

Discrete Trial Teaching

Because a significant proportion of students at our School have autism level 2 or 3, discrete trial teaching is an essential part of the teaching-learning experience for our students. Details of this methodology are provided here from <http://www.educateautism.com/applied-behaviour-analysis/discrete-trial-training.html>

<https://www.bing.com/videos/riverview/relatedvideo?&q=discrete+trial+teaching&&mid=7117EB87F30DDEF05E687117EB87F30DDEF05E68&&FORM=VRDGAR>

Discrete Trial Training (DTT) is a method of teaching in simplified and structured steps. Instead of teaching an entire skill in one go, the skill is broken down and “built-up” using discrete trials that teach each step one at a time (Smith, 2001). Sometimes you might see the term “discrete trial procedure,” “discrete trial teaching,” or “discrete trial instruction,” but these terms are all the same as discrete trial training.

The Basic Concept

It might be helpful to initially think of DTT as a series of “teaching attempts” with each “attempt” called a “discrete trial” or sometimes just a “trial”. As an example, say we’re teaching a child, Jane, to learn to identify the colours red and blue by asking her to point to red or blue cards placed on her desk. Each teaching attempt or “discrete trial” might be scripted (structured) like this:

Discrete Trial One

Teacher places one red and one blue card on the table in front of Jane
The teacher then says “point to red”
Jane responds by pointing to the red card
The teacher would say “That’s right! Great job!”
There would be a very short pause before a new discrete trial would begin

Discrete Trial Two

Teacher places one red and one blue card on the table in front of Jane
The teacher then says “point to blue”
Jane responds by pointing to the blue card
The teacher would say “You’re right! That’s Brilliant!”
There would be a very short pause before a new discrete trial would begin

Within DTT, each trial has a very specific set of steps that are clearly defined and scripted and always need to be followed. Clearly defined steps allow the teachers and programme supervisors to identify what specific teaching methods or “tactics” are working and which ones are not.

The Five (or Six) Steps of a Discrete Trial

We listed 5 parts in the trials shown above but there are actually 6 possible parts to a discrete trial:

- Antecedent
- Prompt
- Response
- Consequence for a correct response
- Consequence for an incorrect response
- Inter-trial interval

Authors generally state that there are 5 parts to a discrete trial (e.g. Malott & Trojan-Suarez, 2006; Smith, 2001) because the consequences (our parts 4 and 5 above) are usually regarded as just one part. We have separated them into two because we think it’s helpful to show that there are **two** possible consequences and that **both** need to be clearly defined.

Antecedent

The antecedent is the first part of the discrete trial and it “sets up the response”. In our original example, the antecedent was the teacher saying “point to red” as well as the coloured cards.

So, without this antecedent Jane would not have been able to provide the correct response of pointing to the red card and this is why the antecedent “sets up the response”. Note that both the coloured cards and the teacher’s statement/request are needed for Jane to be able to answer correctly, so both are

defined under the antecedent. When writing out the discrete trial, all of the teacher's actions would be written out as the antecedent; with the antecedent abbreviated into just the letter "**A**". Using the red-blue colour discrimination task, the antecedent might be written as: **(A)** *Red and a blue card on the desk in front of Jane. Teacher says, "point to _____" (red or blue).*

Prompts

Prompts are supplemental teaching aids and there are numerous types that could be used. To give an example, when Jane was first learning to point to coloured cards, a prompt called a "full gestural prompt" might be used. For a full gestural prompt, after the teacher says "point to red" s/he would then immediately point to the red card himself, effectively giving Jane the answer. Only if Jane then responded correctly by pointing to the red card would reinforcement be delivered.

After this prompt has been used a number of times and Jane is responding correctly at a certain frequency (a set criteria) it might then be "faded" out to a "partial gestural prompt". This time after the teacher says "point to red" he would only gesture about half way to the red card (partially gesturing) and again reinforcement would be delivered if Jane then pointed to the red card. As the teaching further progressed, this prompt might also be faded out so that no prompting was being used.

When no prompting is used the prompt level is still defined so it is clear for the teachers. No prompting is defined as "independent" or sometimes shortened to "IND". Defining the prompt level as "independent" lets the teachers know that no prompts are to be used because Jane is expected to respond all by herself. Below is what might happen as each prompt is faded out:

Full Gestural Trials

Teacher places one red and one blue card on the table, then says "point to red"
Teacher then immediately points to the red card (full gestural prompt)
Jane responds by pointing to the red card
The teacher would say "That's right! Great job!"
There would be a very short pause before a new discrete trial would begin

Partial Gestural Trials

Teacher places one red and one blue card on the table, then says "point to red"
Teacher then immediately gestures half-way toward the red card (partial gestural prompt)
Jane responds by pointing to the red card
The teacher would say "You're right! That's Brilliant!"
There would be a very short pause before a new discrete trial would begin

Independent Trials

Teacher places one red and one blue card on the table, then says "point to red"
Teacher gives no prompt (independent)
Jane responds by pointing to the red card
The teacher would say "That's right! Well done!"
There would be a very short pause before a new discrete trial would begin
The prompt level is abbreviated into the letter "**P**". Adding the prompt to the antecedent will now create the written discrete trial as:
(A) *Red and a blue card on the desk in front of Jane. Teacher says, "Point to _____" (red or blue).*
(P) *Full gestural prompt.*

Response

The response, sometimes called the "target behaviour" or "behaviour," comes after both the antecedent and the prompts. When the discrete-trial procedure is written out, the behaviour is defined clearly such as "Jane will point to the correct coloured card" and not something more general such as "Jane will answer correctly".

This clear definition ensures that anyone teaching the child will know precisely what **response** is to be reinforced. The behaviour is abbreviated into the letter "**B**" as below:

(A) *Red and a blue card on the desk in front of Jane. Teacher says "point to _____" (red or blue).*
(P) *Full gestural prompt.*

(B) *Jane will point to the correct coloured card.*

Consequence for Correct Responses: Reinforcement

Correct responses receive positive reinforcement which may be in the form of verbal praise and/or through a token economy or delivery of tangible reinforcers like sweets.

The type and amount of reinforcement must also be defined and adhered to as it can be an integral part of the success of educational programmes (Cooper, et al, 2007; Miltenberger, 2008). The amount or type of reinforcement to be given is called a Schedule of Reinforcement.

In this example, we say reinforcement will be delivered after every single correct response – so every time Jane points to the correct coloured card positive reinforcement through tokens is delivered.

Giving reinforcement after every correct response is called a “continuous schedule of reinforcement” or it could also be defined as a “fixed-ratio reinforcement schedule of 1” with the 1 denoting how many correct responses are necessary to receive reinforcement. This type of reinforcement schedule would be abbreviated into just “FR1” (Fixed Ratio). Within the written discrete trial the consequence for a correct response is abbreviated into the letter “C” and might look like this:

(A) *Red and a blue card on the desk in front of Jane. Teacher says “point to _____” (red or blue).*

(P) *Full gestural prompt.*

(B) *Jane will point to the correct coloured card.*

(C) *FR1 praise and token.*

Consequence for Incorrect Response: Correction

Smith (2001, p. 86) states that ‘if the child has given an incorrect response, the teacher says “No,” looks away, removes teaching materials, or otherwise signals that the response was incorrect’. When we were trained to use discrete trials in an Applied Behaviour Analysis school under a Board Certified Behaviour Analyst, this wasn’t the case.

Instead, a correction procedure would be followed by the teacher to show the child what the correct response was. This correction would use a pre-chosen prompt to guide the child and help them understand what the correct response was. When written out the correction is generally abbreviated into “**Corr**” or sometimes “**C₂**” to denote the fact that it is the “second” possible consequence (the first being the consequence for a correct response).

As an example, if the teacher said “point to red” but Jane pointed to the blue card, the teacher might then point (a full gestural prompt) to the red card saying “red”. The teacher would then give a neutral statement like “let’s try another one”.

For incorrect responses no reinforcement is given, even after the correction. This is because if reinforcement was given even for incorrect responses why would the child be bothered getting a correct response? Instead, the teacher would go through the correction and then begin a new trial.

(A) *Red and a blue card on the desk in front of Jane. Teacher says “point to _____” (red or blue).*

(P) *Full gestural prompt.*

(B) *Jane will point to the correct coloured card.*

(C) *FR1 praise and token.*

(Corr) *Full gestural prompt.*

Inter-Trial Interval

The inter-trial interval comes after the consequences, whether correct or incorrect. As the name suggests, it is an interval that comes between trials and signifies the ending of that trial. It is not written out into the discrete trial script as it is something that will always happen and does not need to be defined unless there is a specific time interval that needs to be followed for a certain programme. Malott and Trojan-Suarez (2006) suggest the inter-trial interval is as short as possible, just a few seconds at most.

Why are Discrete Trials Scripted?

Discrete trials are defined and scripted to make sure every trial is run the same way. By running each trial the same way, it allows a Behaviour Analyst to identify why a trial procedure might not be working and change it. If every trial was run differently, then how would you know what isn’t working when you

probably don't even know what is working!? For example, if teacher A is using a full gestural prompt while teacher B is using a partial gestural prompt then it could be difficult to tell which method is working best and the child might also find the teaching sessions confusing.

A philosophy often cited within ABA is that "if the child isn't learning, then it is the method of teaching that needs to be changed". By using clearly defined discrete trials, it is easier to identify what might not be working. Thus, it allows ABA programmes to be altered and individualised in an effort to better educate the child.

Discrete Trial Training and Applied Behaviour Analysis (ABA)

Discrete Trial Training is commonly used within Applied Behaviour Analysis (ABA), but it is important to note that ABA is not Discrete Trial Training. ABA uses DTT as one method of teaching, but many other methods are also used within ABA.

Discrete Trial Training and Children with Autism

Discrete trials are regarded as an effective teaching method for children with autism because, according to Smith (2001), children with autism often lack a desire to learn like their typical peers. That is, children with autism often have difficulty learning through observing others or exploring their environments; as well as difficulty engaging with, playing with or talking to others.

There are many reasons why DTT can increase motivation and learning for a child with autism (Smith, 2001). Firstly, each trial is short therefore many teaching trials can be completed allowing for numerous learning opportunities. Secondly, the DTT method of one-to-one teaching allows for the programme to be completely individualised for the needs of each child. Thirdly, the "procedural" format of a discrete trial creates clarity for the child. There is a clear beginning and end to each trial with prompts and antecedents kept simple and at an appropriate level. By breaking down tasks into short manageable trials and using suitable prompts and guidance 'DTT maximises children's success and minimises their failures' (Smith, 2001, p. 87).