Journal of Humanities and Social Sciences Researches (JHSSR)

ISSN: 2958-3160 (Online)

The impact of the generative learning methodology on teaching artistic Gymnastics Law to fourth-year Female Students

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Received: 20/05/2024 Accepted: 01/07/2024

Abstract

The current study intends to:
1. Evaluate the effectiveness of the generative learning model in teaching artistic gymnastics law to female fourth-stage students at the University of Babylon's College of Physical Education and Sports Sciences.
2. To determine the variations in cognitive accomplishment between the control and experimental study groups after teaching the artistic gymnastics law.
The research hypotheses are that fourth-stage female students at the College of Physical Education and Sports Sciences, University of Babylon, have significantly higher cognitive achievement of the artistic gymnastics law after post-testing.
The researcher utilized an experimental approach. The fourth-year female students at the University of Babylon's College of Physical Education and Sports Sciences deliberated on the research community for the academic year 2022-2023. One of the reasons for this decision is that the topic (artistic gymnastics) is presented at this level. This is one of the subjects in the first semester. At present, there are 40 female students in the research sample, which was randomly divided into 20 students in the experimental group and 20 students in the control group.
The researcher's conclusion was as follows:
1. The strategy used, and the generative learning model, increased cognitive success when teaching artistic gymnastics law.
2. In post-tests, the generative learning model beat the previously used strategy regarding cognitive accomplishment.
The researcher recommended the following:
1. Implementing this concept to include additional sports activities in other cognitive and practical curricula.
2. Instructing faculty members in the department to use this paradigm in general and practical curricula.
3. Conducting scientific studies using current techniques or tactics and comparing results of this model to assess its efficacy in the educational process.

Keywords: Generative learning, Artistic gymnastics, law.

DOI:10.33687/jhssr.003.04.000355

Introduction:

Raising educational standards requires that colleges take on a new role in addition to disseminating information and knowledge. In which learners are given a real opportunity to participate in the lesson's numerous activities. There is little question that this demands discovering and implementing instructional approaches that consider this. In addition to learners' aspirations and motivations, as well as their abilities to achieve what is possible from the lesson's objectives.

The generative learning model is a modern approach to learning. It serves as both a learning and teaching model, where students actively engage in various activities and exercises within a diverse educational environment. This approach focuses on learning for understanding, encouraging students to connect previous learning experiences with new ones and to build connections and relationships. Generative processes are used to alter alternative perceptions and specific notions based on accurate scientific information (Dhuhra: 2009, 66).

The researchers observed that many teachers do not use new teaching models for practical sessions, relying solely on lectures and students' listening skills. Modern approaches emphasize simultaneous teaching and learning, and the study aims to provide physical education instructors with a learning model to improve their understanding of artistic gymnastics law.

Research problem:

After studying existing research on teaching legal themes for team sports in general, and artistic gymnastics law in particular, it was noted that there is a lack of current teaching tactics that cater to learners' ambitions, desires, talents, and individual variations. Traditional techniques that rely solely on the teacher's teaching and the learner's listening are frequently used and do not fully address the needs of the learners.

Despite considering into consideration their personal circumstances, including their ability. This has an impact on intellect, particularly in arbitration proceedings involving legal errors made during competition.

As the subject of the Artistic Gymnastics Law needs to be understood and realized so that learners are able to apply its legal articles when practicing play inside the classroom or arbitration after graduating from college. In addition different arbitration sites and cases, hence the problem of the current research was found to answer the following:

-Does the generative learning model have an effect on teaching the Artistic Gymnastics Law to fourth-year female students of the College of Physical Education and Sports Sciences, University of Babylon?

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Research Objectives:

1. Evaluate the effectiveness of the generative learning model in teaching artistic gymnastics law to female fourth-year students at the University of Babylon's College of Physical Education and Sports Sciences.
2- Identifying disparities in cognitive success between the control and experimental research groups in post-tests when teaching the artistic gymnastics law.

Research Areas:

- **Human field**: Fourth-year female students of the College of Physical Education and Sports Sciences, University of Babylon.
- **Time field**: From 11/19/2022 to 12/4/2022. Spatial field: Classrooms and the artistic gymnastics hall in the College of Physical Education and Sports Sciences, University of Babylon.

Research procedures:
Research methodology:

The researcher used the experimental method to suit the research problem and its experience.

Research community and sample:

In the academic year 2022/2023, the research community was determined intentionally by fourth-stage female students at the College of Physical Education and Sports Sciences, University of Babylon. One of the reasons for this determination is that this subject (artistic gymnastics) is taught at this stage as part of the subjects for the first semester. The total number of female students at this stage is (40) students, as the research sample was divided into (20) female students in the experimental group and (20) female students in the control group, randomly.

Table (1) Illustrate the two research groups, the method used, and the generative learning model in the research sample

Total Number	Teaching Strategy	The two research groups	Classroom
20	Teaching style	Control group	The first
20	The generative learning model	Experimental Group	The second
40	Total		

Data sources:

The researcher used several sources to collect data, namely: (references and scientific sources, questionnaire, personal interviews, previous studies).

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Data collection tools:

1. **The Cognitive Educational Materials for the Artistic Gymnastics Law:**

The educational material was taken from the Artistic Gymnastics Law book, which is given to female students at the College of Physical Education and Sports Sciences/University of Babylon. After conducting personal interviews with the teacher, explaining the teaching model for the research experiment in detail, and providing educational plans and procedures for implementation, the teacher agreed to participate in the experiment.

2. **Place of applying the lectures:**

The students in both groups received their theoretical lectures in the classrooms at the College of Physical Education and Sports Sciences/University of Babylon, while the practical lectures were applied in the Artistic Gymnastics Hall at the college.

3. **Distribution of lectures:**

The lectures for the study material were distributed by the department head according to the study schedule for the fourth academic stage, as the lecture time for the research group was as follows:

- (Wednesday) of each week - at (10.30) in the morning.
- Every Thursday at (8:30) in the morning.

Learning plans for the generative learning model:

In order to conduct the current study experiment, the researcher created teaching strategies for the experimental group using the methodological book for the Artistic Gymnastics Law. These strategies consisted of ten plans aligned with the subject's curriculum. Each educational plan has a duration of 90 minutes and was implemented at the pace of one plan per week. It's important to note that the study materials provided to both groups were the same due to unified administrative procedures. The main difference lay in the execution of the lesson, with one group using the generative learning model and the other using a different technique.

This led to confirm the validity of these plans, the researcher showed a model of these plans to a group of professionals in the field of physical education and sports science teaching techniques, who expressed their strong comments on their validity (Appendix 1). After submitting the questionnaire, it was apparent that they agreed with the model of plans and their instructional content, with minor revisions. Appendix (2) displays a model of the plans created in their final form using the generative learning model.

Exploratory experiment of educational plans for the experimental group:

On Wednesday, November 10, 2022, the experiment was used as an introduction lecture for the students participating in the research experiment in order to clarify the following:

- Clarifying the model's idea and application via in-person and practical courses.
- Making sure that all necessary gadgets and tools are available.
- Responding to any queries posed by pupils**.**

The results of the exploratory experiment include the following:

1- The students' positive enthusiasm towards implementing the plan prepared according to the model.

The main research experiment:

The subject school studied the research group and applied the procedures for the model according to the prepared plans and a weekly teaching plan, noting that the research experiment was implemented as follows:

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_ Experimental group (generative learning model):

There are a set of basic steps that must be followed by both the school and the student to apply the generative learning model.

The school can reduce or increase them according to what suits the surrounding circumstances (learning environment), so the process of applying the lesson according to this model is as follows:

1. **Preliminary phase:**

The goal of this phase is to prepare for the lesson through discussion with the students, which depends on dialogue and asking questions about the following:

- What are the legal measurements for artistic gymnastics equipment?
- What are the specifications of artistic gymnastics equipment?
- How long is the motor exercise? Starting signal, how to calculate the player's score and deductions.

The students' answers are either verbal or in each student's notebook, where the student here records all the answers to the questions asked by the subject teacher. She notes the most important things that the teacher asks before starting to answer the questions and can answer them verbally according to the discussion and dialogue.

2. **Focus phase:**

The school distributes the students into groups (control and experimental). The school works to link the previous knowledge with the knowledge that is required to be reached. The work focuses on the targeted concepts while clarifying what is required to be achieved from the lesson objectives, then providing opportunities for discussion and dialogue between the groups. Here, the students go through the experience of the concept.

3. **Contrasting phase (challenge):**

During this phase, the instructor discusses the entire lesson topic with the students, allowing them to share their views and comprehension, and works on exhibiting illustrative photographs of the stadium and its worldwide measures. These topics can be discussed on the stadium floor, along with presenting an instance of artistic gymnastics equipment, as well as discussing the timing of the movement exercise and the beginning signal, as well as how to compute the final score and deductions. In other cases, the objectives to be learned can be displayed by showing video films, or the legal solutions can be applied by applying them live with the students.

4. **Application phase:**

The objective of this phase is to apply educational concepts to solve problems that may arise due to students' lack of full understanding of the questions. The aim is to help students reach the correct answers and find solutions while applying these concepts in a practical setting, such as the stadium floor. This approach aids in expanding students' knowledge and awareness. Following the implementation of these procedures in the generative learning model, the school will allocate time for arbitration. This involves dividing the classroom into two groups inside the gym and practicing arbitration. The school is responsible for carrying out the arbitration process for the motor exercises outlined in the initial educational plans, with the arbitration gradually shifting to the students.

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Final Cognitive Achievement Test:

This test was administered on Wednesday, 11/4/2022, at (10:30) ten thirty in the morning for both groups, taking into account the same procedures in the process of applying the pre-test and the time specified for it, noting that it was implemented in the department's classrooms.

Statistical Methods:

The researchers used the statistical package (SPSS 25) to reach the research results.

3- Presentation, analysis and discussion of the results:

3-1 Presentation, analysis and discussion:

There are statistically significant differences between the pre- and post-tests of the control and experimental groups in cognitive achievement in teaching the artistic gymnastics law. In the interest of the post-test for fourth-year female students of the College of Physical Education and Sports Sciences / University of Babylon. Then, to verify the validity of this hypothesis, the (t) test for related samples was used to identify the statistical differences between the average performance scores of the two experimental groups, and Table (2) shows that.

Table (2) illustrates the comparison in the statistical parameters between the control and experimental groups in the pre-and post-tests of cognitive achievement in teaching the artistic gymnastics law

Statistical Features		Unit of measurement	Pre-test		Post-Test		Calculated T value	Value of t Tabular	Error rate Sig
The two research groups	audition		+Going to	±on	+Going to	±on			
Control group	Knowledge achievement in teaching the law of artistic gymnastics	degree	22.64	2.23	28.65	2.36	2.23	2.024	0.046
Experimental Group			22.58	2.36	39.75	2.40	7.31		0.021

Significant at error rate ≤ (0.05)

It is clear from Table (2) that the value of the error rate (sig) for the control group is (0.046) and for the experimental group is (0.021). It is less than the error rate (0.05), which means

DOI:10.33687/jhssr.003.04.000355

that there are statistically significant differences between the pre- and post tests for the control and experimental groups in the cognitive achievement test. In addition teaching the artistic gymnastics law and in favor of the post-test. Based on that, the research hypothesis is accepted.

The researchers credit the improvement in cognitive accomplishment between the pre- and post-tests, with the post-tests outperforming the pre-tests, to the success of the cognitive achievement technique and model. They helped to improve cognitive achievement through the efficacy of the applied instructional modules. And what they included in terms of structuring instructional units in a way that is simple for pupils to comprehend, compatible with their cognitive processes, and takes into consideration the individual variances between individuals.

Al-Zaghloul and Al-Mahamid (2007) emphasize "the interest in how the study material should be organized and the methods of presenting it to the learner in a way that enables him to integrate it into his cognitive structure and achieve what is called meaningful learning" (Al-Zaghloul and Al-Mahamid: 2007, 119). According to Al-Jamal (2016), students are responsible for applying legal situations based on the model taught to them.

Which causes her to learn in the specific cognitive aspects related to the educational material, and thus any information presented to the student during the educational unit will increase their cognitive attainment. Which highlights progress in the level of cognitive attainment between the pre- and post-tests for the two groups in favor of the post-test." (Al-Jamal: 2016, 112).

3-2 Presentation, analysis and discussion of the second research hypothesis:

The post-tests for cognitive success in teaching the artistic gymnastics law show statistically significant differences between the control and experimental research groups. The following is a presentation of the statistical results that were reached after the statistical analysis and using the test (T) for unrelated samples to identify the statistical difference between the average degree of cognitive achievement in teaching the artistic gymnastics law for the control and experimental groups, as shown in Table (3).

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Table (3) compares the statistical characteristics of the control and experimental groups in the post-test of cognitive accomplishment when teaching the artistic gymnastics law

Statistical milestones audition	Unit of measurement	Control group		Experimental Group		Calculated T value	Value of t Tabular	Error rate (sig)
		+S	±A	+S	±A			
Knowledge achievement in teaching the law of artistic gymnastics	degree	**28.65**	**2.36**	**39.75**	**2.40**	**7.38***	**2.024**	**0.010**

Significant at error rate ≤ (0.05).

It is clear from Table (3) that the value of the error rate (sig) for the (cognitive achievement) test is equal to (0.010) which is less than the error rate (0.05). According to this result, there is a statistically significant difference between the average scores of the experimental group that studied according to the generative learning model and the average scores of the control group that studied according to the school method followed in favor of the experimental group and according to the higher arithmetic mean.

The researchers attribute the experimental group's superiority to the fact that the learning model assisted learners in actively generating knowledge by reorganizing the structure of prior knowledge, accessing new information, and forming relationships and connections between them. This is in the context of social interaction, and this model is one of the forms of active learning that helps learners clarify and improve the content they have acquired.

It depends on the depth of the level of information processing by linking new information with previous knowledge structures to build more sophisticated cognitive structures. (Saada, 2018) states that this model works to integrate learners' previous knowledge with modern knowledge, and encourages them to think creatively based on their experiences and expertise. According to the researchers, this methodology is based on using sensory inputs whenever feasible, asking students questions for learning, and sharing perspectives and evaluating ideas. Finding a variety of approaches and bridges to connect prior and subsequent learning. And the actual application of information, which was used to accomplish its educational objectives and phases.

DOI:10.33687/jhssr.003.04.000355

Conclusions and recommendations

Conclusions

After obtaining the research findings, the researchers reached the following conclusion.

1-The strategy used and the generative learning model resulted in an increase in cognitive success when teaching the artistic gymnastics law.

2-In the post-tests, the generative learning model surpassed the previous strategy in terms of cognitive accomplishment.

Recommendations

The researchers recommend the following:

1. Benefit from this approach by applying it to other sporting activities within different cognitive and practical curricula.

2. Directing faculty members in the department to incorporate this paradigm into the curriculum in general and practical courses specifically.

3. Conducting scientific studies using current methodologies or tactics and comparing results to this model to assess its efficacy in the educational process.

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Appendices:

Appendix (1)

Explains the questionnaire of the committee of specialists to determine the validity of educational plans

M/Questionnaire of the Committee of Specialists to Determine the Validity of Educational Plans

The researchers have begun the initial procedures for their research entitled (The Effect of the Generative Learning Model in Teaching the Artistic Gymnastics Law) on a sample of fourth-year students at the College of Physical Education and Sports Sciences/University of Babylon. Part of the requirements for its procedures is the application of the generative learning model, and the researchers have prepared a model for the lesson plan according to this model. Given your expertise in the field of teaching methods and motor learning, the researchers hope that you will provide valuable scientific assistance in stating your sound opinion on the validity of this plan and modifying it so that it can be applied to the research sample.

God Almighty grants everyone success in serving science

Researchers

Appendix (2)

Explains a model of an educational plan according to generative learning

Educational objectives: Plan: First

Develop decision-making, cooperation, thinking skills, discussion, presenting ideas and attracting attention. Stage: Fourth

Educational objectives: Number of students: 20 students

1-Teaching students the measurements of international legal artistic gymnastics equipment and its parts. Day and date: Wednesday 11/26/2022

2-Teaching students the time of the movement exercise and calculating the final score, deductions and specifications of the device Plan time: 90 minutes

Behavioral objectives:

1-For students to mention the international legal measurements of artistic gymnastics equipment.

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2-For students to show the measurements and specifications of the equipment, the time of the movement exercise, the starting signal, the final score and deductions.

Sections of the plan and time	**Educational Activities**	**Observations**
Introduction (5) min	Preparing the necessary tools to accomplish the educational plan. Preparing the necessary equipment to implement the lesson plan. Ensure attendance and absence. Forming groups for the implementation of the required work in the main part of the lesson.	1- Ensure the adequacy of the tools and equipment necessary to implement the plan. 2- Confirm the continuous attendance of lectures. 3- Providing advice and guidance to students to follow the parts of the lecture and interact with them actively. 4- Verify the division of groups in equal number and different levels of knowledge.
Main Section (60) minutes Educational and applied activity	1- Introductory phase (10 minutes): The aim of this stage is to prepare the lesson through discussion with students, which depends on dialogue and asking questions about the following:: -What are the legal measurements of artistic gymnastics devices. -What are the specifications and measurements of artistic gymnastics devices . -How long is motor training? Start signal, final cycle.Rebates. The answer from the student is either verbal or in the notebook of each student, where the student works here to record all the answers to the questions posed by the subject school and notes the most important things posed by the school before starting to answer the questions and can be answered verbally according to the	The subject teacher does the following: -Make sure you listen to questions. -Pay attention to what is required of the answer. -Do not rush to make a decision. -Correct thinking to answer the questions presented. -Discussion and dialogue in an educational and organized way. -Language between teacher and students is the psychological tool for thinking, speaking and seeing, and at this stage concepts unfold.

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	discussion dialogue.	
	2- Focus phase (10) minutes: The school distributes students into groups, which have already been identified in the preparatory section of the lesson and the school works to link daily knowledge and the knowledge required to be reached, and the work focuses on the targeted concepts with clarification of what is required to be achieved from the objectives of the lesson, and provides opportunities for discussion and dialogue between groups, and here the students pass through the experience of the concept.	The subject teacher works as follows: -Emphasize cooperation and positive reach with others. -Apply dialogue and discussion between members of the same group. -Teamwork in the group. -Emphasis on reaching the correct answers to the questions provided.
	3- Conflicting phase (challenge): (10) minutes: In this phase, the school discusses the entire topic of the lesson with the students with the opportunity to make their observations and understanding, and works to display illustrative images of the devices and their international measurements, as well as a model of legal devices, then explains the training time and the start signal, as well as the final degree of the player and discounts. In other cases, the objectives to be learned can be presented by showing videos or legal solutions are applied by applying them live with students..	The subject teacher works as follows: -Emphasis on providing an appropriate classroom learning environment that suits students for presentation. -Emphasize the student's understanding and attempt to find the right solutions to the questions. -Emphasis on sound and meaningful scientific debate. -Provide sufficient time for students and give them the necessary guidance
	4- Application Phase (10) minutes: The goal of this stage is to apply the concepts of educational objectives to solve the problems that may be caused by students or lack of full understanding of the questions and reach the correct solutions to the questions and find solutions to these goals in their application, which helps to expand the knowledge and perceptions of students .	The school assists students in: -Helping students in mentally organizing the experiences obtained by students and linking them to similar previous experiences. Organize their ideas and guide them towards the right solutions. Practice positive skills and behaviors, so that students expand their interests

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		and tendencies.
Free Activity 20 minutes	Playing : The school divides the classroom into two groups inside the sports hall and the practice of playing and the school is the one who referees the match in the first educational plans.	Confirm everyone's participation. Confirm the application of what has been learned in the educational activity.
Closing Section 5 minutes	Implementation of the closing skill of the lecture. Calming down + leaving exercises.	Attention to the school. Commitment to calm and order.

DOI:10.33687/jhssr.003.04.000355