

Effect of a technological program for motor educational on the development of fundamental motor skills and some Emotional, social variables for the pre-school

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Abstract

The study aimed to design a proposed program for motor education using multimedia (a technological program for motor educational) and monitor its effects on the development of fundamental motor skills and some emotional, social variables for the pre-school. The researcher used the experimental method by the experimental design of two groups, one experimental and the other controlled using pre-post measurements for each group. the study was conducted on a sample of 40 pupils of the kindergarten stage with 72.73% of the total population in 2017/2018, results indicated that the technological program for motor educational using multimedia technique led to the development of fundamental motor skills, the emotional variables and social variables under research compared to the traditional method in teaching (explanation and presentation method).

Keywords: Technological program, Multimedia, Fundamental motor skills, Emotional variables, Social variables, Pre-school.

Introduction

The technology is at the forefront of science, which seeks to develop its content and concept from time to time, according to the changes of the modern era, which is characterized by the revolution of information and knowledge and technology in various fields, especially the scientific

and educational field, which is developing on a daily basis. [51]

Laurillard, Reiser et al (2017) pointed out that one of the strengths of the definition of education technology is that it focuses on systematic processes and the use of technological resources

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and human performance technology. It also focuses on the analysis of education, performance problems, design, development, use, evaluation and management of educational and non-educational processes and resources, Institutions. The new concept of education technology has been linked to the field of teaching design and technology, such as multimedia. [27][46]

Multimedia is the field concerned with the computer-controlled integration of text, graphics, drawings, still and moving images (Video), animation, audio, and any other media where every type of information can be represented, stored, transmitted and processed digitally. [13]

Multimedia finds its application in various areas including, but not limited to, advertisements, art, education, entertainment, engineering, medicine, mathematics, business, scientific research and spatial temporal applications. Several examples are as follows:

* Education. In education, multimedia is used to produce computer-based

training courses (popularly called CBTs) and reference books like encyclopedia and almanacs. A CBT lets the user go through a series of presentations, text about a particular topic, and associated illustrations in various information formats. Edutainment is the combination of education with entertainment, especially multimedia entertainment.

* Education technology

Multimedia provides students with an alternate means of acquiring knowledge designed to enhance teaching and learning through various mediums and platforms. This technology allows students to learn at their own pace and gives teachers the ability to observe the individual needs of each student. [5][12][32]

* Social work (social variables) and the emotional variables

In an attempt to examine the impact of multimedia technology on students' study, A. Elizabeth Cauble & Linda P. Thurston conducted a research in which Building Family Foundations (BFF), an interactive multimedia training platform, was utilized to assess social work students' reactions

to multimedia technology on variables of knowledge, attitudes, and self-efficacy. The results states that respondents show a substantial increase in academic knowledge, confidence, and attitude. Multimedia also benefits students because it brings expert to students online, fits students' schedule, allows students to choose courses that suit them. [7][11]

Mayer's Cognitive Theory of Multimedia Learning suggests, "people learn more from words and pictures than from words alone." According to Mayer and other scholars, multimedia technology stimulates people's brains by implementing visual and auditory effects, and thereby assists online users to learn efficiently. Researchers suggest that when users establish dual channels while learning, they tend to understand and memorize better. Mixed literature of this theory are still present in the field of multimedia and social work. [7][11][23]

On the other hand, fundamental motor skills are movement patterns that involve various body parts and the

foundational movements. Examples are crawling, walking, running, hopping, jumping, bending, pushing and pulling, binding, extension, tweeking, rotation, bouncing, balance, galloping and skipping.[28]

Through the practical observation and supervision of practical education schools and observing the motor performance of the pupils, the researcher noted weakness, lack of fundamental motor skills such as walking, running and jumping. Also, fundamental motor skill's performance level for the pupils in is characterized by randomness, poor performance and lack of coordination in motor sequence, which called on the researcher to design a technological program for motor educational and monitor its effects on the development of fundamental motor skills and some emotional, social variables. Thus, using of education technology in the development of fundamental motor skills.

Therefore, this study is an attempt to using one of the most modern techniques in the field of motor educational, by

designing a technological program using multimedia for study its effect on the development of fundamental motor skills and some emotional, social variables.

Research Aim:

The main aim of this study was designing a technological program for motor educational (a motor education program using multimedia) and monitor its effects on the development of fundamental motor skills (walking, running, jumping, hopping, balance, throwing, catching, kicking), the emotional variables and social variables.

Research hypothesis:

1. There are statistically significant differences between the pre-and post-measurements for experimental group (multimedia group) in the motor, emotional and social variables under research in favor to the post measurement.
2. There are statistically significant differences between the pre-and post-measurements for the controlled group (explanation and presentation group) in the motor, emotional and social variables under research in favor to the post

measurement.

3. There are statistically significant differences in post measurements between the two experimental, controlled groups in the motor, emotional and social variables under research in favor to the experimental group (multimedia group).

Methodology

Method:

The experimental approach was used for two groups, one experimental and the other controlled, using pre-post measurements for each group for the pre-school.

Research sample:

The research society consisted of (55) pupils of the pre-school (KG₂) in School of Abu-Bakr Al-Siddiq - City Sadat for the year 2017/2018. The basic sample was randomly selected from the pupils of the research society. The total number of the sample was (40) pupils with 72.73% of the total population, and the sample was divided as follows; Experimental group: uses the motor educational program using multimedia, (20) pupils. Controlled group: uses the motor educational program using the traditional method

“explanation and presentation style”, (20) pupils.

And (15) pupils of the total research community and outside the basic research sample as exploration sample. Thus, the basic sample and outside the basic research sample consisted of (55) pupils by 100% of the population.

Tools:

1- Data recording forms: (Appendix 1): Forms for recording the measurements and data for the sample: name, age, height, weight, scores of IQ test, fundamental motor skills, emotional variables and social variables under research.

2- Tools and devices: Restameter device for measuring height and weight, tools of motor educational (collar, rope, sand bottles, grain bags, sandbags, stick, balls, parachute, tennis balls).

3- IQ test (Appendix 2): The "Man Drawing for Children's Intelligence" test was used by American researcher Goodnough F. Translation of "Mohamed Farrag, Abdel-Halim Mahmoud, Safia Mohammadi 1998" [20:97,98], After the establishment of "Harris A." By making some modifications, it became

known as the Goodnough Harris Drawing Test to be the child's assessment of the child's observation and the evolution of his perception of the subject rather than on the basis of artistic skill in the drawing.

4- Evaluation form of fundamental motor skills:

The form was used evaluation of fundamental motor skills, prepared by R. Gabal, Ayat Mohamed and A. Khalil 2014 (Appendix 3). The form was purposed to evaluation of fundamental motor skills under research *for the pre-school*. The form was prepared in 2014 through the following references: (Rehab A. et al., 2014), (Zeinab, Ghada 2010), (Abdallah A., Rehab A. 2014), (Essam 2014), (Ministry of Education 2012a,b), (Amin et al., 1998), (Khairya, Abdel-Wahab 2005) and (Khairya, Waseela and Fatma 2005). [2] [4] [17] [25] [26] [34] [35] [44] [57]

The number of phrases reached (86) phrases. The form was presented to the experts at the faculties of physical education (appendix4) for the purpose of identifying the experts' opinion. The percentage of the experts'

agreement was calculated on phrases of the form. The agreement rates on the phrases ranged from 75% to 100%.

5- Test of Emotional variables, Social variables(Appendix 4): The degree of emotional and social variables for pre-school students was measured by tests emotional and social variables, prepared by Rehab Gabal 2011 (Appendix 3). The objective of the two tests was to identify the degree of emotional and social aspects of pre-school students. Preparation of the tests in 2011 through the following references: (Rehab A. Gabal 2011b), (Bold P. 2010), (Sahar 2005), (Samira 2003), (Sayed 2010), (Nermin 2008), (Wael 2008) and (Green 2010). [9] [21] [41] [47] [48] [49] [39] [53] [57]

The technological program for motor educational (program of motor education using multimedia) (Appendix 5):

The technological program for motor educational (program of motor education using multimedia) was designed as shown below:

- Defining the aim of the program that suits its content: (Designing a program of motor

education using multimedia to know its effect on on the development of fundamental motor skills and some emotional, social variables) for the pre-school.

- The educational content was analyzed through the curriculum of the pre-school or Kindergartens (Ministry of Education 2012a,b) [34] [35], In addition the following references that describing the fundamental motor skills under research: (Rehab A. et al., 2014), (Zeinab, Ghada 2010), (Abdallah A., Rehab A. 2014), (Essam 2014), (Ministry of Education 2012a,b), (Amin et al., 1998), (Khairya, Abdel-Wahab 2005) and (Khairya, Waseela and Fatma 2005), which was used when designing the technological program for motor educational (multimedia program). [2] [4] [17] [25] [26] [35] [36] [41] [44] [57]

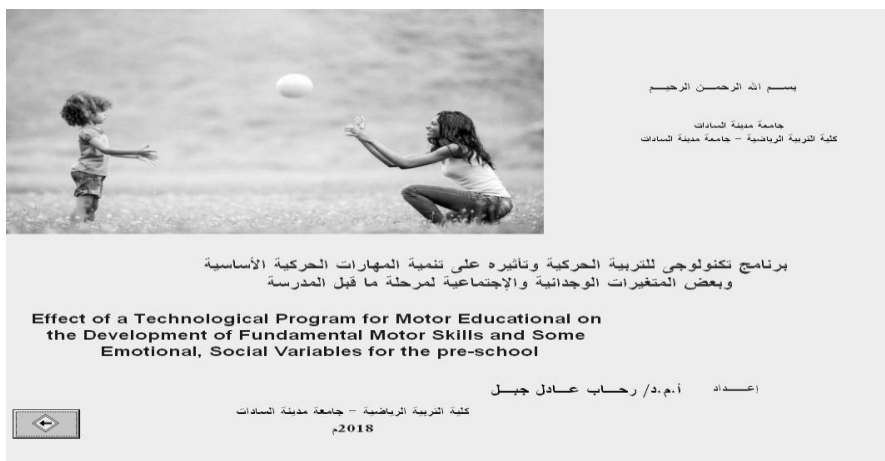
- The researcher prepared (24) technological units using Visual Basic language to have the opinion of experts about the appropriateness of these units. The experts approved the distribution of program content (technological units of motor

educational program) by 100% as shown in Table (5).

- The importance of the technological program content of the sample was clarified, taking into account the grading factor in the design of the program.

using Visual Basic software as shown in both (CD-ROM and appendix 6) This point included the following:

* The program's main screens: Containing the introduction which clarifies idea and title of the technological program for



- The technological program for motor educational display was organized under research

The second, the third, the fourth and the fifth screen (Appendix 6).

- The experts' opinion of the program (appendix 7) was reviewed and its appropriateness for the sample and agreement was obtained on the validity of a multimedia program of fundamental motor skills.

- The proposed program was tested on a sample of the

motor educational using multimedia.

exploratory study to determine the suitability of the multimedia program for the sample. This experiment resulted in the clarity of all the contents of the multimedia program to the sample pupils of the exploratory study.

Application of the program:

The motor educational program using both of multimedia, explanation and

presentation style was implemented on the basic study sample (40 pupils) according to the time distribution, as shown in appendix (5).

- The time distribution of the program was standardized for the two research groups, and

the difference was only in the learning method for each group. The experimental group was learn by multimedia program. The controlled group was through explanation and presentation style.

Result

**Table (1)
Significance of the mean differences between the (pre- post) measurements of the experimental group in the parameters under research**

Parameters	Experimental (Multimedia) N ₁ =20				Mean Differences	T value
	Pre		Post			
	M	±SD	M	±SD		
Fundamental motor skills:						
Walking	22.55	2.79	28.99	3.22	6.44	9.58*
Running	41.10	2.15	44.66	2.74	3.56	6.04*
Jumping	20.62	1.98	30.63	3.64	10.01	14.53*
Hopping	20.45	1.68	26.75	2.06	6.30	8.89*
Balancing	15.85	1.72	25.69	2.65	9.84	12.41*
Throwing	27.88	2.12	35.62	3.33	7.74	10.06*
Catching	19.65	1.25	25.41	3.29	5.76	8.04*
Kicking	8.50	1.01	13.88	2.54	5.38	7.74*
Emotional variables	15.23	4.91	22.70	5.76	7.47	9.96*
Social variables	13.41	4.56	20.17	5.25	6.76	8.76*

T Table value at a significant level (19, 0.05) = 1.73 (one direction)

Table (1) shows statistically significant differences between Pre-Post measurements of the

experimental group at a significant level of 0.05 in favor to the post measurement.

Table (2)
Significance of the mean differences between the (pre- post)
measurements of the controlled group in the parameters under
research

Parameters	Controlled (Explanation and presentation) N _r =20				Mean Differences	T value
	Pre		Post			
	M	±SD	M	±SD		
Fundamental motor skills:						
Walking	22.62	2.82	26.41	3.10	3.79	7.02*
Running	41.06	2.14	42.55	2.35	1.49	3.30*
Jumping	20.55	1.97	25.86	2.43	5.31	7.40*
Hopping	20.50	1.71	23.87	1.89	3.37	6.09*
Balancing	15.91	1.74	20.58	2.01	4.67	7.55*
Throwing	27.83	2.08	31.34	2.71	3.51	5.86*
Catching	19.61	1.24	22.94	1.40	3.33	6.05*
Kicking	8.53	1.02	10.88	1.42	2.35	4.57*
Emotional variables	15.20	4.90	18.69	4.98	3.49	6.22*
Social variables	13.52	4.58	17.05	5.06	3.53	6.41*

T Table value at a significant level (19, 0.05) = 1.73 (one direction)

Table (2) shows group at a significant level of statistically significant 0.05 in favor to the post differences between Pre-Post measurement. measurements of the controlled

Table (3)
Significance of the mean differences between the (post-post)
measurements of the two groups (experimental, controlled) in the
parameters under research

Parameters	Post measurement N=40				Mean Differences	T value
	Experimental		Controlled			
	M	±SD	M	±SD		
Fundamental motor skills:						
Walking	28.99	3.22	26.41	3.10	2.58	4.55*
Running	44.66	2.74	42.55	2.35	2.11	4.48*
Jumping	30.63	3.64	25.86	2.43	4.77	7.89*
Hopping	26.75	2.06	23.87	1.89	2.88	4.78*

Follow Table (3)
Significance of the mean differences between the (post-post) measurements of the two groups (experimental, controlled) in the parameters under research

Parameters	Post measurement N=40				Mean Differences	T value
	Experimental		Controlled			
	M	±SD	M	±SD		
Balancing	25.69	2.65	20.58	2.01	5.11	7.95*
Throwing	35.62	3.33	31.34	2.71	4.28	7.40*
Catching	25.41	3.29	22.94	1.40	2.47	4.50*
Kicking	13.88	2.54	10.88	1.42	3.00	5.29*
Emotional variables	22.70	5.76	18.69	4.98	4.01	7.25*
Social variables	20.17	5.25	17.05	5.06	3.12	5.38*

T Table value at a significant level (38, 0.05) = 1.69 (one direction)

Table (3) shows statistically significant differences in post measurements between the two groups (experimental, controlled) at a significant level of 0.05 in favor to the experimental group.

Discussion

First research hypotheses: (Multimedia)

The results of Table (1) show that there are statistically significant differences between pre and post mean values of the experimental group where the lowest value of calculated (t) (6.04) it was greater than the value of table (t) (1.73) at a significant level (0.05) in favor to post measurement, which indicates the higher level of

fundamental motor skills, the emotional variables and social variables under research for the post measurement to the experimental group (multimedia group).

The researcher attributes the level of progress and improvement in these results to the experimental variable only, which is the use of the multimedia method in the development of the fundamental motor skills, the emotional variables and social variables under research. This indicates that the presentation of program in the multimedia method has a positive effect on the skills under research and knowledge of the fundamental motor skills content through

multimedia and information that helps to form a clear picture by text, sound and image of this skills (fundamental motor skills).

This indicates that using multimedia has a positive effect on the fundamental motor skills of pupils. Which is consistent with the study of (Medina 2016), (Jean, Charles 2015), (Smorzewska 2015), (Talha 2011), (Rehab 2011a), (Rehab, Duaa 2015), (Eman 2014), (Ayat, Eman 2016), (Rehab, Abdallah and Khaled 2013), (El-Banna 2017), (Abd-Rabbo 2015), (Abdallah 2016), (Rehab 2016), These studies indicated that the computer groups based on the use of multimedia method have a positive effect on the skillful, motor, emotional or social variables under research. [1] [3] [6] [16] [19] [24] [31] [33] [40] [42] [43] [45] [50]

Thus, the first hypothesis is achieved, which stated that there are statistically significant differences between the pre-and post-measurements of the technological program group for motor educational (using multimedia) in the development of the motor, emotional and social variables

under consideration in favor to the post measurement.

Second research hypotheses (explanation and presentation method):

The results of Table (2) show that there are statistically significant differences between pre and post measurement of the controlled group in development of fundamental motor skills, the emotional variables and social variables in favor to the post measurement.

These results indicate that the explanation and presentation style was a positive effect on development of variables under research (fundamental motor skills, the emotional variables and social variables). This indicates that the traditional method of education or instruction was led to pupils improvement in the information and concepts related to these variables. Thus, Improved and effective in emplement of fundamental motor skills, the emotional variables and social variables under research.

The previous results was indicated that the method of explanation and presentation leads to progress and

improvement in the educational process, where the teacher relied on the explain of information and content understanding of the performance through verbal explanation and a model presentation of how to implement and this was led to effectiveness and positive on the fundamental motor skills, the emotional variables and social variables for the controlled group. This is consistent with Zakia Kamel, Nawal Shaltout and Mervat Khafaja (2010), Rehab Gabal (2016), Eman Abdel-Halim (2014, 2018) and Ayat, Eman (2016) where they pointed out that the method of explanation and presentation has a positive effect on the development of skills under research. [6] [15] [16] [42] [57]

Therefore, the second hypothesis is achieved, which stated that there are statistically significant differences between the pre-and post-measurements for the controlled group (explanation and presentation group) in the development of fundamental motor skills, the emotional variables and social variables in favor to the post measurement.

Third research hypotheses:

The results of Table (3) show that there are statistically significant differences in post measurements between the two groups (experimental, controlled) in the development of fundamental motor skills and some emotional, social variables for the experimental group where the lowest value of calculated (t) (4.48) it was greater than the value of table (t) (1.69) at a significant level (0.05), which indicates the higher level of the fundamental motor skills and emotional, social variables under consideration for the experimental group (multimedia group) than the controlled group (explanation and presentation).

This indicates that the progress in the variables level under research of the experimental group compared to the controlled group is due to the reliance on the multimedia program and the diversity of images, sound, music and video, thus the positive effect on the level of the fundamental motor skills and some emotional, social variables due to the

attractiveness and effectiveness of the multimedia program.

The researcher attributed the reason for the preference of the multimedia group compared to the explanation and presentation group that the pupils of the experimental group (multimedia) had the opportunity to imagine the correct performance free of errors because of using images, sound, music and video when watching the skills under research on the Computer (multimedia program) where they were briefed on the best technical aspects of the fundamental motor skills which was reflected positively on the performance level of the experimental group compared to the controlled group (explanation and presentation method), and the above is consistent with (Magdy 2003), (Moustafa 2009), (Yaseen 2006), (Yogesh 2004) and (Mohamed, Makarem, Hany, 2001). [30] [36] [37] [54] [55] The above is consistent with the study both of Abdallah (2016) and Chastre, Edouard (2015), which indicated that the using of multimedia and technology in general in the educational process has

effective in learning the skills under research because of the attractiveness and effectiveness of multimedia e-studies compared to others traditional methods. [1][24]

Therefore, the third hypothesis is achieved, which stated that there are statistically significant differences in post measurements between the experimental and controlled groups in the level of fundamental motor skills, the emotional variables and social variables under consideration in favor to the experimental group (multimedia group).

Conclusion

- The multimedia program has a positive effect on the development of fundamental motor skills, the emotional variables and social variables under research for pre-school.
- The traditional method in teaching or instruction (the explanation and presentation style) has a positive effect on the development of fundamental motor skills, the emotional variables and social variables under research for pre-school.
- The technological program for motor educational (multimedia program) led to a

higher level of fundamental motor skills, the emotional variables and social variables under research for pre-school compared to the explanation and presentation style.

Recommendations

- Encouraging using the technological program for motor educational (multimedia program) for pre-school pupils because of its effect in development of fundamental motor skills, the emotional variables and social variables.

- Introducing programs designed through multimedia in the curricula of the pre-schools.

- The need to benefit from the expertise of specialists in the field of education technology by holding seminars and lectures in the educational institutions to raise awareness of the importance of using multimedia in the educational process.

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