European Journal of Education Studies
ISSN: 2501 - 1111
ISSN-L: 2501 - 1111
Available on-line at: www.oapub.org/edu

10.5281/zenodo.59799 Volume 2 | Issue 2 | 2016

THE EFFECTS OF ESTABLISHED METHODS IN CONSOLIDATING TRAINING PROCEDURES IN MATHS FOR PUPILS WITH LEARNING DISORDERS: A CASE STUDY OF SAUDI ARABIA

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Abstract:
The aim of this current research is to identify the effects of the established methods in consolidating between training and procedures and analysing the tasks upon the achievement of female pupils with learning disorders in Maths in the Kingdom of Saudi Arabia. The study group was made up of all the children with academic learning disorders in Al Qurayyat.

In order to answer the study questions and investigate its specifications, the averages and standard deviations were extracted for the marks of the sample individuals in the test and control groups upon the resulting test. The results showed that the established method has an effect on consolidating between the training upon the procedures and extracting the results upon the achievement of the female pupils with learning disorders in Maths. The test group showed greater achievement than the control group. Based on the results of the research, recommendations have been proposed, the most important of which were: taking heed of training pupils with the methods before using results analysis for teaching every mathematical skill as numerical skills can be divided based on skills analysis methods; focusing on analysing the areas of strength and weakness and skills that children fail with and then consolidate between the two issues.

Keywords: training for procedures; analysing the task; learning disorders

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1. Introduction

Pupils who suffer from learning disorders have hidden abilities besides their weaknesses, which makes their disabilities hidden and baffling, as special education trainers have described it. Despite their weakness in following simple instructions, they find the tasks easy to despite their inability to write. They might excel in very strange skills at a very high level so appear perfectly normal and clever. There is nothing in their appearance that indicates that they are different from ordinary children except that they have great difficulty in learning some skills at school. Some of them cannot learn writing. Some of them might be unable to read because of defects. Some others might make recurring mistakes and face real difficulties in learning Maths. These difficulties usually appear in achievement tests.

The term "learning disorder" is connected to aspects of special needs with combined results. Sometimes they mix learning with those with mental disorders, sometimes with individuals with language, speech and Maths disorders and sometimes with behavioural disorders. Rather than being non identical to of difficulties and disorders, learning disorders are many and varied. This phenomenon is not combined between each individual with learning disorders. They might show some of these symptoms that might not be exclusive to others so discussing this issue is not an easy matter. It is a modern concept in the field of special education because of not being clear. Because of that they need very specific explanation [7]. Specific detail is through understanding the situation that we face, the program that deals with these issues and teaching methods that the teacher can use, through which they can distinguish between aspects of learning disorders and disabilities.

At the onset of the 60s, the term "learning disorder" appeared to differentiate between the terms of slow mentality, slow learning and learning disorders that some pupils might face because of internal or developmental factors. Despite enjoying almost normal intelligence, they cannot achieve at the level corresponding to their mental ability level [1].

The term "Maths learning disorder" is applied to all mathematical processes because they need to use symbols such as the ability to differentiate between the correct symbols. Maths learning disorders appear in a child as an inability to deal with numbers, processes and mathematical rules in a correct way or the logical training in taking steps to the answer using mathematical calculation processes. It is known that the concepts and calculation processes begin at the bottom level then start to become progressively more complicated. Because of that, Maths learning disorders do not stop at the level of basic primary concepts such as differentiating between images, similar

symbols such as “2 and 3” or “6 and 9”, the ability to understand the teaching and following it such as following the highest sequence of numbers or executing simple mathematical processes such as addition, subtraction, multiplication and division. They also have difficulty in using concepts and standard symbols such as >, < or = or using complex mathematical rules. In a way, Maths and calculation skills start from the basic and develop until they reach the difficult. It is important to point out here that children with Maths learning disorders face difficulties in basic primary concepts such as addition, subtraction, multiplication and division. Some do not face these difficulties except when they reach higher levels in Maths, such as fractions, decimals, algebra and trigonometry [8].

Al Zayyat [9] points out that teaching general Maths involves not using principles and general learning strategies for effective learning. These principles or strategies include using different areas that they can start teaching Maths from, from basic foundation skills in preparing to learn Maths to problem solving. What follows are a number of principles and general learning strategies that can be applied to students with learning disorders. Behavioural disorders with those who have Maths learning disorders are numerous, especially grasping concepts and Maths processes.

Because of this, it is important for the teacher to hold a workshop for required Maths skills and gradually development from the abstract to the tangible. It is important to depend on direct training, review and refer to areas of strength and weakness that the students have, aiming to establish the concepts and Maths skills in the minds of the students. It is important for the teacher to balance advanced Maths programs by presenting teachers with different logical methods that do not confuse the receiver, which helps reduce or resolve the problems that they face.

1.1 Importance of the research

Maths learning disorders consist of getting to know numerical concepts, their actual meanings, knowing real mathematical concepts such as addition and subtraction as well as difficulty in getting to know digits and concepts such as sequencing ascending and descending numbers. Also, reading and writing numbers made up of many digits, difficulty in getting to know mathematical symbols and writing similar numbers in shape and direction such as the numbers “6 and 9” and finding the most appropriate methods to deal with problems of learning disorders. The researcher aimed to undertake research based on consolidating between teaching the processes and analysing the importance of the results. That is to identify its role in improving the achievement of female pupils with Maths learning disorders.

1.2 Research problems

The difficulty of learning disorders is not a local problem connected to a specific community or culture but an international problem. In the USA it is considered to be the biggest hub for special education in terms of the number of pupils who receive these services. The American Office for Education has pointed out that roughly 1.1% of those who need special education services are from a group with learning disorders [21]. The concept of learning disorders is based on an exhaustion of the ability and different competences that an individual might have meaning that some of these abilities and competences could be weak within the individual. Some of these could be strong [18]. Modern educational methods focus on learning disorders whereas traditional teaching methods focus on areas of weakness that individuals have in this area and reject their areas of strength [25]. This might reduce the problem by integrating them later with ordinary children who do not have learning disorders. Because of this the problem of the current research aims to answer the following question:

- *What are the effects of established methods in consolidating between training and procedures and analysing the tasks upon the achievement of female pupils with learning disorders in Maths in KSA (Kingdom of Saudi Arabia)?*

1.3 Research aims

The current research aims to identify the effects of established methods in consolidating between training and procedures and analysing the tasks upon the achievement of female pupils with learning disorders in Maths in KSA.

1.4 Significance of the research

There is statistical significance at the significance level ($\alpha \geq 0.05$) for the established methods in consolidating between training and procedures and analysing the tasks upon the achievement of female pupils with learning disorders in Maths in KSA.

1.5 Research concepts

Maths learning disorders: it is made up of difficulties in learning, grasping concepts and mathematical skills and applying them to different situations that normally appear at the start of the elementary level and continue until High School. It does not only appear in learning situations but also crosses over into daily life situations [21].

Teaching method for processes: they are the established methods for dealing with the symptoms of poor growth that affect learning. This method treats the personal sensory disorders that are responsible for learning. This method helps the student learn to develop cognitive skills such as differentiation, comparison and evaluation and thus

increase the learning opportunities for them. By this method, a learning planned is produced aiming to deal with the methods that are affected by the child's areas of strength and weakness.

Task analysis method: this is dividing the skills into units or secondary skills that can be taught. Some researchers have expanded the task analysis concept so that it includes describing the educational tasks that are used to teach the skill while others have shortened the concept of breaking down of what they will learn. The strategy of breaking down the task is a useful solution that depends on allowing the student to do well in the parts of the concept skills. This method allows the student to put together these categories after becoming fluent in them so that they can become clear, fluent, sequential whole skill methods. This method helps to identify the area that the student failed in and the parts of the task where the student faces difficulty in mastering so that they can practice it in a special way. This method is used to resolve reading, writing and Maths skills.

Established method based on consolidating between learning methods and task analysis: this established method is based on analysing the task and processes. It does not look at the processes as independent known processes that can be leant separately. It is possible to describe the established method on task and process analysis as it includes evaluating areas of strength and weakness for the child (analysing the child).

It is possible to use the method here to teach numerical skills that include counting, number concepts, their symbols and calculating processes, visual senses, special memory and special skills are key abilities for implementing and processing mathematical skills. Because of that, there is no doubt the students should be taught these processes and then analyse the tasks in learning each numerical skill.

1.6 Theory and previous studies

The methods of teaching these skills and various verbal and non-verbal methods that the teacher uses in their teaching of learning concepts are considered as ways that cater for the areas of strength of all the students. In addition there is the quality of positive interaction such as learning the methods step by step or learning from the whole task broken down into parts [5].

The discussion of the concept of learning disorders is not an easy issue because it is a modern concept in special education. It is characterised by not being clear [7]. The joint national committee for learning disorders in their last amendment pointed out to defining learning disorders in the year 1994 as it is a general concept, which includes a changing group of disorders that clearly appear as clearly significant difficulties in acquiring and using listening, speaking, reading, writing, thinking, memory or sporting

skills. These disorders are characterised by being internal within the individual that relate to poor action in the central nervous system. It can occur throughout different stages of life. They can be accompanied by difficulties in mental organisation, social awareness and social conduct without being a learning disorder by themselves. Despite learning disorders possibility being accompanied by other conditions such as nervous disability, mental weakness, severe emotional disorders or external factors such as cultural differences, insufficient or inappropriate learning, they are not a result of these conditions or effects [8].

The American Society formed a committee to clarify the definition of learning disorders. It clarified that learning disorders are a general concept that points to a non-homogeneous group of disorders at a significant level of difficulty in terms of acquiring and using concentration, speech, reading, writing and numerical skills that are connected to internal problems. It has concluded that children who suffer from learning disorders are normal children in terms of mental, sensory and emotional abilities but they might suffer from difficulties in logic, thinking and concentration processes that usually affect their learning. They are a result of different views around the concept of learning disorders. These sorts of disorders are considered substantial for the individual as they must occur because of problems in conduct of the central nervous system and thus behavioural problems could occur such as self-organisation, social awareness and conduct in addition to learning disorders [14].

Learning disorders are divided into developmental learning disorders, which are among the main factors responsible for a drop in a child's level of academic achievement and leads directly to it as it actually includes disorders in concentration, perception, memory, thinking and language. They are the factors that could lead to disability in the child's academic development despite what they enjoy from an ordinary level of intelligence. The second type of learning disorder is academic learning disorder such as difficulty in learning reading writing, spelling and numerical processes [17].

From what preceded, it can be noticed that it upon the teacher to take heed of choosing the best method in teaching a part of learning disorders based on its type and categorisation. The appropriate method of teaching includes foundation work that can be overcome by working through their problems with their peers.

Psychological literature in the field of learning disorders points to teaching methods for individuals in this area who depend on three strategies. They are:

- Teaching based on analysing the task and simplifying it: this strategy requires the presence of a weakness or developmental disability with those who have learning disorders whose problem includes limited education and experience in

the task itself. Because of this it depends on breaking down the task in a way that allows t pupils to master its simple components

- Teaching based on psychological and developmental processes: this strategy is based on the pupils who have a limited development disability. This strategy depends on training the developmental abilities of those with learning disorders
- Teaching based on breaking down the task and the psychological and developmental processes: this strategy is based on consolidating between the key concepts for each task breakdown strategy and psychological and developmental strategies where the researcher places it through the research [12], [2].

Al Khateeb pointed out that the tasks are teaching methods based on breaking down tasks into the components that they are made up of and connecting closely between the complex behaviour of the pupils and the teacher. This is a method that cannot be achieved through strength and force. It is by dealing with the complex behaviour that is considered a written agreement that clarifies the relationship between the task that the student will perform and the reinforcement that they will receive as a result of that. The scale of the task in this field is wide and varied [15].

1.6 The categories that included this method

Who will perform the task? The student or the teacher, etc.? What are the learning difficulties that they face or the behaviours that need to be changed in the student, which will be specified and accurately measured and clarified?

- What will the student do or the task that they will perform?
- When will the pupil perform the task? The timescale that the pupils must work towards must be specified here
- What are the conditions of accepting the task performance? Meaning what will the individual do exactly?

When discussing the task we will deal with support factors that include support categories. When will the student perform the required task based on important categories, which are:

- Who will give support?
- What is the support that will be given?
- When will the support be given?

The following example helps the teacher to assess the student's conduct:

Number	Paragraph	Yes	No
1	Are the behaviours /required tasks clear?		
2	Are the behaviours /tasks possible to achieve?		
3	Is there clarity for whoever will follow the task?		
4	Is the calibre of assessment of the pupil's conduct of the task specific and clear?		
5	Are the learning outcomes specific and clear?		
6	Are the outcomes suitable for the task?		

Task definition: is it possible that the work that teacher performs and trains the pupils to perform to correspond with learning tasks based on sequential and connected abilities and duties?

If we agree to teach the calculation method 5+1, we perform the following steps:

First: getting the pupil to recognise the numbers 1 to 5

Second: teaching the pupil to write the numbers

Third: teaching the pupil to differentiate between the shapes of the numbers 1-5

Fourth: getting them to recognise the addition symbol "+" by teaching them by means of consolidation

Fifth: getting them to know that the addition symbol means consolidation

Sixth: getting them to know the meaning of the symbol "="

Seventh: getting the students to know the overall results

When breaking down the tasks and teaching, it is possible for the teacher to perform the following:

1. Counting or numbering the contents of the task: it is possible for the teacher during this step to limit the number of sub activities of the main activity or behaviour
2. Describing the task: by identifying what it includes from the aim, conditions, subjects and evaluation, it is possible to sequence the following:
    - Counting all the sub activities that the required behaviour is made up of while carefully sequencing it as they occur
    - Specifying the skills or initial knowledge indicators for each task
    - Specifying the time
    - Specifying the type and amount for the level of achievement
    - Specify the knowledge or previous skills that they have before starting any course
    - Teaching the task based on this method

Studies and research show that those with Maths learning disorders have poor specialist knowledge and following behaviour:

- They find difficulty in specifying prepositions such as: above, below, raised, lowered, far and near.
- They have difficulty in comparing between sizes such as: big, small, a lot and a little
- They have difficulty in moving from one activity to another
- They have difficulty in understanding the symbolic language of Maths
- They have difficulty in logical thinking, making diagrams and understanding relationships
- They have difficulty in specifying directions
- It is difficult for them to understand positioning of numbers
- They reverse numbers like when reading the time or geometric measurements
- It is difficult for them to comprehend mathematical concepts
- They have difficulty in dealing with different types of decimals or fractions
- They have difficulty in carrying out the 4 core calculation processes
- They have difficulty in using calculation symbols
- They repeat counting on their fingers
- They lack ease and spontaneity in dealing with numbers
- They have low confidence when thinking of counting or calculating numbers and the ability to mentally perform what this relates to in terms of investigation and comparison procedures
- They have difficulty in distinguishing between shapes and areas
- It is difficult for them to read numbers with many digits
- It is difficult for them to write ordinary fractions
- It is difficult for them to solve sequences
- They have difficulty in performing counting procedures and knowing the significance of numbers as it is difficult for them to write them correctly
- They have difficulty in learning mathematical facts or new facts
- They have difficulty in understanding words or symbols that have mathematical meaning
- They have difficulty in copying shapes
- Fractions and decimals are difficult for them when they are not in their correct place
- They have difficulty in using a number line
- They have difficulty in using blank pages when writing numbers
- They have difficulty in differentiating between positive and negative numbers

- They have difficulty in sequencing ascending or descending numbers
- They have difficulty in knowing the last or previous number for a specific number
- They have difficulty in horizontal solving mathematical questions
- They have difficulty in writing numbers that have many digits
- They have difficulty in solving verbal questions, especially those that have many steps
- They have difficulty in answering open mathematical questions

2. Literature review

When looking through previous studies, each of the studies [24] aimed to deal with the effect of using an established learning strategy to solve problems with mathematical thinking and orientation towards Maths with students from the 7th grade in Jordan. The results showed that the orientation towards Maths was better in the test group compared to the control group and that there is no statistically significant difference in mathematical thought to consolidate between the effectiveness of the learning strategy and level of achievement. The orientation of the test group of students was better than their peers in the control group and there was no statistically significant difference in the orientation of the students towards Maths consolidating between learning strategies and achievement levels.

The study of Al Qudsi [6] aimed to identify the learning disorders in Maths for pupils of the 8th grade. The results for this study showed that pupils of the 8th grade face many varied types of mistakes in the mathematical questions from algebra and trigonometry. These require solutions using set and unclear rules as the percentage of mistakes, the steps for the solution increase and the mistakes become more random and inaccurate. They include: mistakes in dealing with 4 calculation methods such as addition, subtraction, multiplication and division.

The study of Mazzacco [21] aimed to identify the differences between the mathematical mistakes of students with learning disorders and ordinary low and average achieving students in Maths. The results of the study showed that the percentage of mistakes of ordinary low level achieving students is more than the mistakes of the ordinary average achieving students but they were similar in nature. The percentage of the students with learning disorders was more than the ordinary low and average level achieving students and they were different in nature. The major mistakes in multiplication for those with learning disorders were the following: mistakes in the concept of multiplication, mistakes with the times table for similar

numbers, mistakes in understanding the process of multiplication and replacing the process of multiplication with addition. The main mistakes in consolidating between those with learning disorders were the following: mistakes in the process of horizontal multiplication from two levels because of mistakes in the value of the position of the number.

The study [10] advised of the importance of paying attention to teaching mathematical subjects in a way that is implicit and not as an explicit subject and the process of moving from assessment to the philosophy of aims to base levels.

Al Hilali [3] conducted a study that aimed to identify the main types of mistakes in Maths for pupils with learning disorders in the two classes for the 2nd and 3rd elementary grades. The results of the study have found difficulties in conducting numerical processes. It showed a clear statistically significant difference for the major mistakes between the 2nd and 3rd grade pupils compared to ordinary pupils. There is a statistically significant difference at 0.001 between the pre and post application results in favour of the test group.

Brown and Quinn [11] undertook research that aimed to identify mistake patterns that High School level pupils fall into while conducting numerical processes on fractions. An analysis of the mistakes found that there were a large number of incorrect concepts related to fractions. The study showed that there are patterns in mistakes that relate to the process of adding, subtracting and multiplying fractions and the lowest common denominator.

The research conducted by Zhou et al. [30] on a sample of kindergarten children where a group of researchers monitored the conduct of children in Maths over a period of a whole year aiming to identify the kindergarten children's ability to understand written numeric symbols. The results analysis found that: the conduct of the children as a whole in addition was better than subtraction. As the numbers became bigger, the conduct of the children reduced. There is clearly a bigger problem in the activities that need to be carried out during addition to borrowing during subtraction. The mistakes were curried during addition when the first number is bigger than the second.

Al Kabeesi [4] conducted a study that aimed to identify the mathematical difficulties that pupils face in the 5th and 6th grades classes and cause them to fall into mathematical errors. The results showed that most of the errors were in the calculation processes based on real numbers in their normal and decimal forms, some numerical processes, analysis processes, solving first and second degree equations with one variable, some foundation issues and their mathematical processes and errors in questions that require thinking.

The study of Riccomini [27] aimed to identify the ability of teachers of foundation elementary level pupils to identify the level of mistakes of pupils in subtraction processes, which are more likely to be resolved. The results of the study show the students' ability to identify the level of student's mistakes in learning subtraction and identifying the most common. They were not able to choose the suitable answer to correct the mistakes.

The study [13] aimed to find the percentage of students from the 10th grade who were suffering from weakness in algorithms to solve the organisation of equations, identifying categories of mistakes that students fall into and the percentage of errors in each category. The study found 5 main categories of mistakes: comprehension mistakes, assessment related mistakes, algorithm related mistakes, difficulty in mathematical language despite answering correctly and mistakes resulting from poor concentration.

The National Council of Teachers of Mathematics (NCTM) found that the students do not like their teaching to be in explicit study subjects but build a holistic view of the world and benefit from forming this view from the different study subjects –among them Maths. This is what they mean by understanding and explaining foundation learning for a lot of problems that they face and they are to solve though their rules that belong to various learning subjects. Because of this it is important to confirm these sorts of relationships, which allows the pupil to use it in their life [14].

The study of Schroeder [28] confirmed that pupils use the relationships that they reach to solve non routine problems. In another statement, they could perform a task and use the relationships to better understand the problems and finally successfully solve the problem.

The study of Leblanc and Weber [20] confirmed the importance of pupils working on the relationships through similarities to understand the given situation as the pupils use established strategies, a timetable, a geometric shape, mathematical plan or picture that represents the situation in a sensory way. This is to help them understand the situation.

The study that Yahya and Mohammed [29] performed aimed to identify the effectiveness of established learning strategies on a sample task and teaching analysis on mental processes to develop some foundation knowledge process skills that disabled children with hearing problems had in the foundation level. The two researchers have prepared the following tools: achievement tests in the first chosen unit and an assessment of foundation knowledge process skills. The results showed that there is statistically significant different at the level 0.01 between the average marks of pupils from the two test and control groups in favour of the test group in post application for the achievement test.

From previous studies, it was noticed that some of the previous studies were conducted on children with learning disorders and ordinary children. Their level of achievement disorders increased with the difficulty of learning. Within the knowledge of researcher, there is limited study based on methods of consolidation between learning processes and task analysis for the foundation level.

3. Methodology

3.*1 Steps for processing*: What follows is a description of the methods and tasks that the researcher followed to verify the aims of the study, which includes a description of the study group, its samples, the conduct of the study, verification and authentication methods, study variables and statistical methods that the researcher used to answer the research question.

3.2 Study group and its samples: the study group is made up of all the students with learning disorders in KSA. The study sample was made up of 65 female students from those students. They were specifically selected from one of the centres for learning disorders. The sample was randomly divided into two groups: 35 students from the test group that was be exposed to the established method for consolidating between learning the processes and analysing the results and 30 students from the control group who were not exposed to the method.

3.3 Study tools: the researcher used an established training program to consolidate between training the processes and analysing the results and applying an achievement test:

First: the established training program for consolidating between training the processes and analysing the results: the researcher prepared the special research plan in Maths in a way through which the established method will be used for consolidating between training the processes and analysing the results. A number of varied activities were suggested, which take care of the individual differences between the female students as well as teaching methods, technology and computed values. The program was made up of 12 training sessions.

Validity of training program: the training program was validated by explaining it to the group of specialised and experienced arbitrator members of the training council at universities in different specialist curriculums, training methods and Arabic language and literature and supervisors and educators. Their comments and suggestions were applied by amending some of the activities, exercises or adding new exercises.

Second: learning achievement test in Maths: the researcher built an achievement test for Maths research /statistics and probability unit whereby the test was from 30

paragraphs from the various test types. The tests were prepared according to the following steps:

- Analysing the level of conceptualisation in a unit of statistics and probability to mathematical concepts, mathematical analysis, algorithms, skills and mathematical questions
- Identifying the aims and results of the study that the students are expected to achieve after studying one unit of statistics and probability, categorising these paragraphs based on the level of subject knowledge in Bloom's Knowledge Taxonomy (knowledge and memory, understanding and capacity, application, analysis, synthesis and evaluation).
- Build a table of requirements and extract the level of importance for each category from the contents category and each level from the level of aims
- Write test paragraphs, review them, revise them and apply them as a priority

Validity of the achievement test: to validate the test, it was presented at a conference of skills and experienced arbitrator members of the training council at universities specialised in curriculums, teaching Maths, measuring and evaluating and their comments and suggestions were taken, applying what was required from amendments and suggestions.

Authenticity of the achievement test: To validate the authenticity of the achievement test, authentication factors were produced in two ways: the first way is the method of application and repeat application on an improvers sample from the test group, outside the study individuals, made up of 20 female students with a time gap made up of two weeks between the first and second applications and calculating the Pearson Coefficient between the two applications to produce an R Test. It was 0.84. It calculated the authentication values by using a Koder Richardson (K-R20) at 0.81. Table 1 clarifies that.

Table 1: The authenticity of conducting the study based on K-R20 and R Test for the achievement test

Test	Koder Richardson	R Test
Achievement test	0.81	0.84

3.4 Difficulty factors and differentiation: Difficulty and differentiation factors were produced for each of section of the test. Their authenticity was reviewed and validated. The range of difficulty factors ranged from 0.37 - 0.74. The levels of differentiation ranged from 0.35 - 0.71. Table 2 clarifies that.

Table 2: For areas of difficulty and differentiation for all paragraphs of the achievement test and the whole

Question number	Areas of difficulty	Areas of differentiation	Question number	Areas of difficulty	Areas of differentiation
1	0.40	0.62	16	0.45	0.73
2	0.37	0.45	17	0.65	0.69
3	0.74	0.69	18	0.54	0.67
4	0.45	0.71	19	0.65	0.57
5	0.65	0.57	20	0.44	0.61
6	0.44	0.61	21	0.42	0.51
7	0.39	0.64	22	0.45	0.35
8	0.46	0.65	23	0.39	0.64
9	0.42	0.51	24	0.46	0.56
10	0.45	0.35	25	0.43	0.69
11	0.54	0.53	26	0.54	0.68
12	0.54	0.67	27	0.52	0.41
13	0.52	0.49	28	0.58	0.46
14	0.58	0.47	29	0.69	0.58
15	0.69	0.57	30	0.52	0.41
Overall				**0.52**	**0.59**

3.5 Educational curriculum: A semi test curriculum was used in this study because it was more reliable. It was distributed for the study sample to two groups. One was random for the training program and the other remained as a controlled group that the program was not exposed to.

3.6 Study procedure: to validate the aims of the study, the researcher performed the following tasks:

- Planned the study tools (calculated learning program and achievement test) and validated its authenticity and consistency
- Specified the individuals for the study sample for the for the academic year 1437-1438
- A book had been provided to simplify the research task for the Ministry of Education and Training to allow the application of training tools on individuals in the two test and control groups
- A book had been provided for the research task from the Ministry of Education and Training in KSA /management of the area of Al Qurayyat aimed at the school where the study would be conducted

- The manager of the school and Maths teacher for the first High School level of the school had been met in the school. The nature of research had been explained to them and the teacher was liaised with to conduct the research on the test group based on an estimated continuation of 3 weeks at 5 weekly lessons
- The researcher got the achievement marks of the female students at the end of the first term considering that they represent the pre measurement in Maths for the test and control groups for the study
- The results of the study groups were validated before starting the experiment, by finding all of the average values and standard deviation for the pre measurements of each of the two groups then producing T Test results for the independent samples to identify the variable value
- The statistics and probability unit was studied using the training program that was calculated for the female students of the test while the control group studied the same unit by the ordinary method
- A test analysis was applied for the low values in the study as a post measurement on the control and test groups after finishing with the training program
- The answers of the individuals of the sample were extracted based on the educational achievement test, measuring the mental effectiveness, measuring the mathematical thinking and conducting statistical analysis using the statistics program, SPSS.

3.7 Study variables: the study included the following variables:

First: independent variables: Methods of teaching: using the mathematical training program and ordinary methods.

Second variables: Achievement tests: this is expressed by the average values for the marks of the female pupils on low achievement tests in this study

3.8 Statistical resolution: In order to answer the research questions and investigate its specifics, the average and standard deviation values were extracted for the marks of the sample group in the two test and control groups. A Paired Sample Test was then conducted to identify the difference between the pre and post measurements for the test and control groups and accompanying ANCOVA test to identify the effects of the training program on achievement.

4. Discussion on results

What follows is a discussion of the results of the research aiming to identify the effects of the established methods on consolidating between training for processes and analysing the tasks on the achievement of the female students with learning disorders in Maths in KSA:

What are the effects of established methods in consolidating between training and procedures and analysing the tasks upon the achievement of female pupils with learning disorders in Maths in KSA?

To answer this question, the average and standard deviation values for the pre and most measurements were extracted for the control and test groups. An Independent Sample T Test was applied for the previous measures to identify the differences between the two groups in the post measurements. Table 4 shows that. A Paired Sample T Test was applied to identify the differences between average pre and post measurements for each group at the achievement level. Table 5 shows that.

The efforts of the groups in the study achievement test

Table 3: Independent Sample T Test to identify the results for the two groups in educational achievement on the pre measurement

Group	Average	Standard Deviation	T Value	Degrees of freedom	Statistical significance
Control	62.73	5.74	1.23	63	0.22
Test	61.20	4.25			

The results from table 3 show that the T Values are low and not statistically significant at the significance level ($\alpha \leq 0.05$) for the pre measurement. This shows that the achievement of the two groups (controlled and test) in the pre measurement.

Table 4: Independent Sample T Test to identify the difference between the achievements of the two groups in educational achievement in Maths for pupils in the foundation level in KSA based on post measurement

Group	Average	Standard Deviation	T Value	Degrees of freedom	Statistical significance
Control	78.53	6.48	2.77	63	0.01
Test	83.40	7.51			

The results from table 4 show that the T Values is statistically significant at the significance level ($\alpha \leq 0.05$) between the two groups (test and control) for the post measurement. The differences were in favour of the test groups as the conduct of the student in this group was better in the post measurement in the control group.

Table 5: Implementing a Paired Sample Test to identify the difference between the pre and post measurements for the test and control groups in an academic achievement test

Group	Level	Average	Standard Deviation	T Value	Degrees of freedom	Statistical significance
Control	Pre	62.73	5.74	9.05	29	0.00
	Post	78.53	6.48			
Test	Pre	61.20	4.25	15.54	34	0.00
	Post	83.40	7.51			

The results from table 5 show that there is a statistically significant difference between the pre and post measurements for each of the two groups in academic achievement. The T Value for the test group was 15.54 with a statistical significance of 0.00. The differences were in favour of post measurement. The T Value for the control group was 9.05 with a statistical significance of 0.00. The differences were in favour of the post measurement. It is noticed that the level of progress in the test group was better than the control group.

*To identify the effects of the established methods in consolidating between training and procedures and analysing the tasks upon the achievement of female pupils with learning disorders in Maths in KSA, an ANCOVA analysis was applied. Table 9 shows that***.**

Table 6: Results of the ANCOVA test to identify the difference between the two groups in the academic achievement test in the post measurement with an accompanying pre measurement test

	Squared group	Degrees of freedom	Average squared values	F Value	Statistical significance
Group	346.39	1	346.39	6.89	0.01
Pre measurement	21.70	1	21.70	0.43	0.51
Error	3116.17	62	50.26		
Corrected value	3520.46	64			

Table 6 shows that there are statistically significant differences at the significance level of 0.05 following the group variables. They were in favour of the test group. The results

show that there is no difference in the educational achievement test at the pre measurement. This confirms the effort between the two groups of pre and post measurements.

The reason for that is using the established method for the processes and task analysis that the researcher used to assess areas of children's strength and weakness. This goes back to parenting and benefitting from areas of strength and weakness and people close to them. This step for the child goes back to identifying clear ground for ways of dealing with them, which helps to increase their areas of response and countering its areas of negativity. The researcher broke down the skills that the child failed at in order to identify a series of behavioural and knowledge skills required to conduct those skills.

Conclusion and Recommendations

Consolidating between special knowledge by the child and skills analysis helps to plan the training methods and educational subjects that will be evaluated individually. Areas of strength and weakness and skills that children failed on were analysed then the two issues were consolidated until they planned the methods of teaching and educational subjects that suit the student.

Perhaps the reason for using this method goes back to learning mathematical skills that include numbers, numerical concepts, their symbols and numerical methods. The sense of sight, spatial memory and remembering directions are key abilities to implement and apply mathematical skills. The success of the student is built which lead to presenting a noticeable analysis of foundation level female students.

Building on what preceded, the researcher gave a number of suggestions for development such as the following:

1. Paying attention to using sensory stimuli, bright and familiar colours to allow a gradual transition to common conceptual skills
2. Paying attention to teaching the processes to female students before using analysis skills in learning using every sensory. Numerical skills by themselves can be divided based on skills analysis methods
3. Paying attention to analysing the strengths and weaknesses and skills where children fail then consolidating between the two issues. That is to make the teaching plan and educational subjects successful, which suit the students' abilities.
4. Knowing areas of strength and weakness gives us a clear area for dealing with the child if they have many areas of strength that we try to encourage

5. Trying to conduct a study that includes a large sample that includes males and females whereby the two can be compared in the analysis test.

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