“The effect of constructivist model on aspects of learning jump skill inside on the jump table for the seventh level students of physical education department at El Baha University”

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Introduction and research problem.

The scientific and technological progress witnessed by the world todays makes it imperative for nations and individuals to undertake many and various duties, and pushes them to the initiative by using the maximum available of this technology for the development of teaching and learning methods to get rid of the traditional methods that are not feasible to keep up with the changing rapidly and developing permanently world, so it is necessary to prepare the individuals so that they can adapt to the scientific and technological changes, particularly in the field of teaching.

It is important to explore alternative models of the art of teaching to be able to progress in this upscale art under the conditions that may be adverse to noble purposes that aim to develop the teaching process.In spite of full awareness and willingness of teachers to upgrade the art of teaching, this requires action against the current approach stream that is characterized by keeping the old and lack of suitability for the age in both content and style together. (25: 11).

Both Omnia AL Gendy and SadeqMunir(2001 AD) indicated that the development of education requires from us to rethink about how students think, it does not mean what students learn, but it means that students learn how to think, and it is necessary to work on the liberation of the teacher from the traditional methods (363: 5).

Sultana Al Faleh (2003 AD) indicated that a great interest has appeared to try many non-traditionalmethodsin the processes of teaching and learning, and some of these methods havebeen emerged from the constructivist theory, from which several diverse and useful teaching models are derived, and have a great value in teaching and learning process (85: 12).

Artino (2008 AD) indicated that the point of view of modern many educators emphasize that the best ways to prepare the learners and their success depends on theirstock of knowledge with well utilization of it in solving problems, and this is unlike the traditional view of education.The new is that the constructivist theory emphasizes that the learner shall not remain static, but he must acquire the renewable knowledge, and he must develop himself to remain in a renewed world and interacting with it and with others and thus he can solve his problems (1:32).

The most modern projects in the United States rely on the constructivist theory, which helped to improve the learning through changing teacher practices andapplying itin the developed countries has become a basis for learning and education, while in the developing countries, there is no movement of educational renewal movements that rely on this theory as a basis for educational practices (27: 2).

Wadih Maximus (2003 AD) indicated that the constructivist learning modelhelps the students to build their concepts and scientific knowledge according to four stages adopted intheir originfrom the stages of the learning cycle and the model assures linking science with technology and society.Its four stages were built on what ishappening in the mind of the learner at the building of his scientific concepts in accordance with the philosophy of constructivism.The four phases of the model are invitation stage, exploration stage, proposing solutions and interpretations stage and the application stage (55:31).

Where Omnia AL Gendy (2003 AD) indicated that the role of the teacher in the teaching from the constructivist perspective is not limited to the transfer of knowledge only, he is a guide in the processes ofbuilding the knowledge of the learner, then the learner builds or configures the meaning of the new information and events as a result of the interaction between prior knowledge of the individual, experiences and ongoing observations (4: 3).

- Research Problem.

The adoption of the traditional methods in educating students, which rely mostly on external variables such as the teacher, the school and the curriculum variables becomes useless in education, therefore it was necessary to search for all that is new in the education process, and the transition from dependence on external factors only to try to focus on what is happening inside the mind of the learner when being exposed to the educational situations such as his previous knowledge, his ability to focus and his motive to learn.Throughthe researcher acquaintance on the scientific references and previous studies, he found that among modern methods that rely on that is constructivist learning which prompted the researcher to think about designing an educational program based on the constructivist model in education and identify its effect on some of the physical variables and the level of skill performance of jumping skillinsideonthe jump table device as it is one of the composite skills in gymnastics, which contains many of the technical stages that need a thorough understanding to link between those phases to master them and perform them to the fullest.

- Research Objectives.

The research aims to design an educational program using the constructivist model to identifyits effect on the following:

1- Some physical variables ofresearch sample individuals.
2- Performance level of the jump skillinsideonthe jump table forresearch sample individuals.
3- Cognitive achievement level of the research sample individuals for the jump skillinsideonthe jump table.

- Research Hypotheses.

1- There are statistically significant differences between the two measurements (pre and post) of the experimental group in some physical variables in favor of the post measurement.
2- There are statistically significant differences between the two measurements (pre and post) of the controlled group using the traditional way in some physical variables in favor of the post measurement.
3- There are statistically significant differences between the two (post) measurements of the experimental group and controlled group in some physical variables in favor of the post measurement of the experimental group.
4- There are statistically significant differences between the two (post) measurements of the experimental group and controlled group in the level of skillperformance in favor of the post measurement of the experimental group.
5- There are statistically significant differences between the two measurements (pre and post) of the experimental group in cognitive achievement level in favor of the post measurement.
6- There are statistically significant differences between the two measurements (pre and post) of the controlled group in cognitive achievement level in favor of the post measurement.
7- There are statistically significant differences between the two measurements (post) of the experimental group and controlled group in cognitive achievement level in favor of the post measurement of the experimental group.

- Research Procedures.

- Research Approach.

The researcher has used the experimental approach by using experimental design for the two groups, one of them is experimental (using constructivist learning model) and the other is controlled (using traditional method). He used (The pre and post methods) for both groups which was suitable for research nature.

- Research community and sample.

The research community contained forty-five(45) students from the seventh level students, department of Physical Education, Faculty of Education, Al-Baha University. Students were chosen deliberately. Fifteen (15) students have been excluded to conduct surveys so the research sample was thirty(30) students. They were divided into two groups, one was experimental of fifteen (15) students and the other was controlledof fifteen (15) stud
ents.

- Homogeneity of the research sample.

Table (1)Description of research community and sample N=40

Variables	Unit of measurement	mean	s.d	Skweens
Length	Cm	169.33	4.410	0.090
Age	Year	20.78	0.628	1.153
Weight	Kg	70.48	7.661	0.242
Intelligence	Grade	59.67	9.244	0.518
Compatibility	Repetition	0.90	1.130	1.659
Flexibility	Repetition	20.14	2.709	1.459
Fitness	Time	11.65	2.36	1.362
Leg Capacity	Distance	1.61	0.223	0.257
TransitionSpeed	Time	7.18	1.156	0.192

Table (1) shows that the torsionmodulus of research a sample in the age, intelligence and some physical variables confined between (± 3). This indicates that the homogeneity of the sample in those variables.

- Evenness of research sample members.

Table (2)Arithmetic average,Standard deviation,(T)Valueandits significanceinage,intelligence andphysical variables for thetwo groups(experimental / controlled) n1=n2=15

Variables	Unit	Experimental group		Controlled group		Calculated value of (T)
		mean	S.D	Average	S.D	
Length	Cm	161.20	3.847	163.90	4.811	2.052
Age	Year	19.80	0.678	19.66	0.627	0.622
Weight	Kg	59.40	0.684	61.50	9.583	0.905
Intelligence	Grade	59.60	10.679	59.30	5.192	0.117
Compatibility	Repetition	0.50	0.688	0.60	0.681	0.567
Flexibility	Repetition	20.45	2.089	19.60	2.088	1.470
Fitness	Time	16.30	2.080	16.60	2.563	0.384
Leg Capacity	Distance	1.50	0.192	1.44	0.206	1.255
TransitionSpeed	Time	7.29	1.122	7.53	1.141	1.882

The value of"T"tabulatedatthe level (0.05) = (2.145)

Table (2) shows that there arestatistically insignificant differencesbetween the two groups (experimental /controlledling) in the age, intelligence and someelements of physical fitnessvariables.This shows that there is evennessbetween the two groups because the calculated value of “T” is less than the tabulated value of “T”.

- Means and tools of data collection.

-Devices and tools used in the research:

Jump table – measurement tape – Stopwatch – Restometer for measuring length – Medical balance to measure weight - jump ladder.

- Data registration form.

* Registration Form of student measurements in variables (age /length/ weight). Attachment (1)
*Registration Form of student measurements in physical tests. Attachment(2)
* Skill performance evaluation form. Attachment(3)
* Physical tests. Attachment(4)
* Cattell test of intelligence. Attachment (5)
*Cognitive achievement test. Attachment (6)

- Sincerity of physical and intelligence tests under discussion.

Table (3)Indication of the differences between the two groups (distinguished and non-distinguished) of the tests under discussion.

Variable	Unit	Groups	Number	Mean of ranks	Sum of ranks	(Z) Value
Flexibility	Repetition	Distinguished	15	8.00	40.00	2.632*
		Non-distinguished	15	3.00	15.00	
Fitness	Repetition	Distinguished	15	8.00	40.00	2.660*
		Non-distinguished	15	3.00	15.00	
Leg Capacity	Distance	Distinguished	15	8.00	40.00	2.805*
		Non-distinguished	15	3.00	15.00	
TransitionSpeed	Time	Distinguished	15	8.00	40.00	2.635*
		Non-distinguished	15	3.00	15.00	
Compatibility	Repetition	Distinguished	15	8.00	40.00	2.795*
		Non-distinguished	15	3.00	15.00	
Intelligence	Grade	Distinguished	15	8.00	40.00	2.730*
		Non-distinguished	15	3.00	15.00	

The value of "Z" tabulated at the level of significance (0.05) = (1.96).

Table (3) shows that there are statistically significant differences between the top-quarters distinguished group and the low-quarters non-distinguished group because the calculated value of "Z" is larger than tabulated value of "Z" at the level of significance (0.05). This refers to the sincerity of the tests and their ability to distinguish between groups.

- The stability of physical and intelligence tests under discussion.

Test and re-test was used with time interval of (5)days between the two applicationson a sample outside of basic research sample but from the same community. This sample has the same characteristics of the basic research sample. Their number
has reached (15) students.

The following table shows the correlation coefficients between the values of the two applications.

Table (4)Arithmetic average, standard deviation and "R" value calculated between the first and second application for tests under discussion. n=15

Variables	Unit	First application		Second application		R value calculated
		M	S.D	M	S.D	
Flexibility	**Rep.**	20.55	2.426	19.60	2.409	0.998 *
Fitness	**Time**	16.30	2.697	15.65	2.661	0.983 *
Legs Capacity	**Distance**	01.47	0.272	01.43	0.307	0.975 *
Transition Speed	**Time**	07.03	1.080	06.73	0.997	0.852 *
Compatibility	**Rep.**	01.00	1.257	01.05	1.050	0.957 *
Intelligence	**Grade**	60.10	11.14	59.35	1.850	0.997 *

Tabulated "R" value at significance level (0.05) = (0.544)

As shown at table (4), calculated "R" value is greater thantabulated "R" value at significance level (0.05),which indicates the stability of tests.

- Cognitive Achievement Test.

The researcher followed the following steps to conduct a cognitive achievement test:

- **Determine the objective of the test.**
  This test is designated to measure cognitive achievement of the research sample in cognitive sports information on the technical aspects of skill of inside jump using jump table device in the artistic gymnastics at men's level.The researcher took into account that the objectives of this test is consistent with the age level.
- **Determine test axis.**
  In the light of the objective of the test, the researcher determined the axis, which is based on the technical side of the skills under discussion.This axis was identified through performing reference survey of the studies and previous research and after referring to references specialized in physical education for gymnastics this axis was pointed in the form contained (29) phrase (Attachment 6). It was then submitted to the experts of the faculty members of the faculties of Physical Education in order to express an opinion on the most important phrases that are commensurate with the nature of the research and appointed.

  Formulation of the test items.

  The researcher studied the objective test items and terms of writing according to
  the rules described in scientific references and previous studies, which are suitable with the research sample.
- **Determine the type of test questions.**
  Researcher has chosen two types of questions to formulate a cognitive test phrases i.e. multiple choice questions and true false questions.
  The researcher took into account the availability of the following conditions in test questions.
  - Suitability with level of research samples.
  - Objectivity.
  - Inclusion.
  - Measure the content of the program's objectives.
  - Accuracy (expression give only one meaning).

- **The initial form of the cognitive test (Attachment 3).**
  The researcher prepared initial form of test measuring cognitive achievement of skill to inside jump, the test in the initial form included (29) phrase submitted to a group of experts in the field of gymnastics in order to review and guidefor amendment, deletion or addition of phrases. (Attachment 6)
  The forms were gathered after being submitted to the experts and its data has been reviewed, result was the acceptance of all test phrases.
- **Test evaluation.**
  The researcher evaluated the test by giving only one pointfor each correct answer of each phrase of the test phrases sothat the test becomes of (29) degrees.

  Determine the time required for testing.

  The researcher used the following equation to determine the time required for the application of the cognitive test
  The time required for testing = (time taken by the first student + time taken by the last student) / 2
  Thus,it was possible to determine the time required for the application of a cognitive test (17 s). (55:278).

  Scientific factors of cognitive achievement test.

  Sincerity of test.

  The researcher calculated the sincerity of differentiation through the top and lowest quarter of the surveying study samples of (15) students and the following table shows the sincerity tes t.

Table (5)Indication of the differences between the top and lowest quarter in the cognitive test under research

n1=n2=4

Variable	Direction		Mean of ranks	Sum of ranks	(Z) value	Probability of error
	Sign	Value				
Cognitive achievement test	+	4	6,50	26,00	2,323	0,20
	-	4	10,00	2,5		
	=	10				

Tabulated "Z" value at (0.05) = (1.96)

Table(5)shows thatthere are statistically significant differences between the top and lowest quarter as the calculated values of "Z" are greater than the tabulated value of (Z) at the indication level of (0.05), indicating to the test sincerity and ability to distinguish between groups.

- Test stability.

To calculate the stability of the test under the research, the researcher used the method of application and re-application on a sample of (15) students from the research community and out of the original sample with a timeinterval of (6) days between the first and the second applications.The researcher has found the correlation coefficient between the two applications and table (6) shows the correlation coefficient between the two applications.

Table (6)The arithmetic average, standard deviation and the value of "R" calculatedbetween the first and the second applications for the cognitive test under research

nn=15

Variables	Unit	First application		Second application		Correlationcoefficient
		M	S.D	M	S.D	
Cognitive achievement test	Grade	10.00	2.803	9.80	2.757	**0.989 ***

Tabulated (R) value at the level of significance of (0.05) = (0.544)

Table no(6) shows thatthere isstatistically significantcorrelation at level of significance of (0.05) between the first application and the second application for cognitive testwhere the correlation coefficient between the first application and the second application reached (0.989), and it is a high correlation degree which indicatesthe test stability with a high degree.

- Educational program according to the proposed model of constructivist learning. Attachment()

The researcher has designed the educational program according to the proposed constructivist learning model, which included a series of stages (invitation stage– explorationstage –proposalof explanations and solutionsstage – taking procedures stage – correction stage) for the skill of insidejump on the jump tablefor the research sample individuals.

- The objective of the program.

Teaching the skill to jump inside through constructivist model proposed for the individuals of the research sample emphasizing on the interaction between the teacher and the learneri.e. learning based on meaning (understanding) through the active role of the students, where students use their information and their knowledge in building the new knowledge with which they are convinced in new situations.

- Program content.

The program content included the constructivist learning model, which consists of:

A. Invitation stage: at this stage, the students are invited to learn through asking some thought-provoking questions or viewing some pictures or some problems by the teacher so that it leads to students feeling of the need to search, exploration and access to the solution, bearing in mind that the questions and things displayed to students at this stage to be of a link with theprevious information of students.

B. Exploration stage: at this stage,the students explore the problem and search for the scientific solutions and explanations for it through conductingscientific experiments and activities through observation, measurement and experimentation.At this stage, students are divided into small heterogeneous groups so that each group conductsthe experiments and activities in preparation for the general dialogue session with the teacher, and the teacher's role is limited at this stage on the guidance and encouragement of students.

C. Proposing explanations and solutions stage: at this stage, the teacher holds a dialogue session in which studentsgroups submit their findings of solutions, interpretations, proposals and discussing them, then modifying what the students have of misconceptions and bring forth sound scientific concepts instead of misconceptions (If any).

D. Takingprocedures stage - at this stage, the studentstry to find the appropriate applications to their findings of new concepts and conclusions in other similar situations in life, and the teacher must givethe students enough time to apply what they have learned and discuss with each other through dialogue session.

- Exploratory studies

- The first exploratory study.

The first exploratory study was conducted on Sunday 07/09/2014 AD in order to conduct scientific factors (sincerity and the first application) for the tests under research.

- The second exploratory study.

The secondexploratory study was conducted on Sunday14/09/2014 AD in order to conduct scientific factors (stability) for the tests under research.

- Pre measurement.

The researcher has conductedthe pre measurements of the two research groups, the experimental and the controlledon Monday15/09/2014 AD

- Applying the program under research.

The researcher has applied the proposed program in accordance with the constructivist model of the experimental group and the traditional program in the period from Tuesday 16/9/2014 AD to Thursday 30/10/2014 AD.

Table (7)Distributionof the proposed educational program units

Unittime	No. of units per week	Total units per program	No. of weeks of the program	No. of months of the program
105 min	2 units	12 units	6 weeks	a month and a half

- Post Measurements:

The post measurement was conducted on Sunday2/11/2014 ADfor the cognitive test and Monday 03/11/2014 AD for the physical tests and Tuesday 04/11/2014 ADfor the skill under research.

- Statistical processors used in the search.

- Arithmetic mean – standard deviation – torsion coefficient – Pearson correlation coefficient –non-parametrical statistics.

- The equation of change percent“improvement."

- Presentation and discussion of the results.

- Presentation of the first hypothesis results.

Table (8)Indication of the differences between the two measurements (pre and post) of the experimental group in the physical variables under research

Variables	Direction		Mean of ranks	Sum of ranks	(Z) value	Probability of error
	Sign	Value				
Flexibility	+	1	8.50	119.00	3.358*	0.001
	-	14	1.00	1.00		

	=	15				
Fitness	+	2	1.50	3.00	3.244*	0.001
	-	13	9.00	117.00		
	=	15				
Legs Capacity	+	15	8.00	120.00	3.412*	0.001
	-	0.00	0.00	0.00		
	=	15				
Transition Speed	+	0.00	0.00	0.00	3.410*	0.001
	-	15	8.00	120.00		
	=	15				
Compatibility	+	0.00	0.00	0.00	3.436*	0.001
	-	15	8.00	120.00		
	=	15				

Tabulated (Z) value at a level of indication of (0.05) = (1.96)

Table (8)shows that there are statistically significant differences between the two measurements (pre and post) of the experimental group in physical variables under research in favor of the post measurementwhere thecalculated value of "Z" is greater than the tabulated value of (Z) at a level of indication of (0.05).

Table (9)Rates of improvement between the two averages of the two measurements (pre and post) of the experimental group in the physical variables under research.

Variables	Pre measurement		Post measurement		Difference between the two averages	Rates of improvement
	x	y	x	y		
Flexibility	20.36	2.460	26.93	1.280	6.57	24.40 %
Fitness	15.48	0.896	13.93	0.199	1.55	11.13 %
Legs Capacity	1.42	0.144	1.65	0.052	0.23	13.94 %
Transition speed	6.35	0.094	4.36	0.102	1.99	45.64 %
Compatibility	0.47	0.52	3.80	0.862	3.33	87.63 %

Table (9) shows the rates of improvement between the two averagesthe two measurements (pre and post) of the experimental group inthe physical variables under research.

- Discussion of the first hypothesis results.

Table (8) shows thatthere arestatisticallysignificantdifferences between the two measurements (pre and post) in the physical variables of the experimental group in favor of the post measurement where the calculated value of "Z" is greater than the tabulated value of "Z"

As shown in Table (9), improvement rates between the two measurements (pre and post)of the experimental group in the physical variables under research, where the percentage of improvement in the flexibility testwas (24.40%) and in Fitnesswas (11.13%) and in force characterized with speedwas (13, 94%) and in the transition speed was(45.64%) and in the compatibility was (87.63%)

The researcherattributed these results and this improvement in the physical variables to the educational programwith the constructivist model used which relies mainly on scientific grounds serves as the pillars that distinguish it from other models which took into account the interest in the need for the development of fitness elements that help to raise the skill performance level of the research sample individuals, as the interest in the fitness elementsof skill has a positive effect on raising the level of the skill performance of the research sample individuals.

This is consistent with what Ahmed Talha(2006 AD)indicated that it is necessary togive interest to the development of fitness elements that serve skill performance upon teaching the motor skills of different sports, where they help to learn these skills rapidly. (3)

As well as Mohamed LotfyAl Sayed(2006 AD) indicates that all types of physical exercises are suitable for the development of the motor capacities but the special exercises are characterized by requiring certain ingredientsfor its motor structure and the ingredients of legal moves of the sport or the specialist competition and it is necessary when using special exercises to take into account that they are useful for the development of the level of athlete in his specialist sport directly, as it is close to a certain extent from sportsor the specialist competition requirements. (26: 124)

These findings are consistent with the findings of each of "Noha Ismail Sharkawy"(2000) (29), Ahmed Mohamed Adam (2002) (6), Maryam Mohammed Jamal(2004) (27) and Amira Abdul Salam Shibl(2005) (9) that the sportive programs works on improving and developing the level of fitness in case of practicing them, which positively affects the level of skill performance.

Thus, the first hypothesiswas proved, which states, "**There are statistically significant differences between the two measurements (pre and post) of the experimental group in some physical variables in favor of the post measurement**."

- Presentation of the second hypothesis results.

Table (10)Indication of the differences between the two measurements (pre and post) of the controlled group in the physical variables under research

Variables	Direction		Mean of ranks	Sum of ranks	(Z) value	Probability of error
	Sign	Value				
Flexibility	+	15	8.00	120.0	3,431*	0.001
	-	0.00	0.00	00.0		
	=	15				
Fitness	+	0.00	0.00	00.0	3,417*	0.001
	-	15	8.00	120.0		
	=	15				
Legs Capacity	+	15	8.00	120.0	3,408*	0.001
	-	0.00	0.00	00.0		
	=	15				
Transition Speed	+	0.00	0.00	00.0	3,571*	0.001
	-	15	8.00	120.0		
	=	15				
Compatibility	+	13	5.56	5.50	2,496*	0.001
	-	2	5.00	5.00		
	=	15				

Tabulated (Z) Value at the indication level of (0.05) = (1.96)

Table (10) shows that there are statistically significantdifferences between the two measurements (pre and post) of the experimental group in the physical variables under research in favor of the post measurement as the calculated value of "Z" is greater than the tabulated value of (Z) at the level of indication of (0.05).

Table (11)Rates of improvement between the two averages of the two measurements (pre and post) of the experimental group in physical variables under research

Variables	Pre measurement		Post measurement		Difference between the two averages	Rates of improvement
	x	y	x	y		
Flexibility	20.00	0.655	25.00	3.994	5.00	20 %
Fitness	15.21	0.391	13.36	0.106	1.85	13.85 %
Legs Capacity	124.93	5.496	156.80	12.353	31.87	20.33 %
Transition speed	6.90	0.275	6.31	0.177	0.59	9.35 %
Compatibility	0.20	0.414	0.80	0.676	0.6	75 %

Table (11) shows the improvement rates between the two averages ofthe two measurements (pre and post) of the experimental group in the physical variables under research.

Second: discussion of the second hypothesis results.

Table (10) shows thatthere arestatistically significant differences between the two measurements (pre and post) of the experimental group in the physical variables under research in favor of the post measurement.
Table (11)also shows thatthe improvement rates between the two averages of the two measurements (pre and post) of the experimental group in the physical variables under research.
The researcher attributed these differences and the improvement rates to the traditional program that contains in its content a part for physical preparation, which in turn leads tothe improvement even the simple in elements of physical fitness of the individuals of the controlled group.
The traditional method does not need highly expensive capabilities, as well as it can be used in classes with large numbers of learners in addition to the ease of its application to all academic levels (8:35).
Thus, the second hypothesiswas approved, which states, "**There arestatistically significant differences between the two measurements (pre and post) of the controlled group using the traditional way in some physical variables in favor of the post measurement**."

- Presentation of the third hypothesis results.

Table (12) Indication of the differences between the two post measurements of the two groups (experimental and controlled) in the physical variables under research

Variables	Direction		Mean of ranks	Sum of ranks	(Z) value	Probability of error
	Sign	Value				
Flexibility	+	15	8.00	120.0	3.451*	0.001
	-	0.00	0.00	00.0		
	=	15				
Fitness	+	0.00	0.00	00.0	3.217*	0.001
	-	15	8.00	120.0		
	=	15				
Legs Capacity	+	15	8.00	120.0	3.508*	0.001
	-	0.00	0.00	00.0		
	=	15				
Transition Speed	+	0.00	0.00	00.0	3.521*	0.001
	-	15	8.00	120.0		
	=	15				
Compatibility	+	13	5.56	5.50	2.476*	0.001
	-	2	5.00	5.00		
	=	15				

Tabulated (Z) Value at the indication level of (0.05) = (1.96)

Table (12) shows that there are statistically significant differences between the two post measurements of the two groups (experimental and controlled)in the physical variables under research in favor of the post measurement of the experimental group as the calculated value of "Z" is greater than the tabulated value of (Z) at the level of indication of (0.05).

Table (13) improvement percentages between the two (post) measurements of the two groups (experimental and controlled) in the physical variables under research

Variables	Pre measurement		Post measurement		Difference between the two means	Rates of improvement
	x	y	x	y		
Flexibility	26.93	1.280	25.00	3.994	1.93	7.72%
Fitness	13.93	0.199	13.36	0.106	0.57	4.27%
Legs Capacity	165.00	0.052	156.80	12.353	8.2	5.23%
Transition speed	4.36	0.102	6.31	0.177	1.95	30.90%
Compatibility	3.80	0.862	0.80	0.676	3.00	78.95%

Table (13) shows the improvement rates between the two post measurements of the two groups (experimental and controlled) in the physical variables under research.

Discussion of the third hypothesis results.

Table (12) shows that there are statistically significant differences between the two post measurements of the two groups (experimental and controlled) in the physical variables under research in favor of the

experimental group as the calculated value of "Z" is greater than the tabulated value of (Z) at the level of indication of (0.05).

Table (13)also shows that the improvement rates between the two post measurements of the two groups (experimental and controlled) in the physical variables under research, where they reached in flexibility 7.72%, in fitness 4.27%, in the ability of the two legs 5.23%, in transition speed 30.90% and in compatibility 78.95%.

The researcher attributed these differences and this improvement in the physical variables of the experimental groupover the controlled group to the educational program with the constructivist modelused thatrelies on scientific principles and rules in its structure where it gives interest to the necessity to develop the elements of physical fitness that helps to raise the skill performance level of the research sample individuals.

The interest in the fitness elements of skill and work to develop themaffect positively in raising the level of performing the skillfor the research sample individuals.

These findings are consistent with what indicated by Mr. Abdel Maqsoud (1994 AD) thatthere isa correlation between the physical abilities and the motor skills as the physical abilities represent an essential foundation for the acquisition of the motor skills,as well as purposeful motor skills teachingis considereda basis for the progress in the physical capacity level and as such, the mutual interference between themillustrates the extent of the dependenceof each of themon the level of the other. (7: 284)

Thus, the third hypothesis was proved, which states, "T**here are statistically significant differences between the two (post) measurements ofthe two groups (experimental and controlled) in some physical variables in favor of the post measurement of the experimental group**."

- Presentation of the results of skillfourth hypothesis.

Table (14)Indication of the differences between the two post measurements of the two groups (experimental and controlled) in the jump inside skill

Variables	Direction		Mean of ranks	Sum of ranks	(Z) value	Probability of error
	Sign	Value				
Jump inside	+	0.00	0.00	00.0	3.446*	0.001
	-	15	8.00	120.0		
	=	15				

Tabulated (Z) Value at the indication level of (0.05) = (1.96)

Table (14) shows that there are statistically significant differences between the two post measurements of the two groups (experimental and controlled)in jump inside in favor of the post measurement of the experimental group as the calculated value of "Z" is greater than the tabulated value of (Z) at the level of indication of (0.05).

Table (15) improvement percentages between the two (post) measurements of the two groups (experimental and controlled) in jump inside

Variables	Pre measurement		Post measurement		Difference between the two averages	Rates of improvement
	x	y	x	y		
Jump inside	8.60	0.632	4.87	0.834	3.73	76.59%

Table (15) shows the improvement rates between the two post measurements of the two groups (experimental and controlled) in jump inside under research.

Discussion of the results of skill fourth hypothesis.

Table (14) shows that the calculated value of "z" is greater than the tabulated value of (z) at the significance level of (0.05), which indicates that there are statistically significant differences between the two post measurements of the two groups (experimental and controlled) in the skill level in favor of the post measurement of the experimental group.

Table (15) also shows the rates of improvement between the two post measurements of the two groups (experimental and controlled) in jump inside, where the rate of improvement reached (76.59%).

The researcher attributed these results and the superiority of the experimental group over the controlled group to the use of the constructivist model in learning where it is completely different from the traditional way where in the traditional way, the role of learners is limited to be recipients only to the information

provided to them by the teacher and implementing it by the way they are asked to do, regardless of their needs, preferences and their preparations, there is poor communication between the teacher and the learner, the lesson depends entirely on the explanation of the teacher, and the use of teaching procedures contained in the constructivist model used in this research is not done.

The main problem in the traditional education based on the school material is the growing emphasis on the content and interesting in it and on the facts and information that are taught to learners without allowing them to effectively participate in the learning process (25: 5).

"Abdul LatifFaraj" (2005) indicated that the traditional way of education is facing many problems which are increasing the number of students, the small number of educationall qualified teachers, enormous knowledge explosion and the consequent complexity in education and deficiencies in considering the individualityamong students as the teacher is bound to end an amount of information at a specific time that weakens the learners following at the same speed (16: 121).

The use of the constructivist model in education has differed completely from the traditional way in terms of calling the educated capabilities of thinking, analysis and the ability to assemble and arrange the data to reach a better learning, as well as the constructivist model raised the students motivation of learning, research and exploration to get the right information at each stage of the skill stages and knowing everything related to it concerning the technical aspect and the method of performance and this is reflected on the result of the experimental group students in the skill level and increasing the proportion of improvements of them significantly compared to the controlled group students which led to their superiority in the skill level as well as in the physical variables.

This is in line with what is indicated by "Lubna Hussein AlAjami" (2003 AD) that the constructivist learning model is focusedon the student to be the center of the educational process, he discusses the problem and gathers information that he sees of help to solve the problem, then discusses solutions, then study the possibility of applying these solutions in a scientific manner (24: 24)

"Taha Abu Zeid" (2003 AD) (14) indicated that, according to the constructivist model, the learner himself reaches to build concepts related to the subject of learning, and he is the one whopractices the experiment himself, tries to deal with the symbols, ask questions, search for answers and compares what he finds by himself with what someone else finds.

This is illustrated by "EffatAl Tnanwi"(2002),"Ibrahim Allzam" (2002 AD) and "Hussein Zaitoon" (2003 AD) that the learner in the constructivist model is more active, and plays the role of the scientist in research and exploration to discover appropriate solutions to the problems he faces, he is considered the center of this model and the center of its attention, and therefore the learner plays an active role in the process of his learning (17:20) (50: 1), (24:10).

These findings are consistent with the results of "Abdul Hakim Mohammed Hassan" (2005) (17), "Ghazi bin Salah al-Matrafi" (2006) (21), "Selim Mohammed Abu Odah" (2006) (13) "Osman Mustafa Osman"(2006) (18) "Gerald Fast & Judith Hankes"(2010 AD) (33) and "Keer" study in (1999 AD) (35) where they concludedthe supremacy of the experimental group who were taught using the constructivist model over their counterparts who have learned through the traditional way.

Thus,the fourth hypothesisis proved which states,**"There are statistically significant differences between the two averages of the two (post) measurements of the two experimental and controlled groups in jump inside onthe jump table in favor of the post measurement average of the experimental group."**

- Presentation of the fifth hypothesis results.

Table (16) Indication of the differences between the two measurements (pre and post) of the experimental group in the level of cognitive achievement under research

Variables	Direction		Mean of ranks	Sum of ranks	(Z) value	Probability of error
	Sign	Value				
Cognitive achievement	+	**15**	**8.00**	**120.00**	4,684*	0.00
	-	15	23.00	345.00		
	=	**30**				

Tabulated (Z) Value at (0.05) = (1.96)

Table (16) shows that there are statistically significant differences between the two measurements (pre and post)of the experimental groupin the level of cognitive achievement in favor of the post measurement as the calculated values of "Z" are greater than the tabulated value of (Z) at the level of indication of (0.05).

Table (17)Rates of improvement between the two averages of the two measurements (pre and post) of the experimental group in cognitive achievement level

Variables	Pre measurement		Post measurement		Difference between the two averages	Rates of improvement
	x	y	x	y		
Cognitiveachievement	9.47	1.642	23.47	3.136	14.00	59.651%

Table (17) shows the improvement rates between the two measurements (pre and post)of the experimental group in the level of cognitive achievement.

Discussing the results of the fifth hypothesis.

It is clear from table (16) that there are statistically significant differences between the two measurements (pre and post) for the experimental group in the cognitive achievement level in favor of the subsequent measurement where the calculated values of "Z" are greater than the tabular value of (Z) at the level of significance (0.05).

The improvement ratios are clear from Table (17) between the two measurements (pre and post) for the experimental group in the cognitive achievement level.

The researchers attributed this improvement in the cognitive aspects specific to skill to the educational program based on structural model that addresses in its content the minds of students, develops their thinking and works on improving feedback with what it includes of knowledge and information related to the skill under research.

It also educates the students the structural model of the new knowledge by building it themselves. The model confirms on the collaboration of students among themselves. It also calls the students ability of thinking and focus on the exploitation of their previous experiences to reach a thorough understanding of jumping inside of the jumping table and its stages and how it is performed. It also has stimulated their ability to analysis and interpretation using the capabilities available to them and the ability to process what they have of information which led them to these results.

The nature of the structural learning model shows that if a student discovered the scientific concept and were able to draft it in a valid scientific way, they can apply it and link it with other lessons concepts through the preparation of conceptual schemes planned by the teacher, and their understanding of this concept increases and it becomes difficult for them to forget it, Because it was linked and organized in the cognitive structure of the students in an organized manner (22: 71).

This is in line with the findings of “Osman Mustafa Osman” (2006 AD) (18), “Gerald Fast & Judith Hanks” (2010 AD) (33) and “Keer” (1999 AD) (35).

Thus, the fifth hypothesis is proved which stated, "There are statistically significant differences between the two measurements (pre and post) for the experimental group of cognitive achievement level in favor of the post measurement.

- **Displaying results of the sixth hypothesis.**

Table (18)Indication of differences between the averages of the two measurements (pre and post) for the controlled group in the cognitive achievement level under research

Variable	Direction		Mean of ranks	Sum of ranks	(Z) Value	Probability of error
	Sign	Value				
Cognitive Achievement	+	15	8.000	120.000	4.695*	0.00
	-	15	23.000	345.000		
	=	30				

Tabulated value of 'Z' at (0.05) = (1.96)

Table (18) shows that there are statistically significant differences between the two measurements (pre and post) for the experimental group of cognitive achievement level in favor of the post measurement where the calculated values of "Z" are greater than the tabulated value of (Z) at the level of significance (0.05)

Table (19)The improvement ratios between the two measurements (pre and post) for the controlled group in the cognitive achievement level

Variables	Pre Measurement		Post Measurement		Difference between the two averages	Improvement Ratios
	x	y	x	y		
Cognitive Achievement	9.33	1.496	14.73	1.335	5.4	36.66 %

Table(19) shows the improvement ratios between the two measurements (pre and post)for the controlled group in the cognitive achievement level.

Discussing the results of the sixth hypothesis.

Table (18) shows that there are statistically significant differences between the two measurements (pre and post) for the experimental group of cognitive achievement level in favor of the post measurement where the calculated values of "Z" are greater than the tabular value of (Z) at the level of significance (0.05).

Table (19) shows the improvement ratios between the two measurements (pre and post)for the controlled group in the cognitive achievement level.

The traditional programs that rely on the verbal explanation and performing the model have an impact on student acquisition of some knowledge and information on the skill that the student receives from the teacher during the verbal explanation. This acquired information is limited only to the teacher explanation and it makes some change in concepts and information of the student but that is not as effective as the new educational methods including education using the structural model so we cannot ignore the role and impact of the traditional way of learning even if it was a weak effect.

This is consistent with what is confirmed by "Nadia Ahmad Bakar and Mounira Muhammad Al Bassam" (2004 AD) that learning from the structural prospective enables the learner to build new ideas and innovations trough his previous experiences and his compositions in his cognitive structure where both of his new experience reacts with his previous experiences so he organizes and interprets his experiences with the world or his surrounding reality (28:13).

Thus, the sixth hypothesis is proved, which states, "There are statistically significant differences between the two measurements (pre and post)for the experimental group of cognitive achievement level in favor of the post measurement"

- **Displaying results of the seventh hypothesis.**

Table (20)Indication of the differences between the post measurements for both groups (experimental and the controlled) in the cognitive achievement level

Variable	Direction		Mean of ranks	Sum of ranks	(Z) Value	Probability of error
	Sign	Value				
Cognitive Achievement	+	15	22.93	344.000	*****4.648	0.00
	-	15	8.07	121.000		
	=	30				

Tabulated value of "Z" at (0.05) = (1.96)

Table (20) shows that there are statistically significant differences between the post measurements for both groups (experimental and the controlled) in the cognitive achievement level in favor of the experimental group where the calculated value of "Z" is greater than the tabulated value of (Z) at the level of significance (0.05).

Table (21) improvement percentages between (the post measurements) for both groups the experimental and the controlled group in the cognitive achievement level

Variables	Pre Measurement		Post Measurement		Difference between the two averages	Improvement Ratios
	x	y	x	y		
Cognitive Achievement	23.47	3.137	14.73	1.335	8.74	59.33 %

Table (21) shows the improvement ratios between the post measurementsfor both groups (experimental and controlled) in the jumping inside under research.

Discussing the results of the seventh hypothesis.

Table (20) shows that there are statistically significant differences between the post measurements for both groups (experimental and controlled) in the cognitive achievement level in favor of the experimental group where the calculated value of "Z" is greater than the tabulated value of (Z) at the level of significance (0.05).

Table (21) shows the improvement ratios between the post measurementsfor both groups (experimental and controlled) in the jumping inside under research.

The structural learning model makes the learner the educational process axis, it is him who searches, experiments and discovers. It also gives the opportunity to practice different learning processes, and it works on developing the learner thinking and enables him with the opportunities of discussion with the teacher or with other learners which let him earn the proper language of dialogue, makes him more active and develop the spirit of cooperation between learners. Teaching according to this model is based on facing the learners with a situation makes them try to find solutions for it through research and exploration (15: 108).

“Kamal Zaiton” (2003 AD) indicates that the structural model is the method through which students are helped to build their knowledge (concepts, principles, laws) on the subject of new lesson through putting them in a situation containing a problem. Then they are guided to conduct exploratory activity to test the validity of their initial thoughts, then show their findings and interpretations and summarize them in the form of basic information to be used in new situations (23: 283).

“RagabAlsaid Al Mihi” (2003 AD) states that the nature of the structural model contains many of the educational variety materials that provide the elements of suspense, motivation, fun and excites the mental and cognitive abilities of the students and it addresses more than one of their senses. In addition to the building of knowledge by students themselves through the different stages of the structural model. All of this led to the survival of the scientific knowledge for a long time and not to get forgot so quickly because of their feeling of its meaning and real value where the existence of the educational atmosphere and climate have helped elevating the level of academic achievement (11:27).

The structural teaching is based on the principle that the student is an active and positive learner while the teacher is the coach and leader of learning processes (19: 260).

This result is consistent with the study results of each of “Abdul Hakim Mohammed Hasan” (2005 AD) (17) “Ghazi bin Salah al-Matrafi” (2006 AD) (21) “Saleem Mohammed Abu Oudah” (2006 AD) (13) “Osman Mustafa Osman” (2006 AD) (18) “Gerald Fast & Judith Hanks” (2010 AD) (33) “Keer” (1999 AD) (35) in that teaching using the structural learning model has positively influenced the skill variables and the cognitive achievement and the ability to innovative thinking. It also helps to increase the enthusiasm of the students and to raise their motivation of scientific material. As well as the effectiveness of teaching according to structural visions has helped in the development of awareness and motivation of students to learn in an atmosphere of teamwork.

Thus, the seventh hypothesis is proved, which states,“There are statistically significant differences between the (post) measurements for both groups the experimental and controlled group in the cognitive achievement level in favor of the post measurement of experimental group”

Conclusions

1- There are statistically significant differences between the two measurements (pre and post) of the experimental groupin some physical variables in favor of the post measurement.
2- There are statistically significant differences between the two measurements (pre and post) of the controlled group using the traditional method in some physical variables in favor of the post measurement.
3- There are statistically significant differences between the (post) measurements for both groups the experimental and controlled in some physical variables in favor of the post measurement of the experimental group.
4- There are statistically significant differences between the (post) measurements for both groups the experimental and the controlled in the level of skilled performance in favor of the post measurement of the experimental group.
5- There are statistically significant differences between the two measurements (pre and post) for the experimental group of cognitive achievement level in favor of the post measurement.
6- There are statistically significant differences between the two measurements (pre and post) for the controlled group of cognitive achievement level in favor of the post measurement.
7- There are statistically significant differences between the (post) measurements for both groups the experimental and the controlled group in the cognitive achievement level in favor of the post measurement of experimental group.

Recommendations

1- Using the suggested structural model in educating the skill of jumping inside.
2- Teaching using the structural model for the rest of Composite Gymnastics Skills.
3- Provide the teaching staff of specialists with indicative guide that explains the philosophy of structural model, its steps and stages and how to use it in teaching.

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