

## **The Effect of Using Linear Programming Technique of Programmed Instruction in Learning and Improving the Performance of some Sprints (running) of the Deaf and Dumb**

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### **ABSTRACT**

The significance of the present paper is to show the role of teaching methods and motor learning including the use of linear programming technique of programmed instruction, which has been successful in achieving lots of games that helped in increasing the achievement level. Linear programming technique of programmed instruction is used to investigate the effect of this technique in increasing the performance level of some Sprints (running) of the Deaf and Dumb “Muteness and Hearing loss”, by this we have made a contribution to increase the performance level of Track and field activities. This paper aims at investigating the effect of using linear programming technique of programmed instruction in learning and improving the performance of some Sprints (running) of the Deaf and Dumb. It is concluded that linear programming technique of programmed instruction in learning and improving the performance of some Sprints (running) of the Deaf and Dumb has achieved a successful effect. As well as self-study according to linear programming technique helps students to do their bests during practicing the Track and field activities especially Sprint (100 and 200 m.). Finally, this paper has focused on necessity of adopting linear programming technique of programmed instruction in learning and improving the performance of some Sprints (running) of the Deaf and Dumb.

**Keywords:** deaf, dumb, linear programming technique

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### **INTRODUCTION**

#### **1.1 Background and the Significance of the Study**

One of the most important things that public education interested in is creating an educated generation because they reflect the image of the nation concerned, for this reason they have to learn different sciences including Sports science.

Physical education is considered as a main part of public education, in which the students in all schools, institutes and universities are studied the Sports science as well as practicing of different sporting events in order to achieve correct educational level and to achieve the sports attainments required for the various sporting events.

Teaching disabled “Personal assistance” including the Deaf and Dumb is not different from learning healthy people in terms of providing them with sports sciences and achieving sporting accomplishments, for this reason we find them in sporting forums they achieve attainment after the other in sporting activities, and for this reason the exercise is an educational aspect that helps not only healthy people in building the educational personality, but even the disabled, which help in ethical, humanitarian and educational aspects during practice [1].

Track and field “athletics” as well as achieving the attainments of all the activities are required to make the correct sporting base, the use of the suitable teaching method and the effective teaching strategy that used to the requalification of the students as respects to physical and skill in order to achieve the suitable numbers and times, especially in the activities of Sprint (100 – 200 M.).

The significance of the present paper is to show the role of teaching methods and motor learning including the use of linear programming technique of programmed instruction, which has been successful in achieving lots of games that helped in increasing the achievement level. Linear programming technique of programmed instruction is used to investigate the effect of this technique in increasing the performance level of some Sprints (running) of the Deaf and Dumb “Muteness and Hearing loss”, by this we have made a contribution to increase the performance level of Track and field activities.

### 1.2 Statement of the Problem

Choosing the best method by the teacher in teaching methods helped students to success the education in the correct way especially in the Track and field activities of Sprint of disabled “Muteness and Hearing loss”.

According to the researcher’s overview in teaching methods and the track and field games of disabled “Muteness and Hearing loss” there are fluctuations in the educational level in the activities of Sprint (100 – 200 M.), which do not rise to the level of ambition because of the lack of distinction between the appropriate educational methods by teaching methods or the lack of experimenting with the appropriate method, including linear programming technique of programmed instruction that requires us to experiment and investigate the scientific facts of these types of methods of teaching methods and their role in achieving attainment [2]

### 1.3 Aims of the Study

This study aims at:

1. Investigating the effect of linear programming technique of programmed instruction in learning and improving the performance of some Sprints of the Deaf and Dumb (disabled “Muteness and Hearing loss”).
2. Identifying the differences between the results of the pre and posttests of the control and experimental groups in learning and developing the achievement of some Sprints of the Deaf and Dumb (disabled “Muteness and Hearing loss”).
3. Identifying the differences between the results of the post-tests of the control and experimental groups in learning and developing the achievement of some short distances (disabled “Muteness and Hearing loss”).

### 1.4 Hypothesis

It is hypothesized that:

1. There were no statistically significant differences between the results of the pre and post-tests of the control and experimental groups in learning and developing the achievement of some Sprints of disabled “Muteness and Hearing loss”.
2. There were no statistically significant differences in the post-tests of the control and experimental groups for the experimental group in learning and developing the achievement of some Sprints of disabled “Muteness and Hearing loss”.

### 1.5 Limitations

1. **Human Limit:** The Students of Al- Amal Institute for the Deaf and Dumb.
2. **Place Limit:** Sports Arenas in Al- Amal Institute for the Deaf and Dumb in Basrah.
3. **Time Limit:** from 1/8/2019 to 14/3/2019.

## THEORETICAL FRAMEWORK

### 2.1 Programs in Programmed Instruction

Programmed education is a type of self-education, which is a program that the teacher prepares in a special style that is presented through a programmed book consisting of a set of frameworks. Each frame consists of small steps that start from simple easy works and go into difficulty, after that and through the students’ knowledge of the mistakes that he/she can make to correct it, thereby enhancing his/her correct response, and accordingly, each framework includes stimuli, response, and reinforcement, and it is divided into:[2]

#### 1. Jumping Programming

In this program, the student jumps from the tires in which he/she has experience in.

#### 2. Linear programming (LP)

This program takes into account the progression from one frame to another from simple to difficult, in which the student chooses the required response from among multiple choices.

#### 3. Differential Programming

Differential programming contains a large number of frames and in which the student chooses the response.

### 2.2 Disabled (Deaf and Dumb “Muteness and Hearing loss”).

Sensory disability (Deaf and Dumb “Muteness and Hearing loss”) is considered as one of the main types of disability. Disability is defined as “is any condition that makes it more difficult for a person to do certain activities

or interact with the world around them. These conditions, or impairments, may be cognitive, developmental, intellectual, mental, physical, sensory, or a combination of multiple factors” [3]

## METHODOLOGY

### 3.1 The Methodology of the Study

The researcher has used the experimental method with two equal groups (experimental and control), because it is appropriate to solve the study problem as well as achieving the study aims.

### 3.2 The Population and the Sample of the Study

The populations of the study have been selected by the purposive sampling, who are the pupils of Al- Amal Institute for the Deaf and Dumb, their ages arranged from 12 to 13 in the 5<sup>th</sup> and 6<sup>th</sup> stages, the sample made up of (22) pupils.

The Study sample has been selected from the community of the study that made up of (20) pupils who accounted for percentage (90.90%) of the study community that have randomly divided into two groups (control and experimental), each group consists of (10) pupils. Each group has equaled as shown in table (1).

**Table (1): Shows the Homogeneity and equivalence of the experimental and Control groups**

No.	The Study Variables	Control Group			Experimental Group			Calculated T-Value
		SD	X	CV	SD	X	CV	
1	Weight/ Kg.	56.11	1.89	3.368	56.36	2.11	3.743	0.264
2	Length/ cm.	159.44	2.77	1.737	159.17	2.117	1.33	1.357
3	100 m Running Achievement	15.23	0.345	2.265	15.45	0.347	2.245	1.349
4	200 m Running Achievement	28.654	0.45	1.57	28.74	0.236	0.821	0.508

Calculated T-value at FD (18), with sig. level at (0.05) = 1.724.

### 3.3 Data Collection

#### 3.3.1 Data Collection Methods

- English and Arabic References
- The Scientific Observation

#### 3.3.2 The Used Tools

- Clock Timer
- Track and Field
- Weighing scale
- Measuring Tape 2 m.
- Whistle

### 3.4. Practical Framework

#### 3.4.1 The Study Variables

The concepts of track and field have been adopted in the lessons of 5<sup>th</sup> and 6<sup>th</sup> in Al- Amal Institute for the Deaf and Dumb (100 and 200 m.).

#### 3.4.2 The Tests Used

##### 3.4.2.1 100 m. Running Achievement

**The Test Aim:** is to measure the transitional speed and 1 100 m. running achievement.

**The Tools:** An area, that is suitable for conducting the tests (its length is 100m and width is not less than 5 m.).

**The Performance Method:** the participant takes standby mode from the high start behind the starting line and when giving the signal the participant runs at full speed until he/she crosses the line.

**Recording:** the participant recorded time by the second.

##### 3.4.2.2 200 m. Running Achievement

**The Test Aim:** is to measure the transitional speed and 200 m. running achievement.

**The Tools:** An area, that is suitable for conducting the tests (its length is 200m and width is not less than 5 m.)[4]

**The Performance Method:** the participant takes standby mode from the high start behind the starting line and when giving the signal the participant runs at full speed until he/she crosses the line.

**Recording:** the participant recorded time by the second.

### 3.4.3 Pilot Study

The researcher has conducted the pilot study in 8/1/2019 on a sample of the same pupils in order to regularize the load of exercises used and apply them and to know how difficult it is when individualizing the sample and the required repetitions and the time it takes to apply the program.

### 3.5 Field Experience

**3.5.1 The Pre-Tests:** the pre-tests have been conducted in 15/1/2019.

**3.5.2 Exercises Used:** The researcher has prepared running special exercises (100 and 200 m.) and programming was implemented during a full lesson and in its three sections (c.f. appendix 1).

Appendix (1) Model of Educational Units/the Aim of the Educational Unit/ Teaching the skill of the human wheel and the balance

Sections and Units	Time	Details and Exercises	Freq.	Notes
Preface	15 Minutes			
Main Part 2- Practical	20 Minutes	- Performance of starting sit-downs between each of the two students for a distance (30 meters) - Performance running (100) meters between three students, to be the instruction to start between them. - Running (200) meters in the form of each (50) meters separately and after the arrival of the players they go the other (50) meters.	2×4  2×2  2×3	
Conclusion	10 Minutes			

This method has applied for eight weeks within one teaching unit. The program was applied on 16 January 2019 and ended on 13 March 2019.

**3.5.2 The Post-Tests:** The post-tests have been conducted in 14/3/2019.

**3.6 Statistical Methods:** SPSS has been used to statistical processing, in order to find out the following:

1. Arithmetic Mean (Mean X)
2. Standard deviation (SD)
3. Coefficient of Variation (CV)
4. T-Test of Paired Samples
5. T-Test of Independent Samples
6. Percentages

## DISCUSSION

Table (2): Shows the Values of Pre and Post-Tests for the Control and Experimental Groups in Valuation Used

No.	Valuation Used	Pre-Test		Post-Test		SE	Calculated T-Value	Sig. Level
		SD	X	SD	X			
1	100 m. Running Achievement	15.23	0.345	14.11	0.247	0.355	3.154	Sig.
2	100 m. Running Achievement	28.654	0.45	27.22	0.356	0.574	2.498	Sig

Calculated T-value at FD (9), with sig. level at (0.05) = 1.833.

Table 3: Shows the Pre- and Post-T-Value of the experimental group in the evaluation used

No.	Valuation Used	Pre-Test		Post-Test		SE	Calculated T-Value	Sig. Level
		SD	X	SD	X			
1	100 m. Running Achievement	15.45	0.347	13.88	0.272	0.561	2.798	Sig.
2	100 m. Running Achievement	28.74	0.236	26.42	0.543	0.771	3.009	Sig

Calculated T-value at FD (9), with sig. level at (0.05) = 1.833.

Table (4): Shows the Post-T-Value of the Experimental and Control Groups in the Evaluation Used

No.	Valuation Used	Pre-Test		Post-Test		Calculated T-Value	Sig. Level
		SD	X	SD	X		
1	100 m. Running Achievement	14.11	0.247	13.88	0.272	1.885	Sig.
2	100 m. Running Achievement	27.22	0.356	26.42	0.543	3.703	Sig

Tabulated T-value at FD (18), with sig. level at (0.05) = 1.724.

Through the tables (2) and (3) it was shown that there are statistically significant differences between the pre and post-test of the control and experimental groups in the test of achievement used and in favor of the post-test, this indicates that the two groups have learned and improved in 100 and 200m. running achievement under study, i.e. that the two methods have achieved success both the traditional teaching method and the method of the linear program of programmed education, especially when the targeted exercises are selected in a scientific way and suitable for the method used and as mentioned by BastoisiAhmed, Abbas Al-Samarrai (1984) "Exercises are organized and targeted movements through which it acquires the development of motor and skill qualities in the field of life and sports" [5].

"The basic and necessary rule in learning motor skills that shows clear progress in learning is to pay attention to the number and variety of exercise attempts." [6].

In addition, the interest in the teaching lesson in the right and successful way is the basis for achieving education and achievement as a sporting event, as indicated by Inaiat Mohammed Ahmed (1998) "Good organization of the lesson contributed to the ability of students to experience and understand the lesson and modify their behavior so that they acquire desirable behavioral criteria in the desired performance" [7, 1]

The method of the linear program of programmed education is one of the important ways in teaching and making the student capable of performing and this is the secret of the teacher's success in experimenting with the

appropriate methods of learning, as Afaf Abdul Karim (1990) stated that "The trainer must provide a variety of practices for open skills, diversity in models is necessary so that the changing needs of skills can be met"[8]

This method is considered as one of educational methods that helps to encourage towards practice and achieve the learning aim, this is confirmed by Ahmed Awad, who has stated that "The impulsive dimension of the cognitive method is impulsive to the tendency of individuals to quickly respond to solutions in the shortest possible way"

This educational method is one of the methods of self-learning that helps the student in creativity and the most extravagant effort in learning and this is the secret to achieving attainment in running (100 and 200) meters, According to Nidhal Boutros (2004), "the clarity of the learning steps in the learning course in its three stages as well as the nature of the presentation of the material to suit the needs of learners by linking the theoretical side to practical application, which leaves a clear and effective effect in the development of inference thinking among students, as it helps them to increase their cognitive potential so that it is easy for them to perform mental processes and apply them in practical terms"[9]

Marwan Abdel al-Majed and Dhia Hassan Bilal have emphasized that there are two basic steps to the study of physical education in learning are: identifying the subject and organizing the steps, as each step is based on the response in the previous step" [10]

## CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

It is concluded that:

1. Linear programming technique of programmed instruction in learning and improving the performance of some Sprints (running) of the Deaf and Dumb has achieved a successful effect.
2. Self-study according to linear programming technique helps students to do their bests during practicing the Track and field activities especially Sprint (100 and 200 m.).

### 5.2 Recommendations

1. Adopting linear programming technique of programmed instruction in learning and improving the performance of some Sprints (running) of the Deaf and Dumb.'
2. Focusing on the exercises of self-study according to linear programming technique helps students to do their bests during practicing the Track and field activities especially Sprint (100 and 200 m.).
3. Conducting similar studies on the other games of track and field, because it has achieved the targeted aims.

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