Discrete Trial Teaching (DTT)
Description and Implementation

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Today

- Provide a brief background and an overview of Autism Spectrum Disorder.

- Provide a brief background and an overview of Applied Behavior Analysis.

- Provide a description of DTT.

- Provide more information about the implementation of DTT in the classroom.

- Learn data collection procedures.

Today

- Provide the best practices for children with autism.
- The importance of providing DTT implementation training (staff development and teacher training in public schools).
- The results of visiting and observing a school implementing DTT.
- Factors in Saudi Arabia.

Opening Activity

Pre-Assessment

Take a few moments and read each statement.

Select T, F, or DK.

T: if you think the statement is correct.

F: if the statement is incorrect.

DK: if you do not know.

Part 1
Autism Spectrum Disorders (ASD)

Overview

- Autism Spectrum Disorder (ASD) is usually diagnosed before the age of three.

- People with autism are characterized as having the following core traits:

a. Impairments in verbal and non-verbal communication,
b. Impairments in socialization,
c. and restricted or stereotyped action behaviors.

(Autism Society of America, 2008)

Here are Facts

- Autism is no longer a rare disorder. The Centers for Disease Control and Prevention (2012) estimated that as many as 1 out of 88 children in the United States are currently affected.

Here are Facts

- The cause of autism is unknown and most likely results from many factors, such as a combination of genetics, environment, and brain functioning.

- Autism is not caused by parenting style. It is probably the result of changes in brain development that may occur before birth or shortly thereafter (Ruble & Gallagher, 2004).

Here are Facts

- Problem behaviors and deficits can range from mild to severe. ASD affects children differently (Ruble & Gallagher, 2004).

- Although some children may be on medication or receiving alternative treatment methods outside of school, the main treatments for autism are educational and behavioral approaches (Ruble & Gallagher, 2004).

Warm Up

- Have you asked yourself as a special education teacher or administrator, "what does your student with autism _really_ want?"

- Have you read the "Ten Things Every Child with Autism Wishes You Knew"?

Recommended →

Part 2
Applied Behavioral Analysis (ABA)

ABA

- This approach is a teaching method for motor, social, and verbal behaviors, and has been found to be particularly effective in teaching behaviors to children with autism (Hoefflin, 2007; Simpson, 2005).

- ABA is defined as:

" The science of applying experimentally derived principles of behavior to improve socially significant behavior."

Source: "The Administrator's Guide to Building and Maintaining a

Comprehensive Autism Program" by Mary Schillinger.

Applied Behavioral Analysis

- <u>Applied:</u> ABA takes what we know about behavior and uses it to stimulate positive change.

- <u>Behavior:</u> Behaviors are defined in observable and measurable terms in order to assess change over time.

- <u>Analysis:</u> The behavior is analyzed within the environment to determine what factors are influencing the behavior.

ABA has been called:

- "behavior modification"
- "operant conditioning"
- "behavioral analysis"
- "consequence learning"
 Autism Academy (2010)

Misconceptions

Within the autism community, ABA has been misrepresented as being synonymous with:

- Discrete Trial Training (DTT),
- Lovaas therapy,
- incidental teaching,
- pivotal response training, and other teaching procedures.

Autism Academy (2010)

ABA Techniques

All these ABA techniques have been found to be *effective and beneficial* as intervention methods for children with autism and other related disorders.
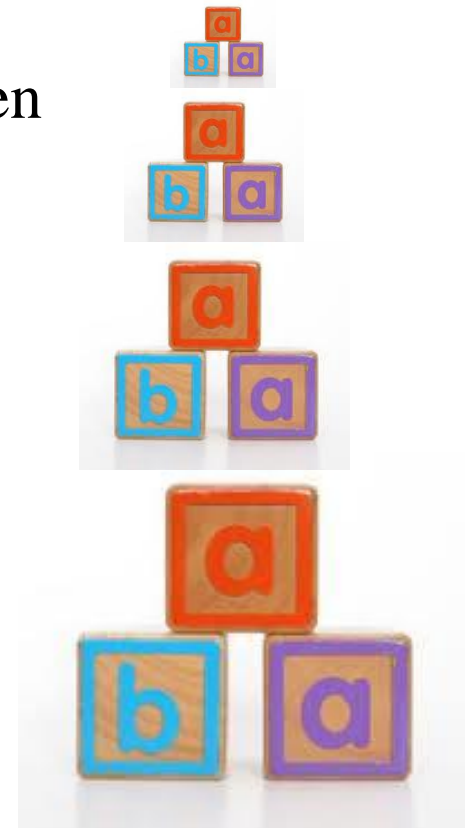
ABA Techniques

Discrete Trial Teaching (DTT)

Incidental Teaching (IT)

Pivotal Response Training (PRT)

Fluency Building (FB)

Verbal Behavior (VB)

Discrete Trial Teaching

- DTT involves an ABA expert providing clear instructions regarding a desired behavior, and once the child responds in an appropriate manner, this behavior is reinforced (Texas Statewide Leadership for Autism, 2009).

Incidental Teaching

- Incidental teaching utilizes the same principle as DTT; however, the goal in incidental teaching is to impart concepts and behaviors through the child's daily experiences instead of emphasizing a particular behavior (Texas Statewide Leadership for Autism, 2009).

Pivotal Response Training

- PRT utilizes ABA principles in targeting pivotal skills for others.

- It is based on the idea that development of a pivotal skill will lead to related development of other behaviors that were not targeted in the training.

Pivotal Response Training

- The idea in this case is that the child generalize ideas and apply them to daily settings (Koegel, Koegel, & McNerney, 2001).

Fluency Building

- FB involves the teaching of a complex behavior in steps until it is fluent, i.e., with the use of ABA techniques of observation, reinforcement, and prompting. The complex behavior is built from the fluent steps (Kubina & Yurich, 2009).

Verbal Behavior

- VB involves the use of the ABA technique to teach language and communication. In VB, the expert carries out an analysis of the language skills the child already has, and then develops and reinforces more helpful and complex skills (Goldsmith, LeBlanc, & Sautter, 2007).

Pair-Share Activity

- Exemplify each ABA method.
- In groups, discuss briefly "The Big Idea" of each method.
- Share them.
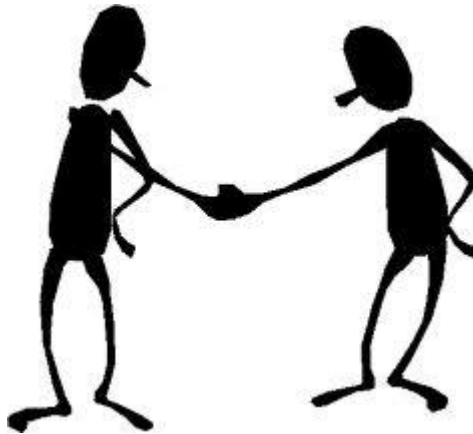
Part 3
Discrete Trial Teaching (DTT)
Descriptions and Benefits

DTT Description

- Discrete trial –small unit of instruction (usually) implemented in a 1:1 environment or small groups.

- The most widely studied approach for teaching children with autism.

- Surgeon General endorses DTT for children with autism.

DTT Description

- This is a style of teaching in which opportunities to respond (trials) are presented one at a time (discretely) so that the specific components are discernible to the learner, and so that an accurate recording of the learner's responses can be made.

Characteristics Overview Chart

Verbal Skills	Grade Levels	Cognitive Level	Areas Addressed
☒Nonverbal	☒PK	☒Classic	☒ (Pre)Academic/Cognitive/Academic
☒Mixed	☒Elementary	☒High	☒Adaptive Behavior/Daily Living
☒Verbal	☒Middle/High	Functioning	☒Behavior
			☒Communication/Speech
			☒Social/Emotional

DTT has Four Components

- DTT offers an orderly and intensive methodology for instruction that takes into account four components:

1. Presentation of a discriminative stimulus,
2. Targeted response approximation,
3. Reinforcing consequence delivery,
4. Inter-trial interval

    (Brown-Chidsey & Steege, 2004; Koegel, Russo, & Rincover, 1977).

Smith (2001) described each component as the following:

$$(S^D --> R --> S^R)$$

The discriminative stimulus (S^D) is a clear instruction given to the child, whereupon the child provides either a correct or an incorrect response (R).

Immediately following the child's response, the instructor gives a consequence (S^R): positive reward if the response was correct, an informal "no" if the response was incorrect.

$$(S^D --> R --> S^R)$$

- Then it is followed by an inter-trial interval (^{ITI}). It is a brief pause between each discrete trial, which makes the child knows that one instruction is completed and another is beginning (Simpson, 2005; Smith, 2001).

Main Techniques of DTT

The five main techniques utilized in DTT include:

1) Breaking the skills into smaller components.

2) Teaching until mastery is achieved.

3) Intensive teaching sessions.

4) Use of prompts is introduced, and then faded as required.

5) Reinforcement strategies are used for skill improvement and increase (Abby, 2011).
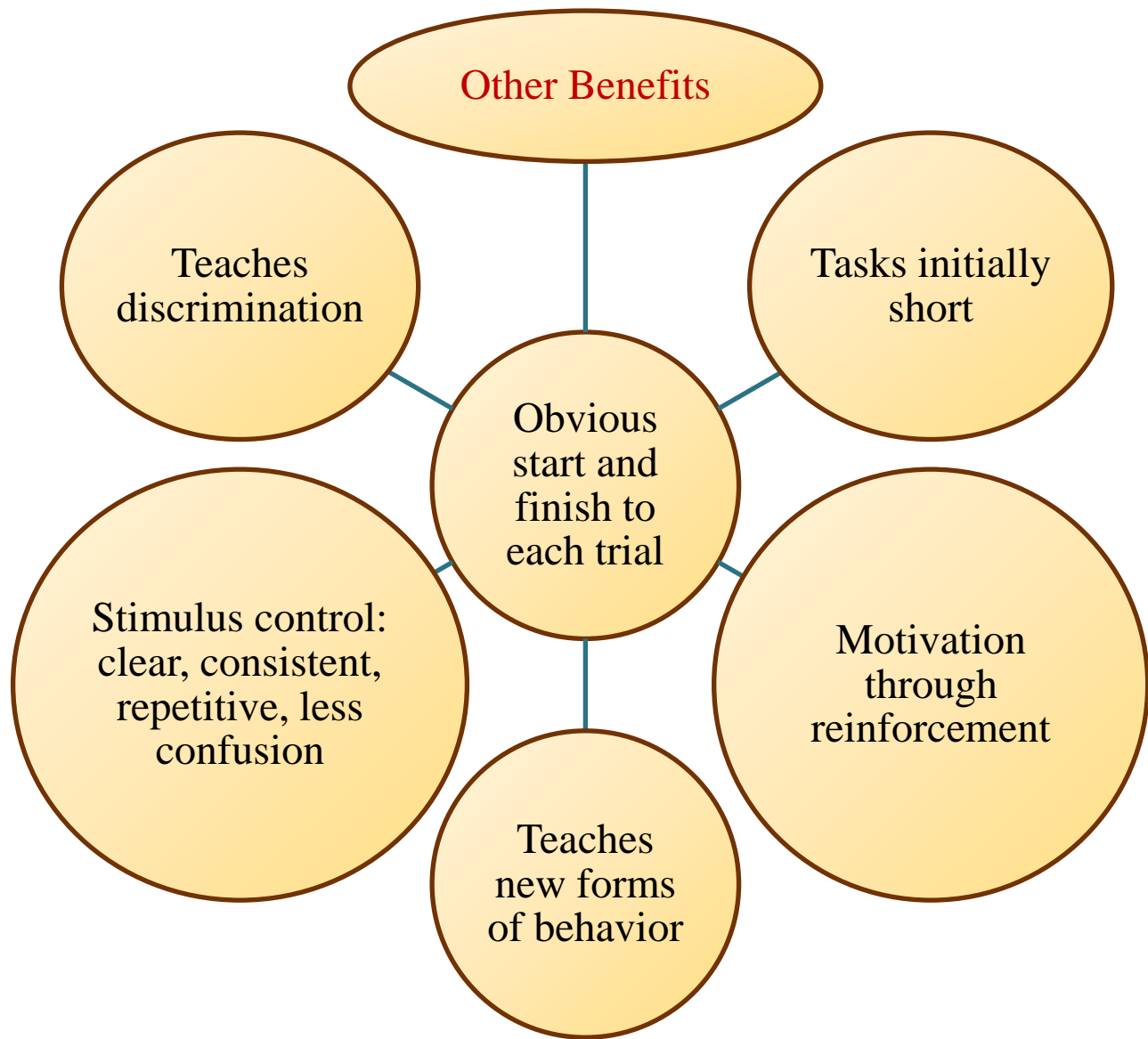
DTT Benefits

- DTT has been proven to be quite significant in the maximization of learning by helping to develop many skills, such as communication, play, cognitive, social, as well as self-help skills (Autism Treatment Info, 2011).

DTT Benefits

- DTT is a highly structured method that breaks teaching skills down into smaller teachable components. Dr. Ivar Lovaas began studying it in the 1980s, and with time, DTT has been shown to maximize students' comprehension and skills in learning (Abby, 2011).

Why Do Teachers Use DTT?

Other Benefits

Teaches discrimination

Tasks initially short

Obvious start and finish to each trial

Stimulus control: clear, consistent, repetitive, less confusion

Motivation through reinforcement

Teaches new forms of behavior

Autism Academy (2010)

Promotes generalization since generalization can be directly addressed through different settings and situations (table top, small group, playground, anywhere)

Other Benefits

Autism Academy (2010)

Part 4
Discrete Trial Teaching (DTT)
Implementation and Limitations

Implementation of DTT

- There are a number of steps in the implementation of DTT.

Step 1

Deciding what to teach, as well as assessment and summarizing results:

Determine the skills.

Evaluate and discuss the designed use of DTT.

DTT must clearly highlight the antecedent and behavior.

Step 2

Breaking skills down into teachable steps:

According to Cohen, Amerine-Dicks, and Smith (2006), this is the cornerstone of DTT, and a teacher's ability to analyze and break skills down into small teachable sessions enhances the success of the program.

In this step, we need: _Task Analysis_ for each skill!

Step 3

Setting up a data collection system:

- One of the defining characteristics of a high quality DTT program is the collection of trial by trial data.

- Data sheets are necessary for a particular skill.

- The DTT instruction plan requires the collection of trial-to-trial data.

Suggested Materials to Include in the Data Collection System

Trial by trial data sheets which contain:
- a place for documenting prompt level (Please see Prompting Brief)   - key for abbreviations   - criteria for mastery   - places to record the dates when trials are introduced and mastered
Graphing sheets
Data sheets which are both trial-by-trial and graphing in one (i.e., self graphing)
Data sheets for recording interfering behaviors
Other necessary data sheets (toileting, food intake, etc.)
Summary sheet for each session
Space designated for parent, therapist, and school communication

Step 4

Designating location(s):

- Make a list of the most appropriate locations.

- e.g., space and lighting availability; number of distractions, if any; and accessibility to peers for generalization.

Two settings can be better than a single one for each skill.

Step 5

Gathering materials:

- Providing the correct materials will make DTT implementation easier to implement (Bogin et al., 2010).

Step 5

Examples:
- Notebooks/binders for data collection
- Team communication,
- Preference list or menu based on preference assessment
- Variety of tangible reinforcers (edible or non-edible),
- Pictures or icons of preferred social activities (reinforcers),
- Instructional materials (letters, shapes, colors),
- Object related materials (blocks, toys, real life materials), Pens, pencils, markers

Step 6

Delivery of trials: (very important step)

1. Assist the learner to transition to the teaching location.

2. Obtain the learner's attention and together select a reinforcer.

3. Provide stimulus of instruction and wait for a response.

4. If the learner responds appropriately, deliver a reinforcer or mark the trial as correct.

# If the learner does not respond to or responds incorrectly!

A. Provide corrective feedback and begin the trial again, presenting the antecedent or cue.

B. Prompt the learner to respond correctly.

C. Reinforce and record the result of the prompted trial.

D. Provide another trial with reduced or no prompting.

E. Reinforce appropriately and record.

Pair-Share Activity!

- What kind of reinforces or tangibles have you used with your students in the classroom?
- Describe a "Reinforcer Survey" if you have used one before.

Talk to someone next to you and share your experience.
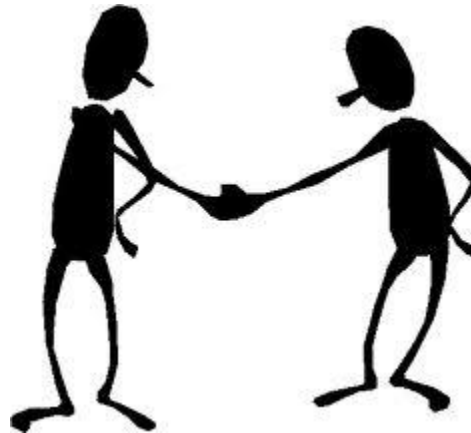
Tangibles and Privileges

- Candy
- Tickets
- Chalk
- Markers
- Colored pencils
- Toys
- Magazines
- Trading cards
- Stickers
- Notebooks
- Posters
- Stamps
- Chips
- Cookies
- Popcorn
- Happy notes
- Grab bag

- Lunch with teacher

- Use of head phones

- Watch video

- Field trip

- Free time

- Tutor younger children

- Parties Breaks

- Help custodian

- Go to library

- Play with clay

- Choose a partner to work with

- Five minutes of uninterrupted time with the teacher

- Five minutes of time to talk about what interests them

- Take a five-minute walk

Step 7

Massed trial teaching:

1. Begin the teaching episode with a *maintenance trial.*

2. Present the teaching step if the learner passes the maintenance trial.

3. If the learner responds correctly on the first trial, repeat the teaching step several more times and record the results.

Cont. Step 7

4. Present a more difficult level.
5. If the learner does not pass the trial step correctly, administer the trial again.

6. If the learner is successful, repeat items 3 and 4 above until mastery is accomplished.
7. Review mastered steps (maintenance trials) once or twice during each session

Remember!

- With every new skill, DTT instruction requires that teachers reinforce every positive reply from the student by the use of social and tangible reinforcements. When a learner's correct responses increase, the teacher may decrease the number of tangible reinforcements.

Step 8

Conducting discrimination training:

- Another element of DTT involves instructing a learner how to respond to stimuli.

- When comprehending new responses, the learner must be assisted in distinguishing the stimulus from the rest.

Step 8

- In assisting a learner to distinguish a novel stimulus, the teacher can first present the new stimulus, provide the necessary instructions, prompt him/her on the skill or behavior, and then reinforce it.

Step 9

Review and modification:

- At this stage, the teacher reviews the learner's progress and may modify the program.

- Modifications should reflect the student's progress by the change of levels, i.e., higher or lower.

DTT in Action

- Let's see some videos.
- http://www.youtube.com/watch?v=JPfErTUYNkY&feature=related

- http://www.youtube.com/watch?v=cp_gzUTCm8g&feature=related

- http://www.youtube.com/watch?v=SMK48vs_YS0

What if the program is not working?

- The process to teach new behaviors can sometimes be very long.

- Teachers can set a number of sessions (or days) as a limit before looking at modifying a program.

- Persistence is the key.

- Teachers can break the task into smaller units.

DTT Limitations

- Prompt dependency: learners comprehend skills by use of cues from the instructor.

   (Bolton & Mayer, 2008)

- Generalization must be programmed: DTT skills are not easily transferable to other environments.

   (Bolton & Mayer)

Cont. DTT Limitations

- Labor intensive: DTT demands a great deal from the teacher, and can be exhausting for personnel because, in the majority of cases, teachers work alone with a child and must consistently be aware of cues (Bolton & Mayer, 2008).

Part 5
DTT and Evidence-Based Practices

- It is important to keep in mind that there is no single method that is effective for all children with autism.

- Appropriate programs integrate a number of evidence-based methods designed to meet the needs of individual students.

(Lord & McGee, 2001; Olley, 1999)

- A study was undertaken by Simpson (2005) where 33 widely used interventions and treatments for young persons with ASD were analyzed.

Definition

- Simpson (2005) defined *scientifically based practice* "as those that have significant and convincing empirical efficacy and support."

Scientifically Based Practice

- "It is difficult for some parents and professionals to recognize and judge the scientific validity of an intervention or treatment designed to be used with individuals with ASD"
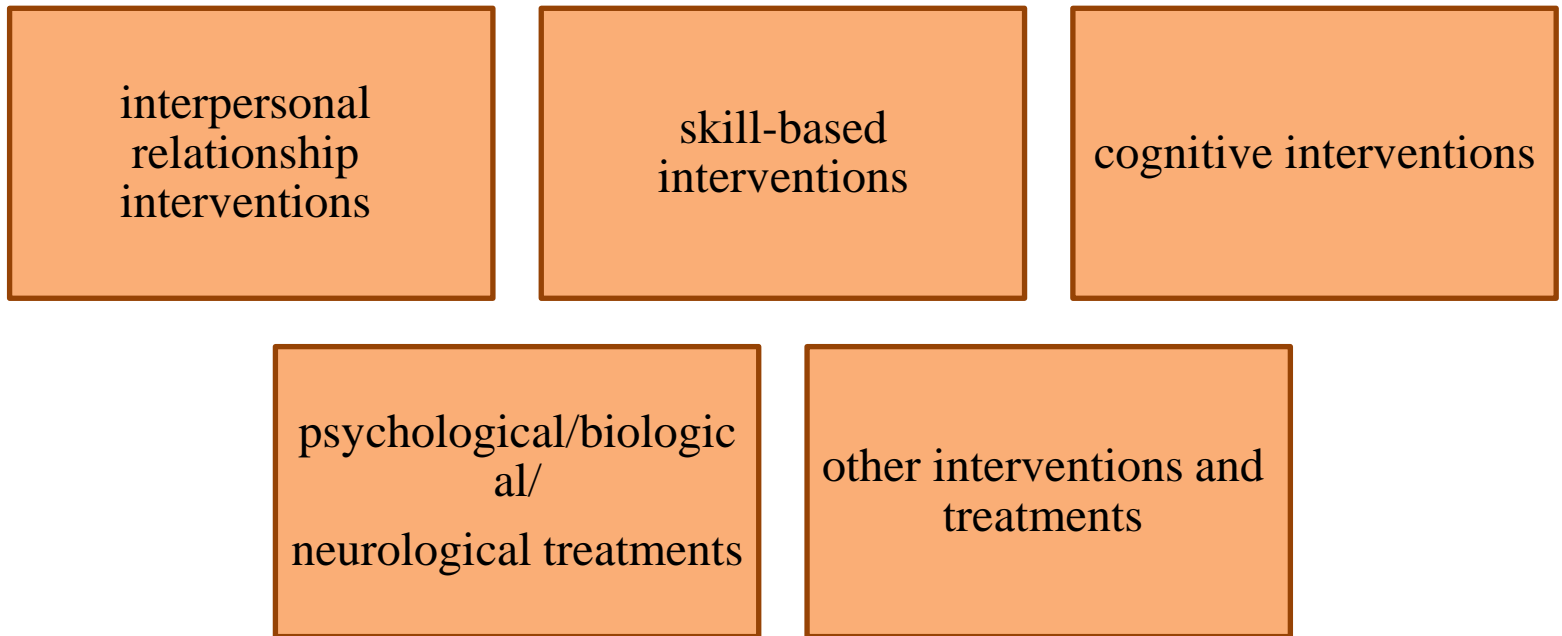
(Connection)

- In this connection, Simpson (2005) used the term *scientifically based practice* to refer methods and treatments have been subject to scrutiny and scientific validation.

Simpson (2005)

Treatments for children with ASD:

- The treatment methods are organized into five categories:

interpersonal relationship interventions	skill-based interventions	cognitive interventions

psychological/biological/ neurological treatments	other interventions and treatments

Simpson (2005)

The following considerations are taken into account:

(a) outcomes reported by teachers/instructors and their effects.

(b) qualifications of the instructors/teachers who undertook the intervention.

(c) location, method, and time of the intervention.

Simpson (2005)

Cont. The following considerations are taken into account:

(d) intervention's potential risks.

(e) cost of intervention.

(f) criteria used in the evaluation of the intervention's effectiveness.

Simpson (2005)

Based on the these considerations, the intervention and treatment methods fall into four categories:

scientifically based evaluations

not recommended

promising practices

Limited supporting information for practice
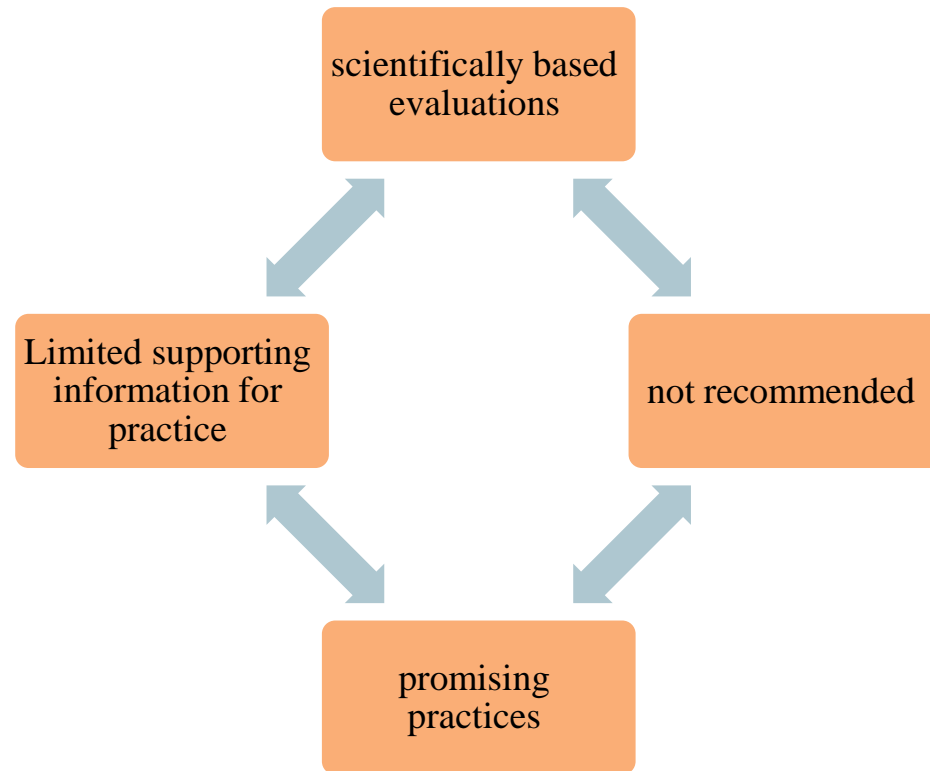
Simpson (2005)

Results indicated

- Scientifically based practices:

ABA

DTT

Pivotal Response Training (PRT)

Learning Experiences: An Alternative Program for Preschoolers and Parents (LEAP)

Simpson (2005)

Their effectiveness is based on how they fit or are aligned with an individual's needs, as well as those of other team members.

Part 6
DTT Teacher Training

Remember!

- "Individuals implementing DTT need specialized training" (Simpson, 2005).

Two Levels of Proficiency for Providing DTT:

- The first level:

Educators can apply DTT with supervision, but they cannot develop DTT curricula for specific students.

- The second level:

Educators can administer DTT, develop DTT curricula, and instruct teachers to implement this strategy (Smith, 2001).

What Do Researchers Say About DTT?

- Leblanc, Ricciardi, & Luiselli (2005) found that:

"DTT instructional skills were effective for paraprofessionals and teachers by providing abbreviated performance feedback."

Methods of Training Staff on the Implementation of DTT:

- Sarokoff and Sturmey (2004) trained three teachers to implement DTT using instructions, modeling, rehearsal, and feedback.

- Bolton and Mayer's (2008) results indicated that all participants were able to maintain their accuracy of DTT implementation above 90% with supervision, for periods ranging from 16 to 23 weeks.

- Ongoing supervision is an important part of professional development

Downs, Downs, & Rau (2008) conducted:

✓ 8-hour DTT training session.

✓ Described a variety of skills and behaviors to four students who had developmental disabilities.

✓ 6 undergraduate research assistants received the training and demonstrated the correct use of DTT.

Models of Training:

- There are a variety of models for providing training to teachers that include opportunities for:
- Listening
- Problem-solving
- Discussion
- Group work, brain-storming
- Reflection, specifically in the form of workshop and in-services

Models of Training:

- Lee (2005) conducted a study on professional development as part of a teacher needs-based model.
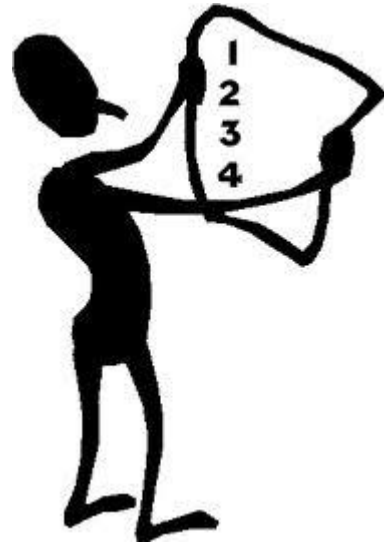
PLACEMAT ACTIVITY!

What does the best classroom model mean to you?
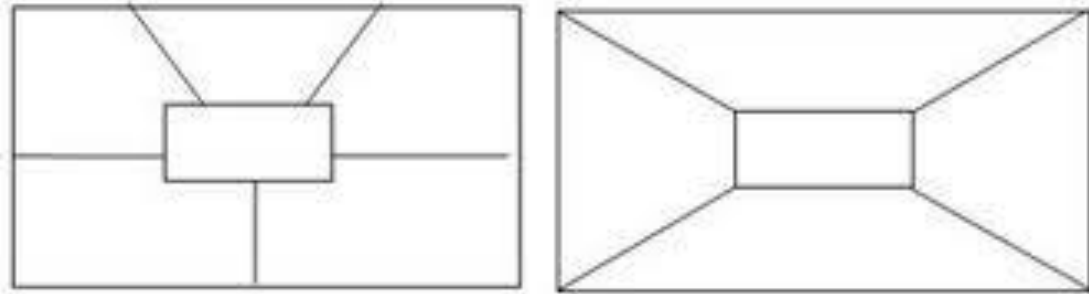
PLACEMAT ACTIVITY

* Work with a group of three other people.

* Draw 4 sections and a center intersection.

* In your section, jot down your personal definition/description of classroom modeling.

* Turn the paper and respond to your colleagues notes– add, agree, disagree, comment.

* Turn the paper and respond again.

* Continue until you've written in all four sections of the paper.

* Discuss: create a joint definition in the center of your placemat.

Selection of Model Classrooms

Characteristics for selection of a model classroom:

✓ Teacher has completed a majority of ABA trainings.

✓ Teacher has demonstrated high level of competency during the ABA trainings.

✓ Teacher is receptive to support and mentoring.

Cont. Characteristics for selection of a model classroom:

✓ Teacher has demonstrated competencies in IEP

development and implementation.

✓ Teacher is fully credentialed or close to completion

of credential program.

✓ Teacher has at least one full year experience with

students with autism.

Characteristics for selection of a model classroom:

- ✓ School principal is supportive of the model classroom concept.

- ✓ School principal has demonstrated understanding of autism and ABA.

- ✓ The school supports inclusive techniques.

- ✓ Classroom has access to typical peers.

Part 7
Data Collection and Other Tools

Brain Storming!

- List the data collection sheets, forms, names you have used in your class with students with autism!
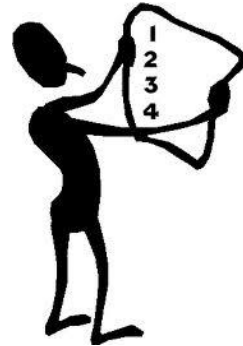
Types of Data

- Frequency: Number of times a behavior occurs.

- Duration: Amount of time a behavior occurs.

- Latency: Amount of time between the start of the opportunity and the behavior.

- Percent: Number of occurrences out of the number of opportunities.

- Intensity: Physical force or magnitude of response.

Types of Data

- Time Sample: Observation period divided into intervals.

- Permanent Product: Count of the behavior by observing the product.

- Interval Recording: Recording behavior in intervals.

Data Collection Forms

✓ User-friendly data collection forms.

✓ Data collection forms should guide the data collection and clear legends about the information contained in the form.

Examples of Data Collection Forms

- Reinforcement Survey
- Self Stimulatory Data
- Skill Training Data Sheet
- Task Analysis Data Sheet
- Objective Data Sheet
- Other sheets

Other Tools:

- Teachers can use other tools to get more information.

- There are many checklists, forms, and surveys that could be useful in the classroom.

Good Resource:

- "The Administrator's Guide to Building and Maintaining a Comprehensive Autism Program" by Mary Schillinger.

Examples for other tools from this book:
- ABA Classroom Support Form
- Self-Study Checklist for Comprehensive Program Components

National Professional Development Center on Autism Spectrum Disorders

- It provides DTT tools, checklists, and data sheets.

Examples:

- Self-Graphing Trial-by-Trial Data Sheet
- Implementation Checklist for Discrete Trial Training

Part 8
DTT in a Public School, CA
Observation and Interview

Interview

- Mary Schillinger, the assistant superintendent for education in the Las Virgenes School District, Las Virgenes, California

Discussion Time!

The Classroom Observation

- Two DTT sessions

The first observation:

- Small groups: (4-5) students
- Students with autism and students with other developmental disabilities
- Academic skills (colors and shapes)
- Clear instructions with repetition
- Reinforcers
- Engagement
- Data sheets

The classroom Observation

The second observation:

- Individual (1:1)
- Student with autism
- Academic skill (numbers)
- Clear instructions
- Using reinforcement
- Repeat unclear instructions
- Student responds

Video

- Let's watch!

Overview of DTT

- http://www.youtube.com/watch?v=7pN6ydLE4EQ

What makes an autism program unique?

Part 9
Can DTT Be Implemented in Saudi Arabia?
Factors and Limitations

The Ministry of Education in Saudi Arabia

Responsibilities:

- providing a free appropriate education for all students, including those with disabilities,
- establishing new schools,
- maintaining old schools,
- providing and developing curricula,
- establishing training programs to in-service teachers.

Other factors

- Perspectives of teachers regarding the general educational setting for students with disabilities.

"It is difficult to determine if these perspectives will be the same in a country" (Alquraini, 2011).

- Determining eligibility for special education services.

Other factors

- A lack of definite procedures for determining eligibility for special education services.

- There are shortcomings in the diagnosis and assessment.

- Assessment procedures are not team-based.

Part 10
Recommendations and Evaluation

Stop!

- Let's take a look at the pre-assessment!
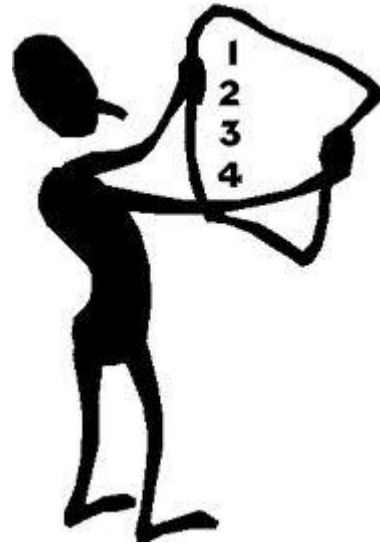
- Now re-read it and give yourself **a score.**

Recommendations

- In your file there is a "Recommendation Sheet."

- It is a list of good DTT resources such as books, articles, and websites recommended for you as a special educator.
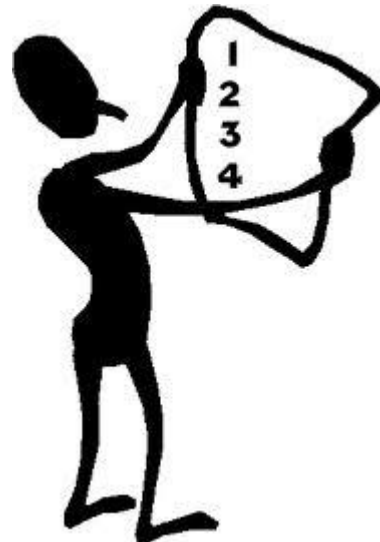
Evaluation

- Take your time and kindly fill out the workshop evaluation form.

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