

Effectiveness of Discrete Trial Teaching in Developing the Skill Rating Level of Students with Autism: Case Study

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Abstract : *This study is an attempt to identify the effectiveness of education through discrete trial teaching in the development of skill rating for two students with autism, aged 6 and 8 years. The result shows that intervention during the performance for both students in skill rating was 100% regarding color and shape. The study recommends that the use of signs and gestures along with discrete trial teaching.*

Key Words: *Discrete Trial Teaching, Autism, Skill Rating.*

I. Introduction

Autism is considered one of the most ambiguous developmental disabilities because its real reasons are specifically unknown and also the absolutely strange patterns of behavior. So, autism constitutes a disturbance for those who are close to the child, (Yahiya, 2002) and it has a direct impact on the child and affects his sociability, language acquisition, behavior, values and tendencies, and expression of feelings, (Gillberg, 1991).

Since the signs of autism are diverse, this was the concern of many scientists and many definitions emerged in order to understand it. The definition of (Hallahan, & Kauffman, 2006, p.398) is one of the most modern definitions of autism spectrum. "This definition mentioned the comprehensiveness of autism spectrum disorders. It stated that there are five types of disorder. They are Autistic Disorder, Rett's Disorder, Asperger Disorder, Pervasive Developmental Disorder Not Otherwise Specified and Childhood Disintegrative Disorder. These children face social and communication difficulties. They also face difficulties in repetitive behavior and in playing, which leads to a relative weakness in their performance due to brain malfunction".

(Kuder, 2003, p.124) states that the American Federal Definition of Autism is "It's a developmental disability which clearly affects verbal and non-verbal communication before three years old and impacts negatively on educational performance. Its characteristics include communication disabilities, being co-founded in repetitive behavior and patterns of movement, resisting environmental or daily routine changes, and unfamiliar response to tangible effects. (Heflin & Alimo, 2007) mention that children with autism disorder show a great difference in their behavior, their abilities, and their learning needs which change according to their growth and development.

The American Autism Institute annual report in 2002 shows that autism is common in American society with a prevalence of 0.75% or (75) in every (1000) cases in the age category 5-11 years. This percentage is higher than the previous one which was 0.5% or 5 cases among each 10000 (Downs, et al, 2008) while the Disease Combating and Protection Center, (2002, CDC) states that ASD is no longer rare in the United States. Approximately each one out of 88 children, (11,3 out of 1000) are diagnosed with ASD.

The education of children with autism constitutes a challenge to the child himself, his family, and to those who are close to him. Those who are close to an autism child resort to a number of styles and methods in order to educate and train him in academic, social, and day-today life skills. Sometimes these methods work and sometimes they do not. This can be attributed to the child, the teacher, the method, or to some other reasons. However, these trials can be improved or amended so that it can yield better results.

Many autism experts mention that autism children require distribution of skills into small steps. These steps should be taught clearly and careful instructions with skill enforcement and repetition should be carried out, (Al-Shami, 2004). Many researchers emphasized that if the required behavior is followed properly by enforcement, the child will learn skills faster. Also children with autism would learn better by dint of repetition, or in other words intensifying of trials, (Lovaas, 1981).

Institutions and organizations that are concerned with autism children arrange rating lists for the significant research-oriented applications and styles in order to be used for those children. One of the most significant of these applications are Discrete Trial Teaching (Ünlü, 2012). (DTT) is a method for behavior analysis with the aim of teaching skills to children with autism disorder (Smith, 2001). This method is based on the principle of distributing behavior into small separate steps at the beginning, middle, and at the end, which is called "single teaching unit". Mostly, attempts are repeated several times and the child is rewarded upon answering correctly, (Lovaas et al, 1973).

Discrete trial teaching (DTT) is one of the methods that used in teaching autism children. In this method, skills are distributed into simple steps, each step is taught by repeated attempts (Hall, 2009; Tarbox & Najdowski, 2008). This strategy consists of five steps which are: (Discriminative Stimulus), (Prompt), (Response), (Consequence) and (Inter-Trial Interval).

(Thomson et al, 2009) mentions that learning by discrete trial teaching is considered the most significant among the intensive training behavior. Teachers, assistants, and parents are in need of this method to teach children with autism. Many researchers such as (Lovaas et al, 1981; Maurice, Green, & Foxx, 2001; Maurice, Green, & Luce, 1996) prepared so many booklets for parents, teachers, and those involved in behavioral remedy. (Lovaas, Schreibman, & Koegel, 1974) emphasized that (DTT) can be implemented in classrooms, at homes, or elsewhere. So the implementation of (DTT) in different environments leads to its generalization and use of the skills.

Skill rating is considered one of the most significant cognitive skills. Moreover, it's a basic skill for building an individual's knowledge framework and it's a necessity for scientific advancement. Without it, we won't be able to deal with the world around us. The ability of rating things in groups determines the degree of response to those things. The skill rating deals with joint characteristics of things in order to place them in one separate entity, (Jarwan, 2012). So, when we classify things, we put them in groups according to certain criteria in our minds, such as rating according to color, size, shape, or otherwise.

The skill rating, which is considered a cognitive and day-to-day skill, is one of the necessary skills for children in general and children with autism in particular. It is used by both adults and children on a daily basis (Zaytoon, 1991). From a psychological point of view, this rating is considered as the base for the development of logical and mathematical concepts of children (Alatrani & Abu Abbas, 1986). Thus, the development of skill rating in children generalizes these concepts, (Donaldson, 1984). Also, a child's mental training on comparisons, linking, rating, sequencing, and other mental operations help him detect the benefit of things, their functions, and their uses in order to satisfy his needs, (Mohammed, 1991).

Many researchers stress the effectiveness of discrete trial teaching in teaching children with autism, besides maintaining and generalizing those skills such as: communication skills (Kranz & McClannahan, 1981), social and emotional skills (Downs & Smith, 2004), playing skills (Coe et al, 1990), grammar skills and syntax (Risley, Hart, & Doke, 1972), imitation skills (Young et al, 1994), receptive and expression language skills (Kurt, 2011; Howlin, 1981; Langet al, 2011; Tsiouri, Simmons, & Paul, 2012; Leaf et al, 2013), emotions, mathematics and literature (Adcock & Cuvo, 2009), positive skills (Downs et al, 2008), spontaneous verbal responses (Jones, Feeley, & Takacs, 2007) and specific movement skills (Delvin & Harber, 2004).

II. Method

This study (case study) aims to teach students with autism disorder of skill rating according to color and shape through discrete trial teaching.

2.1 Participants

Two students with autism disorder participated in this study. They are enrolled in special classes at governmental schools which are affiliated to the directorate of education - Najran - KSA. Below is a description of the study cases: Fares is 6 years and 9 months old. He has been diagnosed with autism disorder by a neurologist, plus application of the Saudi Standard for (CARS) test. He joined the autism program which is part of governmental education from two years ago. The autism teacher said that Fares prefers edible reinforcers and playing with toys. Mohannad is 7 years and 7 months. He has been diagnosed with autism disorder by a neurologist, plus application of the Saudi Standard for (CARS) test. He joined the autism program which is part of governmental education more than three years ago. The autism teacher mentioned that Mohannad is the best compared to his colleagues. He's also fond of toys and prefers edible reinforcers.

The study was conducted in a special class for autism students at Almugera bin Shuba school in Najran city - KSA. The room contains the study tools (car and bicycle toys) plus other tools used by the teacher in teaching autism students. These tools were suitable to conduct the study.

2.2 Tasks and Materials

The two researchers prepared the research tools; they are a number of toys with different shapes and colors. Table (1) shows those tools which were used in skill rating according to color and shape.

Table 1 : Tasks and tools used in skill rating

skill	Materials
I. Color rating	Car toys
1. Three colors rating	Plane toys
II. Shape rating	Bicycle toy
1. Three	

2.3 Dependent Variable

The dependent variable in this study is discrete trial teaching (DTT). These are the procedures executed by presenting verbal instructions, gestures, and signs in the educational process.

2.4 Independent Variable

The independent variable in this study is learning the rating skill. The current study concentrates on rating skill of things (cars, bicycles, planes) according to color and shape.

2.5 Design

The study used the multiple design for the participants (Fares, Mohannad) to assess the effect of discrete trial teaching . Data was collected in three phases which are:- baseline, discrete trial , and generalization in the same autism classroom. Confirming the generalization was done on the day students mastered the skill. The measure in the phase of generalization was similar to the measure in the phase of the baseline.

2.6 Baseline

The assisting teacher measured the performance of the two students regarding to skill rating by giving them verbal instructions, and without giving any feedback about performance. He just gave them the enforcement to finish the job. The participants remained within the baseline until their concerned data was determined.

2.7 Intervention Discrete Trial Teaching

Based on the performance of each participant, intervention sessions started in compliance with the baseline level and with this proverb “Teach a student skill rating / playing, cars, bicycles, according to type”. Explain the method of intervention with the students:

- a) Teacher and student sit face to face in a table
- b) Teacher draws the student’s attention
- c) Teacher says “ put each item separately “
- d) Teacher presents verbal ----- if the answer is correct
- e) If the correct answer is not given within 3-5 seconds, the teacher presents a verbal feedback, then the child is given another chance. If the child continues to respond wrongly, the teacher supposed to raise the level of verbal or physical dictation or both in order to reach the correct answer.
- f) Give the student a short break
- g) During the break, the teacher will register data on the cards that created for this purpose.

So, intervention period for the rest of skills continued until the two students mastered the skills (case of study) with a 100% success.

2.8 Generalization Probes

Generalization probes were carried out in another classroom (resource room) when the procedures that related the completed required skill were completed, and with the same procedures followed in the baseline phase.

2.9 Data Collection and Analysis

In the early stages of the study, the two cases of the study were described by the researchers and going back to the students’ records and meet the teachers and parents of the students.

Before conducting the study, the assisting teacher was given a briefing about the information expected from them. He was provided by the necessary tools of the study. They are toys of different colors and shapes (cars, bicycles, planes). In the second step, the assisting teacher assessed the performance of the two students in skill rating according to color and shape. He observed their performance in the skill mentioned for a week, and then results and observations were noted on special cards the designed to study purposes. That was done in a special classroom for the autism program affiliated with the schools of ordinary students.

Finally, the assisting teacher was requested to start conducting study individually in the classroom (teacher per student), and emphasizing on the significance of noting the observations during the learning process and to what extent the student made progress in the required goal of the study.

III. Results And Conclusion

The data related to the efficiency of discrete trial teaching, which represent the independent variable, has been tabulated, while the skill rating represents the dependant variable. Figure 1 & Figure 2 show the data

related to the effect of the procedures of (DTT), plus the use of signs and gestures in teaching skill rating according to color and shape for both Fares and Mohannad.

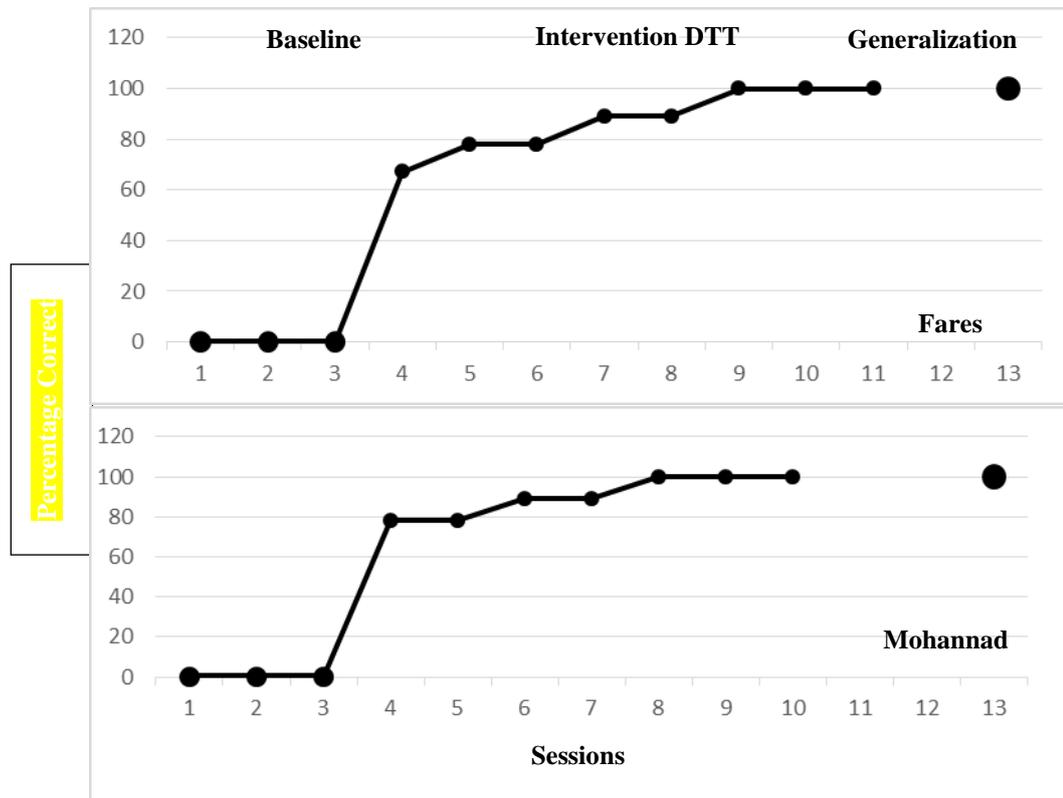


Figure 1. Diagram according to color for participants Fares and Mohannad

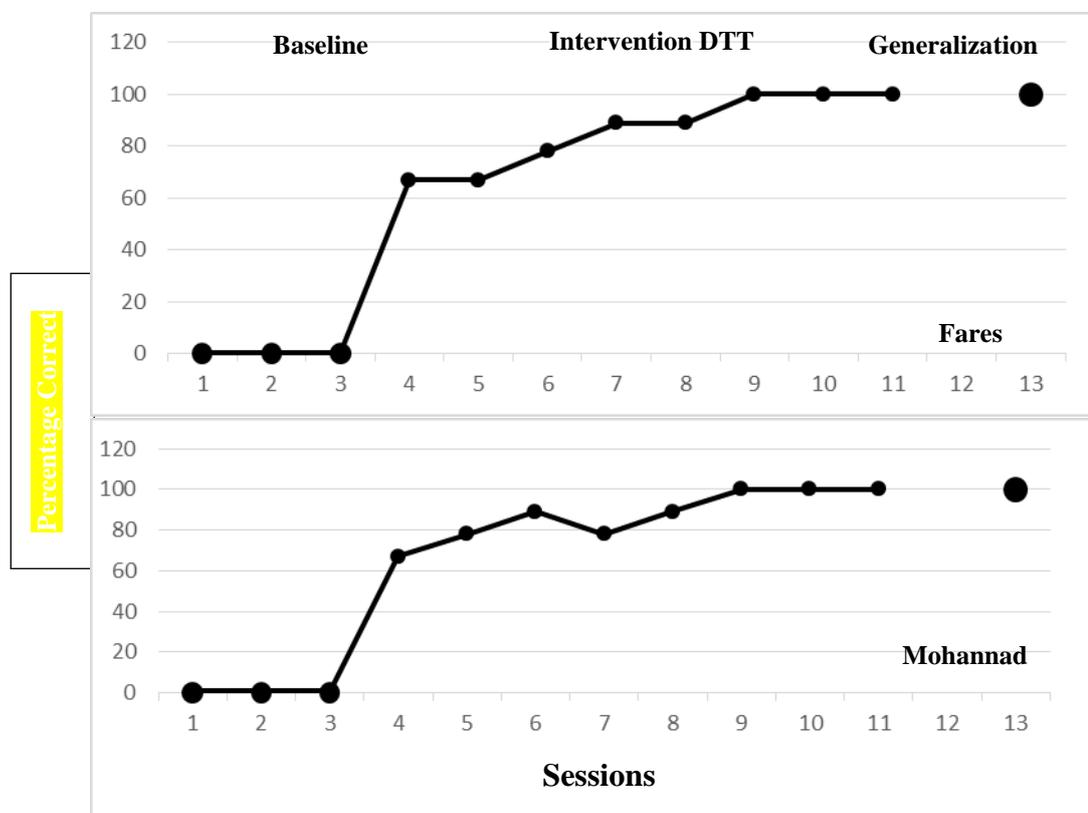


Figure 2. Diagram according to shape for participants Fares and Mohannad

Both Fares and Mohannad showed considerable progress in the rating of things according to color and shape throughout the intervention period of time by DTT. The two children mastered the skills of the case study with a 100% success in three consecutive times. Fares mastered the skill rating according to color after 8 sessions of intervention, an average of 88%, and a response percentage of 67-100%. As for Mohannad, he mastered the same skill in 7 sessions, 91% average, and a response percentage of 78-100%.

Regarding to the rating according to shape, both participants mastered the skill in the 8th session. Fares reached a percentage of 86%, and a response percentage of 67-100%. Mohannad reached a percentage of 88% and a response percentage of 67-100%.

In order to confirm the skills generalization procedure, generalization procedures were carried out in another room in the school (resource room), after each skill was completed separately. The two participants, Fares and Mohannad were able to generalize the skill with a 100% success.

It is worth mentioning that the autism teacher said that he benefited a lot from this study. He was also motivated to do better with autism students by implementing this strategy in learning other skills.

IV. Conclusions And Recommendations

This study shows the efficiency of trial teaching with autism children. Its results match the previous studies in which discrete trial teaching and the ability of children to generalize were used. Examples of these studies (Coe et al, 1990), (Kranz & McClannahan, 1981), (Downs & Smith, 2004), (Risley, Hart, & Doke, 1972), (Kurt, 2011; Howlin, 1981; Langetal, 2011; Tsiouri, Simmons, & Paul, 2012; Leaflet al, 2013), (Young, et al, 1994), (Adcock & Cuvo, 2009), (Downs et al, 2008), (Jones, Feeley, & Takacs, 2007) (Delvin & Harber, 2004).

It is clear from the data which reached by the study that there is a noticeable and gradual progress during the intervention period by using discrete trial teaching. The autism teacher mentioned that this progress became clearer almost after the first four sessions. By teaching autism children the skills – case of the study- this may be a proof of the significance of using this method in teaching autism children.

Due to the significance of the use of discrete trial teaching, the two researchers recommend the necessity of its use in other skills, and in bigger groups of students with autism disorder. This will impact positively on the students' performance. Also in the light of the current study, some improvements and amendments on the program's content can be made in compliance with the abilities of autism children.

Moreover, this study can be considered as preliminary for similar future studies, especially in the Kingdom of Saudi Arabia because of the scarcity of studies that use discrete trial teaching in teaching autism children.

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