

Effects of Using a Hypermedia Educational Program on Learning the Shot-Put Skill for 3rd Year Undergraduates, Faculty of Physical Education, Tanta University

Khaled Abd El-Ghaffar El Falah

Department of Methodology and Curricula Faculty of Physical Education, Tanta University, Egypt

Abstract: The research aimed at preparing an educational program by using hypermedia and identifying its effect on the level of technical performance and cognitive accomplishment of shot-put skill of the 3rd year students, Faculty of Physical Education, Tanta University, besides reviewing students' opinions and impressions towards the program under discussion. The researcher applied the experimental curriculum to a sample of twenty five students in which a hypermedia education program for learning the shot-put skill was designed. The program's results were measured by checking the student performance level, cognitive accomplishment and identifying the students' impressions towards the educational program. The results showed that using the educational programming prepared by the hypermedia technology had a positive effect on learning the shot-put skill. The improvement percentages regarding learning the technical stages of the shot-put skill ranged from 82.91% to 124.14% the opinions and impressions of the research sample subjects towards using the computer programming prepared by hypermedia technology were positive. In addition, education programming prepared by hypermedia technology took in to consideration the individual differences among students, saved the researcher's time and effort, corrected mistakes and provided guidance to students during applying the program.

Key words: Shot put • Educational program • Hypermedia • Students of the faculty of physical Education

INTRODUCTION

Education today is no longer a matter of debate in any area of the world. The contemporary international experiments proved the importance of technology in the educational process in which the countries held the responsibility of checking their educational systems searching for any aspects of deficiency and weakness as well as the extent from which they keep pace with world technological progress, so, here in the Arab Republic of Egypt, we shouldn't be satisfied with just owning modern technology but rather realizing, comprehending and making good use of it besides designing its programs and publishing them to help the teacher [1]. So, education in Egypt should be centered on a general strategy of education taking into account the technological perspective through the Egyptian society's physical capabilities [2].

Many scientists and experts specialized in the educational field seek to benefit from the modern technological means besides applying them aiming at promoting the educational process which can be reflected

positively on both the teacher and learner. One of the most common modern technological methods in education are closed and open television circuits, interactive video, multimedia, hypermedia and the internet. Education can be looked at through a computer-related angle to identify the development of education along ages till our present time, there are 3 kinds of education: traditional, by computer and by internet [3]. Educational technology in its broadest meaning means planning, preparing, developing and applying it through various technological techniques working systematically with the human elements to achieve education objectives. Educational technology is of various levels used for designing and developing education. Also, it can be applied in a comprehensive way to form the total or great system of education at the level of all the educational stages or one of them, or one of the school curricula. In addition, using modern technology in education enables us to get rid of obsolete education systems before it's too late, providing that it should be used in a systemic coordination way in the basic education process which is the process of how a learner gets facts and benefits from them [1, 4, 5].

Educational benefits resulting from using educational technology in education are numerous as it makes teaching tangible, rich and makes more lively, increases the learners' interest and taking individual differences among them into consideration. Taking individual differences among learners in consideration is considered as a common phenomenon in different educational environment. Whatever effort the teacher exerts in order to get homogeneous groups of learners, we find that each learner of these groups behaves in his way according to his own inclinations, predispositions, motives and his ability of learning in addition to his response method, needs and his physical mental and emotional abilities since any learner should go through the educational process in accordance with his abilities and stops whenever he feels he wants to do so to keep himself away from boredom and that is accordingly reflected on his love to the subject of study [6, 7]. Hypermedia is considered a modern technological method in the field of education. In fact, such distinctive method helps the learner to coexist positively with the educational media in a systemic and integral way through computer in a way that helps him to achieve his hoped educational objectives efficiently and adequately. Hypermedia style helps in collecting written texts, sound, steady and animated pictures, linear applications and video shots which were designed to develop the learner's performance in the form of an educational program that provides a chance for interaction between the learner and the program through computer which gives the learner the right of controlling information that are displayed on the monitor and its display time in addition to having freedom of dealing with the educational program [8, 9]. Shot-put is considered a track and field competition that gained a lot of attention from those who set school curricula of physical education of the basic and secondary stages of education like the rest of athletics competitions [10, 11]. It also exists among the school curricula content of the Faculties of Physical Education.

Via his work in teaching athletics, the researcher finds that most of the contemporary educational programs following traditional methods (explanation and model presentation) are no longer capable of keeping pace with technological progress in the field of teaching the shot put competition. Thus, the methods in teaching process need to be developed in order to help the students of the Faculty of Physical Education in Tanta to use their senses, stimulate their motivations towards the educational process and make the learner more interactive in the educational process by finding situations in which

the learner can be more positive. As a result, educational programs that make student the axis of educational process need to be set; the thing that cannot be carried out without benefiting from educational technology that invaded many of the activities in the field of physical education in general and the shot put contest in particular.

The scientific studies showed how efficient using many of the technological techniques is in the educational process for the physical educational activities. Thus, we find that these studies confirmed the importance of using technological techniques in learning different sports activities. Moreover, using a hypermedia educational program had a positive effect on the skillful performance, though the researcher's knowledge didn't touch any study dealing with the subject of using technological techniques in learning the shot put contest in the public education stages in general and the students of the faculty of physical education in particular. As a result, the researcher was encouraged to make a research and attempt to identify the effect of a hypermedia educational program style on the aspects of learning the shot put contest of the faculty of physical education in Tanta University, in addition to identifying its effect on the level of technical performance and cognitive accomplishment of the learners of that kind. This activity came out of caring about educational programming for learning the skills of sport activities in a way that keeps in touch with pre- university education development for the sake of seeking for quality of the educational process in the university education stage in Tanta University, faculty of physical Education as well as identifying a sample of students opinions and impressions towards using programming in educational process under discussion.

The research aims at preparing an educational program by using hypermedia technique, identifying its effect on the level of technical performance and cognitive accomplishment of the shot-put contest of the 3rd year students, Faculty of Physical Education, Tanta University and checking the students' opinions and impressions towards the used educational programming prepared by hypermedia technique.

Research Hypotheses:

- There are statistical significant differences between the pre measurement and post-measurement in favor of the latter in the level of technical performance of the shot put skill of the research group.

- There are statistical significant differences between the pre- measurement and post-measurement in favor of the latter in the level of cognitive accomplishment of the shot put skill of the research group.
- Taking into account opinions and impression of research group towards using the computer programming prepared by hypermedia in learning the shop put skill.

MATERIALS AND METHODS

The researcher used the experimental method by using pre-and post measurements of the research experimental group by using hypermedia through educational program.

A sample of 25 students was chosen in a random way from the 3rd year students, Faculty of Physical Education, 2008/2009, Tanta University. The researcher made sure that the sample persons were all of normal curve limits in order to reflect the sample data normality in terms of some variables (age- height-weight-intelligence) and technical stages (holding and carrying the shot-steady position-rotation-proceeding-throwing position-throwing-balance) as shown in Table 1.

Tools of Data Collection

First: Apparatuses and tools: Rest meter set for measuring height (to the nearest centimeter)-medical scale for measuring weight (To the nearest kilogram me) - a shot put playground and a measurement tape-a number of metal balls (shots of different weights)-obstacles medical balls-a stopwatch IBM computer set-windows 32 Bit system (XP2005 Arabic-supported-computer lab of the faculty-a CD of hypermedia programming prepared by the researcher.

Second: Skillful Performance (Technical Stages):

The researcher points out that the shot put skill of the technical stager under discussion were specified by reviewing specialized scientific references of throwing the shot in addition to checking the experts' opinions as follows:(holding and carrying the shot-steady position-rotation-proceeding-throwing position-throwing-balance).

Third: Tests of Measuring the Technical Abilities of Shot Put Contest: After many interviews with a group of experts in the field of athletics to check their opinions about the elements of physical fitness related to shop put contest and after reviewing scientific references in the

same field in order to find out the frequently used tests, the researcher accordingly chose the following physical tests (muscular ability) standing broad Jump test) arms, Muscles strength (test of pressing the bar with both hands before the chest), speed test (30m Jogging test), flexibility (standing trunk forward bending test), test of numbered circles, balance (one foot standing test) [12].

Fourth: Test of Measuring the Mental Abilities Level (Intelligence):

It includes a number of intellectual questions that reflect the ability of thinking, comprehending the intellectual pictures, visualizing movement of shapes and their relationship to each other in relation to their similarities or differences and measuring the ability of visualizing the shape's and its parts' movement or spatial replacement. In fact, this test was previously performed in many of the scientific studies in the sports field as it is considered the most suitable test for measuring the non- verbal intelligence in the sports field [13].

Fifth: Form of Evaluating the Legalized Performance Level for Measuring the Level of Learning Shop Put Skills:

A form prepared by researcher was designed to evaluate the performance level of shop put skill (holding and carrying the shot-steady position-rotation-proceeding-throwing position-throwing-balance) in order to measure the skillful performance level of shot put presented in a panel of 3 experts. Teaching the shot put skill was chosen to help in calculating the total degree of the evaluation form. The maximum was 70 as each part of the skill takes 10 degrees.

The validity of the form was calculated and it showed that there were statistically significant differences at the level of 0.05 of shot put skill. Then, the reliability of the form was checked by using application and re-application with 2 days intervals on a sample of 8 students. The reliability ranged from 0.74 to 0.86.

Sixth Cognitive Accomplishment Test of Shot Put Contest:

The phenomenon of the shot put skill learners.

Seventh: A Survey for Measuring the Research Sample Opinions and Impressions:

This survey was performed in relation to the educational computer programming the learners' opinions of the 3rd year students of the faculty of physical Education about using a hypermedia computer programming in learning the shot put skill. This survey is regarded as a form of emotion-related aspects towards programming.

Eighth: a Hypermedia Educational Program by Applying the Programmed Education: After finishing its preparation, the program was presented to a set of 5 experts specializing in curricula, teaching methods and athletics from faculties of physical education to check their opinions about (the program's suitability, its achievement of the general and behavioral objectives, scientific accuracy and clarity of the program content, suitability to the students' needs, suitability of evaluation methods and the program's validity for application).

Designing and Preparing a Hypermedia Computer Programming (Extreme Media) for Learning the Shot Put Contest: The researcher organized the content of the program according to the skill nature and the characteristics of students representing the research sample.

The Content Was Divided into 2 Parts

Introduction Part: It is the visual part of the monitor that is displayed consecutively the student's interruption. That introduction is considered the entry to the following programming steps (preface, title, preparation, supervision, instructions, list of tests).

Educational Content Part: It's the beginning of the student's work through the educational programming by following a certain method in a fixed arrangement. The student can control the skill's display accurately in relation to speed, succession and the way of exit at any time from the programming. the educational content is consisted of the following:

- A brief of the shot put contest history which includes (cognitive objectives-historical content-evaluation questions).
- Technical and educational steps of shot put contest that are displayed via behavioral objectives, defining and introducing each step.
- Exercises and evaluation questions for every performance stage. Having been shown the skill to be learnt in the shot put contest by researcher, the student became fully and freely able to control speed, path and succession. Each skill contains some of the scientific information leading to an integral cognitive background in addition to some exercises related to the skill and evaluation questions that measure student's success in achieving objectives of each skill. After answering these questions, the student should know if he is allowed to move to the following skill or repeat it again.

Preparing an Educational Programming Outline:

The researcher reviewed the well-known designing documents (flow charts-graphic board-scenario) the researcher used the hypermedia-related scenario for the following reasons:

- This method is frequently used among most systems designers specializing in preparing computer programs.
- It's easy to be understood and read even for those who are not specialized in computer.
- The method's content can be modified and organized before the final display on the computer.
- Program content can be introduced via a set of means such as (written texts with voice command devices-music and sound effects-stable pictures-animations-video) scenario displays the way each of the hypermedia monitors will look. It also shows how the student interacts with each medium through these monitors. It also be noted that the researcher took into account integration and regularity of programming display.

Defining the Program Content: The program contents were specified in the light of the general objectives and the fixed behavioral ones of the shot put contest, in addition to choosing the cognitive information related to the contest. The content was about (historical development of the shot put contest- shot put contest law- skill of holding and carrying the shot-steadiness stance-rotation-throwing position-throwing-balance). This contest was chosen because it is involved in the athletics curriculum of the 3rd year, Faculty of Physical Education, Tanta University.

General Frame of Program Application: The researcher applied the program in the form of 2 quantities units a week for four weeks (one month) 18/10/2008-17/11/2008. Each unit takes 35 minutes.

Chronological Distribution of the Educational Unit Parts of the Experimental Group Was as Follows: Administrative tasks (3min)-warming up (4 min)-physical preparation (10min)-main part (proposed educational program) 15 min)-final activity (3min) the educational programming (of the shot put contest) can be watched one day before practical application via the faculty's computer laboratory.

A Preliminary Study Was Programming-it Was as Follows: The time specified for watching the outstanding media programming was 40 min as a maximum. In fact, the time of watching should be opened, but in that case the time of watching to which the student can reach was restricted by a maximum. Thus, the time of watching is fixed any way, 40min for watching the hypermedia programming is a suitable time because it surpasses it surpasses the students' technical abilities.

Program's Final Image: through reviewing the experts' opinions and analyzing them it was clear that they all agreed on the program's validity for application.

General Frame of Program Application: The researcher applied the program in the form of 2 quantitative units a week for four weeks (one month only). Each unit took 35min to be executed.

Statistical Processes: Arithmetic mean-medium-standard deviation-broadening-twisted ness-"T" test-percentage of improvement-chi- square.

RESULTS AND DISCUSSION

From Table 1, the arithmetic mean, medium, standard deviation and coefficient of twistedness of the research group are shown. It also became clear that all values range between ± 3 which refer to the data normality. These data are for from abnormal distributions deficiencies. Through the research hypotheses and the measurements ' results achieved by the researcher who treated them statistically and within the limits of research sample, table 1 showed the following: the mean the medium, standard deviation, broadening and coefficient of twistedness of the variables under discussion. The value of skewness coefficient of all variables ranged from -1.11 to 0.056 which represent values lying between ± 3 , these values indicates normality of data of the sample under discussion.

From Table 2, it is shown that total measurement of technical stages of the pre- measurement was of different values, the arithmetic mean was 27.72, standard deviation was 1.89, while the arithmetic mean of the post-measurement was 56.36, standard deviation was 1.68 and the calculated "T" value was 49.88. In addition, the total of technical stages of post measurement had an arithmetic mean of 56.36, a standard deviation of 1.68 and the calculated "T" value was 49.88 thus, from these values, it

can be seen that there are statistical significant differences among the pre- measurement and post-measurement in all technical stages in favor of the post-measurement. it must be added that, the calculated "T" value was higher than the tabulated "T" value which was 1.71 at an abstract level of 0.05 Also, improvement percentages for all technical stages ranged from 82.91% to 124.14% in favor of the post -measurement. These values indicate that educational programming has a positive effect on the level of technical performance of shot put skill. This is because of the importance of technological techniques used in learning different sport activities. To be added, using a hypermedia educational program has a positive effect on the skillful performance and the effectiveness of using technological techniques in the educational process for physical education activities [14-20]. The progress noticed on the experimental group is attributed to the experimental variable represented in the hypermedia educational programming which helped in creating a good educational environment that encourages scientific thinking Moreover, the used style can stimulate the learner's thinking and make him go through educational process in accordance with his desire, speed and abilities which results in urging the learner into being self-conscious and appreciating the role he plays in the educational process which leads to his realization and understanding of facts and different kinds of knowledge arranged in accordance with the right technical performance which fulfills the first hypothesis.

From Table 3 related to the cognitive achievement variable of the experimental research group, it is clear that the pre- measurement scored an arithmetic mean of 37.56 and a standard deviation of 2.12 whereas the post - ,measurement scored an arithmetic mean of 72.12 and a standard deviation of 1.42. All these values indicate that there are statistical significant differences between the pre-and post measurement. The calculated "T" value of 77.87 was higher that the tabulated "T" value of 1.71 at an abstract level of 0.05 with an improvement percentage of 92.01% in favor of the post- measurement. The researcher attributes that to using hypermedia in education, which took into consideration presenting the knowledge and information related to the shot put contest under discussion in addition to organization, co- ordination, good language usage and accuracy of tackling and applying these pieces of information and kinds of knowledge by the learner during the educational process [1, 3, 4, 6, 9, 16, 18, 21]. By this way, the second hypothesis is fulfilled.

Table 1: Specifying the specifying the sample in the basic variables under discussion to show the data normality (N=25)

S	Variable	Arithmetic Mean	Medium	Standard Deviation	Broadening	Twisted ness
1	Age	19.42	19.50	0.32	0.82-	0.71-
2	Weight	171.64	171.00	2.54	1.10-	0.26
3	Height	74.52	75.00	1.61	0.04	0.62-
4	Intelligence	37.28	37.00	1.13	0.42-	0.41
5	Muscular strength	2.30	2.31	0.32	0.84	1.05-
6	Arms' strength	0.73	0,72	0.01	0.88	0.33
7	Legs' strength	118.07	118.22	0.78	1.68	1.11-
8	Speed	4.73	4.76	0.08	1.31-	0.24-
9	Flexibility	6.13	6.12	0.02	0.05	0.56
10	Co-coordination	4.15	4.16	0.03	0.56-	0.22-
11	Balance	4.20	4.21	0.02	1.15-	0.32
12	Cognitive achievement	37.56	38.00	2.12	0.37-	0.24-
Technical variables						
1	Holding and carrying	4.68	5.00	0.47	1.44-	0.82-
2	Steadiness stance	4.16	4.00	0.62	0.27-	0.11
3	Rotation	4.28	5.00	0.89	1.49-	0.61-
4	Proceeding	3.84	4.00	0.55	0.35	0.10-
5	Throwing stance	3.64	4.00	0.49	1.76-	0.62-
6	Throwing	3.48	3.00	0.51	2.17-	0.08
7	Balance	3.64	4.00	0.49	1.76-	0.62-
Total		27.72	28.00	1.89	-1.23	061.-

Table 2: Significant differences of the means of pre- measurement and post measurement in addition to percentages of improvement of the research group in relation to the technical analysis variable (N=25)

S	Technical variables	Pre-measurement		Post-measurement		Difference among	T Value	Percentage of improvement %
		A	S	A	S			
1	Holding & carrying	4.68	0.47	8.56	0.50	3.88	26.73	82.91
2	Steadiness stance	4.16	0.62	8.36	0.56	4.20	20.93	100.96
3	Rotation	4.28	0.89	8.32	0.69	4.04	17.23	94.39
4	Proceeding	3.84	0.55	7.84	0.62	4.0	26.18	104.17
5	Throwing stance	3.64	0.49	7.76	0.66	4.12	24.74	113.19
6	Throwing	3.48	0.51	7.80	0.40	4.32	34.44	124.14
7	Balance	3.64	0.49	7.72	0.73	4.08	23.66	112.09
8	Total	27.72	1.98	56.36	1.68	28.64	49.88	103.32

"T" tabulated value is at an abstract level 0.05 = 1.71

Table 3: significance of differences of the means of pre- measurement and post-measurement in addition to percentages of improvement of the research group in relation to the cognitive achievement variable. (N=25)

S	Variable	Pre-measurement		Post-measurement		Difference among means	T value	Percentage of Improvement %
		A	S	A	S			
1	Cognitive achievement	37.56	2.12	72.12	1.42	34.56	77.87	92.01

"T" tabulated value is at an abstract level 0.05=1.71

Table 4: Repetition, percentage, relative weight and chi- square of the opinions and emotional impressions of the experimental research sample relating to using hypermedia

S	Yes		Fairly		No		Relative weight	Relative importance	Chi- Square
	R	%	R	%	R	%			
1	23	92	2	8	0	0	73	97.33	38.96
2	24	96	1	4	0	0	74	98.67	44.24
3	22	88	3	12	0	0	72	96.00	34.16
4	0	0	1	4	24	96	74	98.67	44.24
5	0	0	2	8	23	92	73	97.33	38.96
6	0	0	1	4	24	96	74	98.67	44.24
7	23	92	2	8	0	0	73	97.33	38.96
8	24	96	1	4	0	0	74	98.67	44.24
9	23	92	2	8	0	0	73	97.33	38.96
10	24	96	1	4	0	0	74	98.67	44.24
11	24	96	1	4	0	0	74	98.67	44.24
12	22	88	2	8	1	4	71	94.67	33.68
13	23	92	1	4	1	4	72	96.00	38.72
14	24	96	1	4	0	0	74	98.67	44.24
15	23	92	2	8	0	0	73	97.33	38.96
16	22	88	2	8	1	4	71	94.67	33.68
17	23	92	2	8	0	0	73	97.33	38.96
18	24	96	0	0	1	4	73	97.33	44.24
19	23	92	1	4	1	4	72	96.00	38.72
20	24	96	1	4	0	0	74	98.67	44.24
21	22	88	2	8	1	4	71	94.67	33.68
22	22	88	3	12	0	0	72	96.00	34.16
23	22	88	1	4	2	8	70	97.33	33.68
24	24	96	0	0	1	4	73	97.33	44.24
25	23	92	2	8	0	0	73	97.33	38.96
26	0	0	2	8	23	92	73	97.33	38.96
27	23	92	2	8	0	0	73	97.33	38.96
28	0	0	1	4	24	96	74	98.67	44.24
29	0	0	2	8	23	92	73	97.33	38.96
30	24	96	1	4	0	0	74	98.67	44.24

From Table 4, it is clear that the tabulated chi-square was of statistical significance for all survey statement whereas the calculated chi- square value ranged from 33.68 to 44.24; all these values are higher than the tabulated chi- square value as it reached 5.99% of repetition. Relative weight and importance of the research sample subjects' opinions and emotional impressions of the learners and their responses towards the emotional survey statement were all statistical significant at a level of 0.05 which is considered a good index of using the efficient hypermedia technique in accomplishing the emotional aspect. The researcher attributes the positivity of research sample opinions and their impressions towards using a hypermedia

computer programming to the programming success in keeping the learner away from feeling boredom or negativity which might be felt because of the traditional style (orders). It must be stated, however, that Using technology in the educational process changes the standstill nature of traditional teaching increases the learner's interaction and pushes him into positive participation by contouring the motion, display and speed of programming which is not available in the traditional method [22-25]. In addition, the programming has taken into consideration individual differences and the learner's needs, inclinations and motives which led to achieving better results in relation to performance, knowledge and attitudes.

RECOMMENDATIONS

- Using the hypermedia educational program in learning shot put skill in Faculties of Physical Education.
- Designing hypermedia educational programs in the rest of other skills of athletics' events.
- Encouraging specialized experts in the field of technological techniques to design software tools for learning sport skills in different sport activities in a similar way to what the ministry of High Education do in some other subjects, taking into account certain scientific and educational criteria should be set for designing these software.
- Building Computer laboratories in the faculties of physical education that include software related to athletics and giving the student the chance to learn what suits him during getting guidance from the teacher.

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