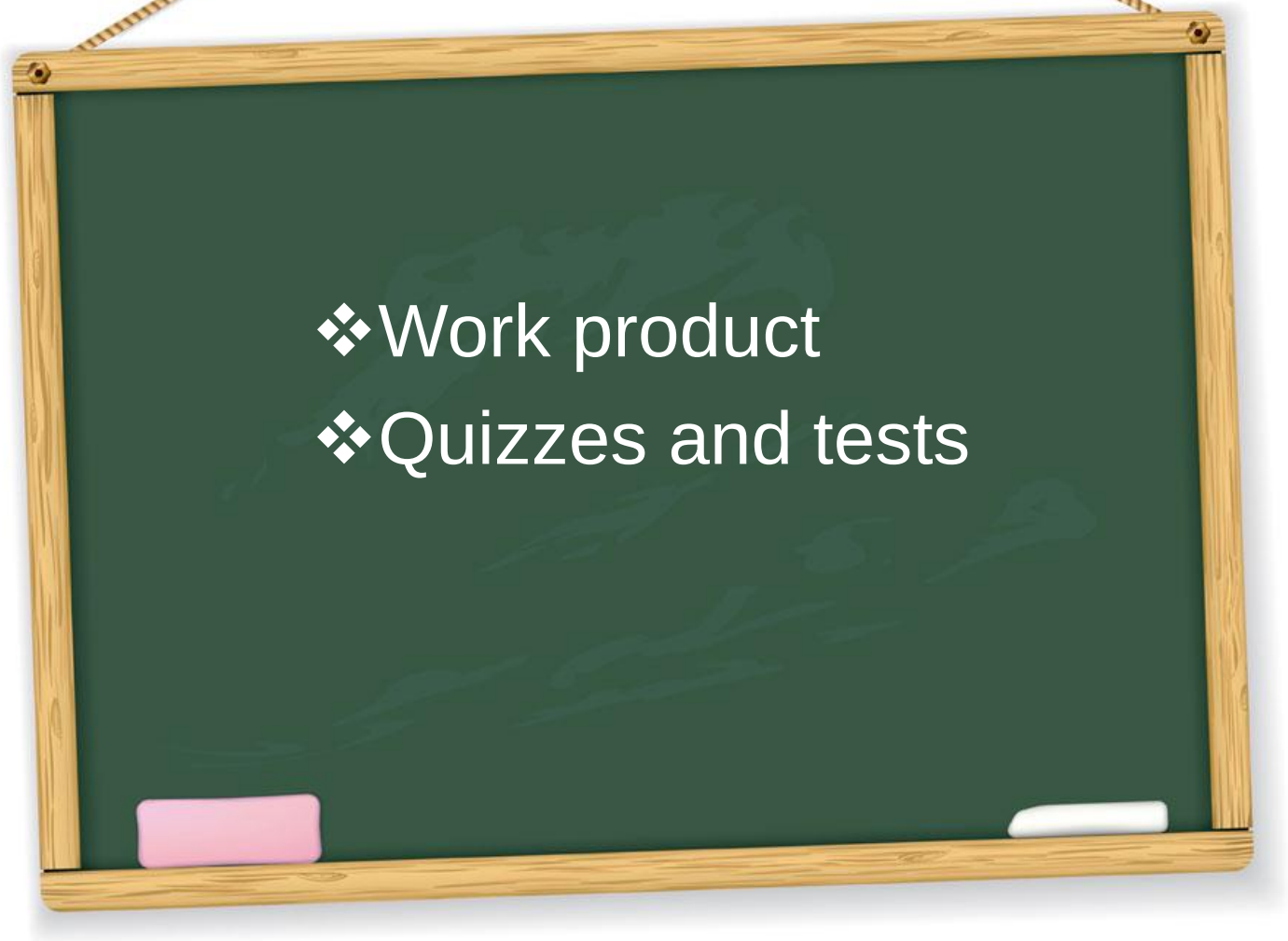
Some notes on DI sessions

- Prepare for the session ahead of time. Reading the script can sound unnatural, practice!
- Have the corresponding worksheets/take home materials ready
- Skip around in the sections, mix it up, keep it interesting for the learner

Direct Instruction Curriculums

- Language for Learning
- Language for Thinking
- Reading Mastery
- Math Mastery
- Spelling Mastery
- DI is not just for classroom use. There are 3 programs created explicitly for home use:
  - Teach Your Child To Read in 100 Easy Lessons
  - Funnix Beginning Reading
  - Funnix Beginning Math

DI Data Collection Methods



Skills to Teach with DI

- Reading
- Writing
- Math
- Spelling
- Language discrimination
- Thinking skills

Peer Mediated Intervention

- Peer imitation – typically a basic developmental process
- Teach peers to engage in specific social behaviors or strategies to direct classmate such as:
  - Attend to classmate
  - Comment on and acknowledge behavior of classmate
  - Gain classmate's (listener) attention, be persistent
  - Maintain interactions
  - Initiate conversation
  - Initiate play
- Key to inclusion is social and behavioral programming with peers to develop meaningful participation

Some Research Findings

- Evidence supports:
  - Peer tutoring
  - Cooperative groups
  - Social skills groups
  - Peer networks with academic and social components
- Generalization not always consistently demonstrated
  - For both students with disabilities and peers

Peer Training Components

- Train peer
  - Reinforce their classmate
  - Initiate interactions with classmate
  - Model skills
  - Expectations of their classmate
- Reinforcement for both peer and student with disability
- Peer self-monitoring systems
- Plan and prepare setting, stimuli, and activities

How to Increase Likelihood of Success

- Predictors of success
  - proximity
  - Listener attention
- Increase frequency of current peer behavior vs novel
- Manipulate setting events – shared attention
- Cooperative learning vs social groups
- Look at communicative functions
  - Comments
  - Requests for information
  - Requests for actions
  - Simple acknowledgements

Skills to Teach with Peers

- Sharing
- Play skills
- Turn taking
- Communicative interactions
- Cooperation
- Following social rules
- Choral responding

Selecting a Teaching Methodology

- Ethics for Behavior Analysts
  - Competence (1.02)
- Base decision on assessment data
  - Learner's strengths, weaknesses, needs
  - Learner preference (parent preference)
  - Ability to implement (social validity)
- Make Data-based decisions
  - Does the current teaching method and/or instructional procedure demonstrate progress?
  - Be prepared to modify if needed

Strengths & Weaknesses

- Specific skills more appropriate within specific teaching methodologies
- Data collection pros and cons
  - Time to take data
  - Information the data provides you
  - Visual analysis components
  - Proven effectiveness of data
    - Trial by trial vs. first response
    - Accuracy/percentage vs. rate

Strengths & Weaknesses

- Social Validity variables
  - Time
  - Cost
  - Training
  - Ability to apply
  - Other

A Few Key Behavioral Strategies

- Pairing
- Errorless Learning
- Prompts
- Shaping
- Behavior Chain Procedures
- Correction Procedures

Pairing

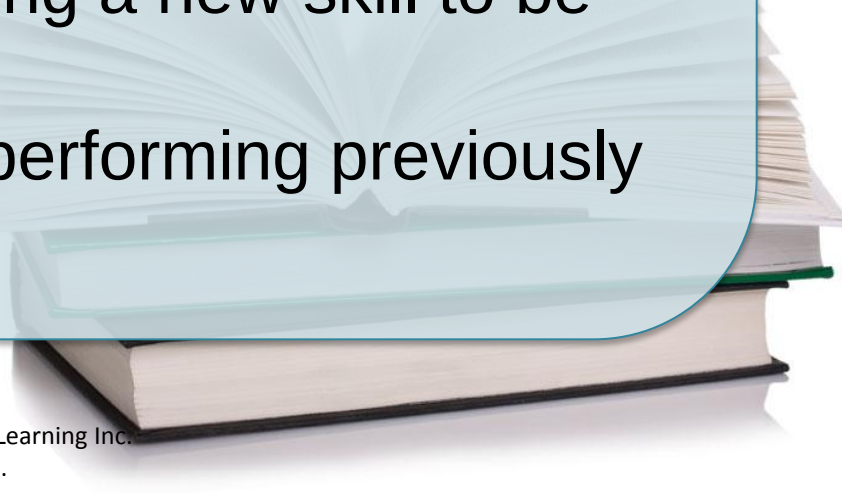
- Conditioned Reinforcers
- Stimulus-Stimulus pairing
  - Identify unconditioned/primary reinforcer = stimulus
  - You = neutral stimulus
  - Stimulus-Stimulus pairing = Pair with the primary reinforcer to condition yourself as a reinforcer = conditioned reinforcer/secondary reinforcer

Pairing Notes

- Numerous pairings increase the likelihood that you will function as a conditioned reinforcer
- Effectiveness of the primary reinforcer is a function of the momentary EO
- Also pairing process called verbal analog conditioning

Errorless Learning - Prompts

- Definition: teaching in a manner that minimizes the possibility of errors by using prompting and prompt fading strategies so that the student will be successful.
- When to use Errorless Learning:
  - When first gaining instructional control
  - When you are introducing a new skill to be taught
  - When a student is not performing previously mastered skills



Prompts

- Supplementary stimuli that eventually controls the behavior
- Types of prompts:
  - Response Prompts
    - Associated with the response such as verbal direction, modeling, physical guidance
  - Stimulus Prompts
    - Cues used in conjunction with the task stimuli or instructional materials such as positional prompts, visual prompts, textual prompts

Prompt Transfer Procedures

- Transfer stimulus control procedures *(fading)*
  - Response prompt fading
    - Most-to-least prompts
    - Graduated guidance
    - Least-to-most prompts
    - Time delay
  - Stimulus prompt fading – *(Stimulus Control Shaping)*
    - Stimulus fading of the specific dimension
    - Stimulus shape transformations

Behavior Shaping

- This procedure has the following components:
  - Differential reinforcement
  - Successive approximations
  - Terminal behavior – predetermined criterion level
- Shape different dimensions of behavior
  - Topography
  - Frequency
  - Latency
  - Duration
  - Magnitude

Shaping Considerations

- Teaches new behaviors systematically and gradually using a positive approach as reinforcement is delivered constantly
- Very effective but often takes a long time
- More efficient to combine shaping with other procedures (e.g. chaining)
- Communication with treatment team regarding what level of response to accept

Behavior Chaining

A behavior chain consists of:

- Specific sequence of behaviors
- Each discrete response acts as a
  - A) discriminative stimulus for the next response
  - B) conditioned reinforcer for preceding response
- Each response moves closer to the final response which produces the ultimate reinforcer

Behavior Chain Procedures

- Forward
- Backward
- Total Task Presentation

Steps to Follow

- Set the target behavior
- Complete a task analysis
- Determine which steps the student already performs independently and which steps need to be taught/shaped
- Get individual steps under SR control
- Fade SR until the reward occurs only at the end of the chain

Factors Affecting Behavior Performance

- 7 major factors:
  - Completeness of task analysis
  - Length or complexity of the chain
  - Schedule of reinforcement
  - Schedule of nonreinforcement (extinction)
  - Stimulus variation
  - Response variation
  - Staffing and supervision patterns

Dipuglia, A. and Milklos, M. (2003)

3 Common Error Correction Procedures

- No-No-Prompt
- No-Prompt
- Extinction

Related Tools and Resources

- Ebook #4
- Manding – ABA Literature Summary. Special Learning June 2011 Issue)
- Teaching Language to Children with Autism or Other Developmental Disabilities
- ABLLS-R
- VB-MAPP Protocol and Guide Combo
- The ABA Language Cards: *Early Language*, Over 2000 Flashcard Set
- Teaching Early Language: Animals, Shapes, Colors, Letters, Numbers Flashcard Downloads
- Learning Kits

References

- Skinner, B.F. (1957). Verbal behavior. New York: Appleton-Century-Crofts.
- Carbone, Vincent (rv 2007). Teaching verbal behavior to children with autism and related disorders.
- Lynch, M. B., & Rasmussen, T. (2007). The verbal behavior approach: how to teach children with autism and related disorders. London, Jessica Kingsley Publishers.
- Weiss, M.J. (2005). Comprehensive ABA programs: integrating and evaluating the implementation of varied instructional approaches. *The Behavior Analyst Today,* 6(4), 249-256.
- Goldstein, H., Kaczmarek, L., Pennington, R. & Shafer, K. (1992). Peer-Mediated intervention: attending to, commenting on, and acknoledging the behavior of preschoolers with autism. *Journal of Applied Behavior Analysis,* 25, 289-305.
- Kamps, D.M., Barbetta, P.M., Leonard, B.R. & Delquadri, J. (1994). Classwide peer tutoring: an integration strategy to improve reading skills and promote reading interactions among students with autism and general educaiton peers. *Journal of Applied Behavior Analysis,* 27, 49-61.

References

- Lovaas, O. I. (1987). Behavioral intervention and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology,* 55, 3-9.
- Smith, T. (1994). Improving memory to promote maintenance of treatment gains in children with autism. *The Psychological Record,* 44, 459-473.
- Cooper, J.O., Heron, T.E., and Heward, W.L. (2007). Applied behavior anlaysis: second edition. Upper Saddle River, New Jersey, Pearson Education, Inc.
- Sundberg, M.L. & Partington, J.W. (1998). Teaching language to children with autism or other developmental disabilities. Pleasant Hill, CA: Behavior Analysts, Inc.
- Weiss, M.J. Expanding ABA intervention in intensive programs for children with autism: the inclusion of natural environment training and fluency based instruction. *The Behavior Analyst Today, 2*(3), 182-186.
- Kamps, D. et. al. (2002). Peer training to facilitate social interaction for elementary students with autism and their peers. *Council for Exceptional Children,* 68(2), 173-187.

References

- Bailey, J.S. & Burch, M.R. (2011). Ethics for behavior analysts: 2nd expanded edition. New York, New York: Routledge Taylor & Francis Group.
- Kubina, R.M. (2002).http://www.precisionteachingresource.net/psfluencyaims.pdf
- Kubina, R.M. Jr. & Wolfe, P. (2005). Potential applications of behavioral fluency for students with autism. *Exceptionality,* 13(1), 35-44.
- Kubina, R.M. Jr. & Yurich, K.L. (January 2009). Developing behavioral fluency for students with autism: a guide for parents and teachers. *Intervention in School and Clinic,* 44(3), 131-138.
- Fabrizio, M.A. (February and March 2003). A parent's introduction to fluency: Parts I and II. The OARacle, Alexandria, VA: The Organization for AutismResearch. Available online at http://www.researchautism.org/newsletter_view2.asp?ID=15
- Haring, T.G. & Breen, C.G. (1992). A peer-mediated social network intervention to enhance the social integration of persons with moderate and severe disabilities. *Journal of Applied Behavior Analysis,* 25, 319-333.

References

- Ganz, J &Flores, M. (2009) The Effectiveness of Direct Instruction for Teaching Language to Children with Autism Spectrum Disorders: Identifying Material. *Journal of Autism and Developmental Disorders,* 39(1), 75-83.
- Watkins, C (2008) From DT to DI: Using Direct Instruction to Teach Students with ASD Association for Beahvioral Analysis International Newsletter, 31(3).
- Flores, M & Ganz, J. (2007) Effectivess of Direct Instruction for Teaching Statement Inference, Use of Facts, and Analogies to students with Developmental Delays and Reading Delays. *Focus on Autism and Other Developmental Disabilities,* 22(4) 244-251
- National Institue for Direct Instruction www.nifdi.org/15/
- Association for Direct Instruction www.adihome.org
- SRA Direct Instruction and Intensive Intervention www.sradirectinstruction.com

References

- www.Projectpro.com/ICR/Research/DI/Summary.htm
- Becker C & Engelmann C. (1996) Sponsor Findings from Project Follow Through. *Effective School Practices* (15) 1
- Koegel, R.L. & Koegel, L.K. (2006) Pivotal response treatment for autism: communication, social, & academic development. Baltimore, Maryland, Paul H. Brookes Publishing Co.
- Koegel, R.L., Schriebman, L., Good, A., Cerniglia, L., Murphy, C., and Koegel, L.K. (1989) How to teach pivotal behaviors to children with autism: a training manual. University of California, Santa Barbara, University of California, San Diego.
- Koegel, L.K., Koegel, R.L., Bruinsma, Y., Brookman, L., and Fredeen, R. (2003) Teaching first words to children with autism and communication delays using pivotal response training. University of California, Santa Barbara.
- Koegel, L.K., Koegel, R.L., Shoshan, Y., & McNerney, E. (1999). Pivotal response intervention II: preliminary long-term outcome data. *JASH,* 24(3), 186-198.
- Koegel, L.K., Koegel, R.L., Harrower, J.K., Carter, C.M. (1999). Pivotal response intervention I: overview of approach. *JASH,* 24(3), 174-185.

References

- Pierce, K. & Schriebman, L. (1997). Multiple peer use of pivotal response training to increase social behaviors of classmates with autism: results from trained and untrained peers. *Journal of Applied Behavior Analysis,* 30, 157-160.
- DiSalvo, C.A. & Oswald, D.P. (2002). Peer-mediated interventions to increase the social interactions of children with autism: consideration of peer expectancies. *Focus on Autism and Other Developmental Disabilities,* 17(4), 198-207.
- Binder, C. (1996). Behavioral fluency: evolution of a new paradigm. *The Behavior Anlayst,* 19, 163-197.

Project Follow Through Results