ISSN: 2776-0960 Volume 3, Issue 4 April., 2022

THE EFFECT OF KARPLUS STRATEGY ON LEARNING SOME BASIC SKILLS IN ARTISTIC GYMNASTICS FOR STUDENTS

Dr. Ali Jabbar Hasan,
Faculty of Physical Education and Sports Sciences, University of Basrah, , Iraq

Dr. Ghazi Lafta Hussein,
Faculty of Physical Education and Sports Sciences, University of Basrah, , Iraq

Dr.Dhurgham A. Neamah Al-Jadaan
Faculty of Physical Education and Sports Sciences, University of Basrah, , Iraq
*corresponding author : Dhurghamaljadaan@gmail.com

Abstract

The study aimed to prepare an educational curriculum and identify its impact according to Karplus's strategy in instructing some of the skills of artistic gymnastics for students. We hypothesized that there are statistically significant differences in the results of the pre-tests and post-tests for the control and experimental groups. As for the second section of this study, it included the research methodology and its field procedures. We used the experimental method given its suitability to the nature of the research. The research community is represented by first-year students of the College of Physical Education at the University of Basra for the academic year 2021-2022. The sample was chosen in an intentional manner and was randomly divided, using the draw method, into an experimental group and a control group. There follows a section that included the presentation, analysis and discussion of the results. The study also included conclusions and recommendations.

Keywords: Karplus strategy, basic skills, motor learning, artistic gymnastics

1. Introducing the research

1.1 Introduction and importance of research:

There have been various educational theories about learning and leaners and finding strategies and methods that are accessible and structured to the teaching processes which are consistent with the capabilities of the learner. Therefore, the teaching process is no longer dependent on the ability of the teacher to put

forward the ideas he/she gained from previous experiences. Rather, it is a process of designing projects that have multiple educational aspects in the theoretical and practical fields based on the peculiarities of learners and their abilities. They must, therefore, find ways to manage the learning process through diversifying the use of methods and strategies or combining them with learning theories. This provides greater effectiveness for learners to make them a positive element involved in the education process by guiding and consulting the teacher. One of these strategies is the Karplus strategy, which contains many stages that seek to gain theoretical and practical experiences in learning through its stages. It is also an effective means of translating the objectives of the curriculum, i.e. learning improves and develops through the learning cycle emanating from structural theory. This is a good application of the theory of Piaget's educational ideas commensurate with how students learn and provide an appropriate space for effective planning and teaching (Zaytoun, 2007, p. 448).

The gymnastics class is an important lesson in the colleges of sports education because it has a great impact on preparing the student mentally, physically and dynamically. This can be achieved by learning many basic skills and even going beyond that to developing self-and mental abilities such as investigation, discovery, organization, responsibility employing various devices. Due to the entry of the sport of gymnastics to the wheel of development, the movements in which they are performed have become complicated and the means of education and training have also had to develop. Hence, it became necessary to find alternative means to facilitate the education process. Therefore, the importance of research lies in reaching new formulas in working within the educational units by applying the stages of this strategy, which works to actively participate and exchange ideas and opinions and communicate concepts.

1.2 Research problem

There are two aspects that go hand in hand in practical lessons in the theoretical aspect (educational activity) which depends entirely on the teacher and his/her method of presentation. Here, the role of the learner is somewhat negative because he/she receives what the teacher does. Hence, the practical aspect (applied activity) and here comes the role of the player or student in applying what was presented and explained by the teacher. Through our knowledge of some teaching methods and strategies that give a greater chance for the player

or student to participate in both activities in thinking and learning, the problem of his research can lie in the following question:

Does the use of the strategy lead to learn skills by engaging players positively in achieving the objectives of the educational unit and move the student from a negative attitude to a positive one interacting with the guidance of the teacher?

1.3 Research goals

1- Preparing an educational curriculum in accordance with Karplus' strategy of learning some skills in artistic gymnastics for students.

2- Identifying the impact of the curriculum prepared by the researchers in learning some skills in technical gymnastics for students.

1.4 Research hypothesis

1- There are statistically significant differences in the results of pre- and post-tests of the control and experimental groups and in favour of post-tests

2- There are statistically significant differences between the results of the post-tests of the two groups and in favour of the experimental group.

1.5 Areas of research

1.5.1 Human field:

First-year students at the College of Physical Education and Sports Sciences.

1.5.2 Temporal area:

This is represented by the time period from 15th of November,2021 to 15th of March 2022.

1.5.3 Spatial Area:

Gymnastics Hall of the College of Physical Education and Sports Sciences.

2. Research methodology and field procedures:

2.1 Research approach

We adopted the experimental method as it suits the nature of the research problem and the method of designing the experimental and the control groups, with the pre- and post-tests and each of the two research groups (Ghassan, 2004, p. 84).

2.2 The research community & Sample:

We chose the research community to be first-year students distributed among (8) people studying in the College of Physical Education and Sports Sciences / Basra University for the academic year (2021-2022). The total number was (237) students. The sample was selected in a random way (draw) where the number of members of the sample was (40) students only, and a percentage (16.87%) of the original community. The sample is distributed as follows:

Division (G) consisted of a sample of 20 students of the first experimental group, which is taught according to the strategy of Karplus. Division (B) consisted of a sample of 20 students of the control group, in addition to studying in two educational units during the week and according to the curriculum planned in the college, as well as to provide the conditions for the application of the strategy of Karplus.

2.2.1 Homogeneity of the two research groups:

We used the variation factor to find out the homogeneity of the sample in body measurements and age, where it appeared that the value of the variation factor ranges from (4,185) to (24,672). This indicates the homogeneity of the sample, the closer the variation factor to (1%) the higher the homogeneity. If it exceeds (30%), this indicates that the sample is heterogeneous (2), as in the Table (1)

Table (1): The homogeneity of the research sample.

Variables	standard deviation	Arithmetic mean	measuring unit	Variation coefficient %
Length	7,323	174.95	poison	4,185
Weight	17,90	72,55	kg	24,672
Age	1,178	19,75	year	5,964

2.2.2 Proportionateness of research groups:

In order to be able to attribute the differences in the results of the post-tests to the effect of the experimental factor, we resorted to verifying the Proportionateness of the two research groups (experimental group and control group) using the t-test of interconnected samples, as in Table (2)

Table (2): shows Proportionateness of the two research groups

	Variable	Unit of Measurement	The first group (Karplus)		The second group The control		T-Values	Sig. Values
			Std. Deviation	The Arithmetic mean	Std. Deviation	The Arithmetic mean		
1	Length	Poison	7,323	174.95	6,137	175,75	0,374	0,710
2	Weight	Kg	17,90	72,55	19,44	72,40	-0,025	0,852
3	Age	Year	1,178	19,75	1,260	19,85	0,265	0,700
4	Headstand	Degree	0.600	1.888	0.600	2.111	0.788	0.440

Through Table (2), all sig values are greater than (0.05), indicating that there are no statistical differences between the body measurement variables and the age of the two research groups. This can be translated as evidence of the proportionateness of the sample members for both the experimental and the control group.

2.3 Methods of collecting information, tools and devices used in the research:

2.3.1 Means of gathering information:

- Arab and foreign sources and references.
- Personal note.
- Statistical means
- Skill tests
- Data registration and unloading form (Annex 1).

2.3.2 Tools used:

- Floor movement mat.
- Measuring tape length (50 m).
- A single electronic scales.
- Gymnastics mats.
- A whistle.

2.3.3 Devices used:

- A Japanese-made DELL personal computer .
- Data show. An electronic manual timer.

2.4 Field search procedures:

2.4.1 Skill tests

Testing the skill of headstand:

This test aims to measure the student's ability to perform the skill of headstand where the student takes the position of headstand and then evaluate the skill by agreeing with the members of the control committee by making the final score of skill between (0-10) points.

2.4.2 Preparing educational units in accordance with the steps of the research strategy:

This entailed the researchers consulting many scientific sources and references including some studies and research conducted on other sports events based on the strategy used in the research. In order to achieve the objectives of research and prior to the initiation of the main experiment, we prepared (16) educational units for the first and second groups (Annex No. 1) and (8) educational units for the first group.

According to the steps of Karplus (discovery of the concept, the stage of submitting the concept, the stage of application of the concept), the educational units as a whole consisting of (16) educational units were presented to a group of experts and specialists in teaching methods and gymnastics in order to benefit from their opinions and guidance on the appropriateness of employing Karplus strategy within the educational units prepared by the researchers.

The appropriateness of dividing the time of the educational unit and activities and exercises prepared by the researchers, dedicated to the first-year students of the college of Physical Education and Sports Sciences / University of Basra, a service to learn the skills in question, we adopted the opinions of experts and specialists and followed their advice in making some adjustments to the educational units.

2.4.3 The mechanism of the sample's work according to the research strategy:

After conducting pre-tests of the skills for both groups used in the research, we implemented the educational units prepared for the members of the experimental group, which included various skilled exercises.

The units were applied in accordance with the steps of the Karplus' strategy separately and in the experimental group in which they would learn. This strategy was implemented on the pilot group represented by division B for first-year students of the College of Physical Education and Sports Sciences / Basra University. The steps run as follows:

Concept Discovery Stage: At this stage, the teacher divides the students into four groups and presents two questions to the members of the four groups on the subject of the lesson. The purpose of these questions is to generate some kind of cognitive stimulus among students for the purpose of collecting information and discovering the concept.

Concept presentation stage: At this stage, the teacher collects students' answers to each group about the questions reached and delivers them in front of others and then discusses them with the teacher of the subject. Then, the teacher presents the educational content of the skill using PowerPoint, which is an educational drawings. The illustration of the three skill sections is displayed using the Data Show.

Concept application stage: At this stage, the teacher directs students to apply exercises for your gymnastics skills.

2.4.4 Piloting:

We conducted the pilot experiment in the gymnastics hall on 10/1/2022 at 10:30 a.m. and in the presence of the assistant team, on a sample of (14) students. These students were from the same original research community and outside the research sample. The purpose of this experiment was to ensure the safety and validity of the devices and tools used, and the appropriateness of the place when carrying out the tests. It was also to find out how long it takes to carry out the tests used, as well as to make sure that the efficiency of the assistant team. In addition, we chose an educational unit of the special prepared units for the Strategy of Karplus. The aim of this experiment was to identify the obstacles that we may face when implementing the educational units prepared in accordance with the strategic steps and work to overcome them. It was also to determine the extent to which students understand the vocabulary of the tests used, and their suitability to the level of the sample members.

2.5 Pre-test:

The pre-test of the experimental group was conducted at 10:30 a.m., and the pre-test of the control group took place at 12:30 p.m. the same day in the indoor hall of the gym on 13 January 2022. These tests aimed to evaluate the technical performance of the skill of headstand. We prepared all the necessary requirements to conduct the tests and installed all variables related to tests such as place, time, tools used, method of implementation and in the presence of the assistant team. This is in order to control as much as possible the creation of the same conditions or similar when conducting post-tests.

2.6 The main experiment:

Prior to conducting the main experiment, we identified all the requirements of the main experiment, by identifying tests that measure performance for the skill of headstand, and preparing educational units for research. We also conducted a pilot study to organise the work and prepare for the main experiment. The main experiment was conducted on the sample of research of (40) students only.

The 20-year-old Division (G), represented the first group, and the 20-student Division(B), represented the control group. The researchers began applying educational units to the first two groups on Saturday, January 16, 2022, at 10:30 a.m. for the first group, and at 12:30 p.m. for the control group. It included (16) educational units , (8) units per group, where it took (4) weeks and 2 educational units per week for each group. The duration of the application of educational units for the two groups ended on Sunday 7/3/2022. The time of one educational unit was (90) minutes and the total time taken to implement all units reached (1440) minutes. The components of the unit were divided into three sections (preparatory, main, final). Each section has a purpose that connects it to the other section and enhances it in reaching the goal. The preparatory section took (20) minutes per unit, (320) minutes in total at (22.22%) of the total time. This included the general warm-up and performing various exercises during walking and jogging. The main section reached (60) minutes per unit, and totalled (960) minutes and a ratio of (66.66) of total time. It included the application of Karplus' steps to the first group. The main section contained educational and applied activity where the teacher gives instructions to all students to stand in a three-pronged setting and begins to explain the skill. In the applied activity, students apply what they learned in the educational activity. after explaining the skill, the student begins to apply the exercises prepared by the researchers. The final

section reached (10) minutes per unit, and the total (160) minutes and by (11,11) of the total time.

2.7 post-test:

After the concluding of the application of the educational units on Sunday (7/3/2022) and for the purpose of identifying the level reached by the students, we subjected the members of the two groups to post-tests on Sunday 14/3/2022 in the gymnastics hall, and under the direct supervision of the researchers and in the presence of the assistant team. The post- test of the experimental group was conducted at 10:30 a.m.

As for the control group, the post-test was conducted at 12:30 p.m on the same day, and the researchers were keen to create the conditions, variables and requirements that were set up in the pre-test, with the aim of moving away from variables that could affect the results of the tests.

2.8 Statistical tools:

We used The Statistical Program (SPSS) version (21) to process data and extract results, using the following applications:

- The arithmetic mean.
- Standard deviation.
- T-Test (T) for interconnected samples.
- Variation factor.

3. Presentation and discussion of results

3.1 Presentation and discussion of the results of the pre- and post-tests of the first experimental group

Table (3): the arithmetic means, standard deviations, calculated T value and sig value for pre-testing and post-testing of the experimental group.

	Variable	Unit of Measurement	Pre-test		Post-test		T-Values	Sig. Values
			Std. Deviation	The Arithmetic mean	Std. Deviation	The Arithmetic mean		
1	Headstand	Degree	0.600	1.88	0.250	8.333	25.164	0,00

We find that the value of the pre-test arithmetic mean of skill of headstand was (1.88) and a standard deviation of (0.600). The value of the arithmetic mean in the post-test was (8.333) and a standard deviation of (0.250), the calculated

value (T) was (25.164). The value of sig) was (0.00) at the level of statistical significance of (0.05).

3.2 Presentation of the results of the pre-test and post-tests of the control group:

Table (4): arithmetic means, standard deviations, calculated T value and sig value for pre-testing and post-testing of research variables for the control group

	Variable	Unit of Measurement	Pre-test		Post-test		T-Values	Sig. Values
			Std. Deviation	The Arithmetic mean	Std. Deviation	The Arithmetic mean		
1	Headstand	Degree	0.600	2.111	0.446	6.555	21,429	0,00

We find that the value of the pre-test arithmetic mean of the skill of headstand was 2.111 with a standard deviation of (0.600). The value of the arithmetic mean in the post-test was 6.555) with a standard deviation 0.446, and the calculated T value was (21,429). The sig value was 0.00 and at the statistical significance level of (0.05).

3.3 Presentation of the results of the post-test of the experimental and controlling groups

Table (5): The arithmetic mean, standard deviation and the calculated value of (t) of the experimental research groups and the control group in the post-test of the skill of headstand.

Statistical Means	Calculated t value	control group		experimental group		Sig. level
		p	s	p	s	
Headstand	10.432	0.446	6.555	0.250	8.333	Significant

Table (5) shows the arithmetic mean of the experimental research group's post-test is (8.333), with a standard deviation (0.250). The control group had an arithmetic mean of (6.555) with a standard deviation of (0.0. 446) When processing the results, it appeared that the calculated value (t) was (10,432) and the value of the statistical indication is less than the value (0.05), indicating significant differences between the two groups and in favour of the experimental group.

3.4 Discussion of Results

In view of what was presented in the table for the statistical values of the skill of headstand of the experimental group, there is a development in the variables researched in favour of post-tests. We attribute this development to the use of the independent variable (Karplus strategy) and its stages where the strategy of Carpels is one of the modern teaching methods in which the learner is at the centre of the educational process. It relies on previous information and experience and with current information for the purpose of obtaining information and building new knowledge that serves the educational process and increases the development and improvement of learning among student learners. Zaytoun (1992, p. 56) indicates that previous knowledge of the learner is a prerequisite for building meaning as the interaction between new knowledge and the previous knowledge can be considered as components of meaningful learning and previous knowledge may be a bridge to new knowledge.

This is confirmed by Qatami (2013, p. 754) that Karplus strategy is based on the fact that the learner is driven to build, add, employ and change his/her buildings, taking advantage of the experience he/she has developed during processing, interaction and manipulation to reach a stage in which knowledge settles on the picture of experience in building knowledge.

We emphasize the selection of the appropriate, sound and well-studied educational program and subject according to sound scientific foundations and according to the Karplus strategy and according to the capabilities of the students and learners in a way that is consistent with the nature of the material they study in the syllabus. Abdulkareem (1993, p. 33) notes in this regard that it is necessary to build curricula on new foundations in view of the comprehensive variables that affect every aspect of our lives with its magic wand, and to take into account the various circumstances and trends that we target in education.

We refer to the development that took place in the research variables to the objectives of the constructivist theory and Karplus's strategy and their suitability in achieving the educational and behavioural objectives of the experimental group. Qatami (2013, p. 755) mentioned that they "aim to build and develop new knowledge structures and make the learner able to take responsibility and make decisions and make the learner proactive, persistent, intellectual and creative and encourage students to discover knowledge in addition to the role of the teacher as a leader, mentor and organizer of educational experiences.

We also attribute this development to the experimental group of the post-tests to the role of encouraging activities in the constructivist classes in performing theoretical and practical lectures. This is done through the use of posing the problem in the form of questions or displaying pictures to the students . This is in addition to discussing a set of solutions through the use of class discussions and practical experimentation and the development of explanations and their application to find solutions. This is supported by Zaytoun (2003) and Al-Jadaan et al. (2020). "The individual does not build his/her external data through his/her own activities only, but through discussing and negotiating with others what he/she has achieved.".

We attribute the development that occurred in some variables of the research to the control group of the method followed by the subject teacher, the good regularity in the performance of the educational units of the subject and curriculum in terms of ease and difficulty. It can also be ascribed to the role of the teacher in planning and good preparation. It is also the result of practice and repetition of performance. The control group was satisfied with the exercise on the movement mat, where Hamid (2015, p. 11) and Neamah (2014) emphasize that "Traditional learning depends on the positive role of the teacher in making all decisions from planning, implementation and evaluation, as well as determining the appropriate time needed to achieve the goals".

Finally, we attribute the development of the experimental research sample according to Karplus's strategy to the regularity and cooperation among the group members and to the teacher's role in managing and organizing the educational unit. Al-Hila (1999, p. 23) asserts "subjecting any sample to an educational curriculum improves its performance level at the cognitive and skill levels, due to its passing through experiences. This is contained in that curriculum "and for the relationship between the curriculum, teaching and the teacher and the capabilities of the teacher in the appropriate dealing with the teaching method and making it highly effective in achieving the objectives of the educational unit during the period of application of the units. This is what Bybee (2006) touched upon stating that" Its principles, as well as educational means and techniques, in addition to the application of teaching methods in the syllabus to learners, require high-performance skills and mastery through studying them and applying the sound ones of those. This helps the teaching process to avoid many of the mistakes that most teachers make.

Conclusions and recommendations

4.1 Conclusions

1- The educational program according to the Karplus strategy, as well as the curriculum prepared according to the adopted method, helped in developing the skill of headstand for the experimental and control group members of the research sample.

2- The use of Karplus strategy was more effective in developing the skill of headstand than using the adopted method.

3- The use of educational units according to the Karplus strategy, the diversity of exercises, the use of aids and the gradation from easy to difficult increased motivation, excitement and suspense during performance.

4.2 Recommendations

1- The necessity of using Karplus strategy in teaching methods in colleges of physical education and sports sciences, clubs and sports institutions by teachers, coaches and specialists.

2- The necessity of using the Karplus strategy with different categories of learners, as well as with most sporting events. This is because in addition to developing the skill level, it works to build the learner's personality and develop his/her trends.

3- The necessity for teachers and specialists to be informed of the most important developments in teaching methods. Therefore, we recommend the necessity of conducting courses or seminars indicating the importance of modern teaching methods.

4- Conducting similar studies by researchers on all sports sciences.

References

1. Abdulkareem, A. (1993). Teaching Methods in Physical Education. Alexandria: Dar Al Maaref.
2. Al-Hila, M. (1999). Instructional design theory and practice (1st ed.). Amman: Dar Maisara.
3. Al-Jadaan, D. A. N., Zaalan, M. S., & Ali, I. A. (2020). Analytical Study to Indicate the Comparison in Biomechanical Variables of Handball Scoring. International Journal of Psychosocial Rehabilitation, 24(02).

4. Bybee, R. W. (2006) : Science and Technology Education for the elementary years frameworks for Curriculum and instruction. New York: The National Center for Improving Science Education
5. Ghassan, M. (2004). Readings in Scientific Research. Cairo: Dar Al-Fikr. Hamid, M. (2015). Curricula and Teaching Methods in the Teaching Balance. Amman: Al-Radwan Publishing.
6. Neamah, D. A. (2014). Relation of time with some biochemical variables of the advancement of the aiming skill by jumping forward in hand. Maysan Journal of Physical Education Sciences, 9(9), 144-158.
7. Qatami, Y. (2013). Learning and Teaching Strategies. Amman: Dar Al-Maysara Publishing.
8. Zaytoun, A. (2007). Constructivist Theory and Strategies for Teaching Science. Amman: Dar Al-Shuruq.
9. Zaytoun, H. H. (1992). Constructivism, an educational perspective. Alexandria: Asl A-Ilm.
10. Zaytoun, K. (2003). Designing Education from the Perspective of Constructivist Theory. Studies in Curricula and Teaching Methods(91).

Appendix (1): the names of the experienced and specialized gentlemen and personal interviews

Gymnastics experts

	Expert name	Workplace
1	Mr. Dr. Laith Muhammed Hussain	College of Physical Education / University of Basra
2	Mother. Dr. Zaki Nasser	College of Physical Education / University of Basra
3	Prof. Dr. Kazem Issa	College of Physical Education/ University of Basra

Teaching methods

	Expert name	Workplace
1	Mr. Dr. Saad Laith	College of Physical Education / University of Basra
2	Prof. Dr. Ghazi Lafta	College of Physical Education / University of Basra
3	Prof. Dr. Ali Jabbar Hassan	College of Physical Education/ University of Basra

Appendix (2)
Assistant working team

	Expert name	Workplace
1	Prof. Dr. Ali Jabbar Hassan	College of Physical Education / University of Basra
2	Ali Sadiq	College of Physical Education / University of Basra
3	Muhaimin Muhammed	College of Physical Education/ University of Basra

Appendix (3): the assessment form of the skill of headstand

Final grade	E5	E4	E3	E2	E1	name	T
							1
							2
							3
							4
							5

							6
							7
							8
							9
							10

Appendix (4)

The purpose of the unit is to teach a skill of headstand using a strategy pf Karplus		
Venue: Gymnastics Hall, College of Education		**unit time: 90 d**

Notes	**organizational aspect**	**The exercises used**	time	**Sectionseducational unit**	
Emphasizing the warm-up procedure for all parts of the body and performance is accurate and dynamic Ensure that you perform the exercise correctly	***** ***** *****	- Line up and explain the duties and objectives of the educational unit - light jogging Physical exercises from the top of the head to the bottom and back	5 d 10 d	Introduction and warm-up physical exercise	preparatory 15 d
Emphasize that students understand the technical aspects of performance		The teacher divides the students into 4 groups, after that the teacher asks the learners questions to link the previous and subsequent experiences. Then the teacher presents the skill using presentations and illustrations. At this stage, the skill is explained by the teacher and in turn tells the learner what he will learn and the learners in groups write down the name of the experiences with enough time and give them directions The teacher asks the learners what the skill they will discover with the participation of the learners by asking questions related to the required skill.	10 d 10 d	**educational part** Concept exploration phase Concept presentation stage	the main 65Dr concluding

Gradual exercises to suit educational objectives Teacher supervision and supervision	******** +	The primary position applied is (sitting on all fours by the students. The stage of placing the hands and head on the ground and forming a triangle is applied, after that the two legs are pushed back up to reach the existing position. A small group game that suits the educational goal and the suspense	45 d 5 d	Application part concept application	