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# THE IMPACT OF EMPLOYING THE TEACHING AID (3D GYM) ON LEARNING MOTIVATION OF SOME GROUND MOVEMENTS IN GYMNASTICS AMONG THE STUDENTS OF THE BASIC STAGE IN AQABA DIRECTORATE OF EDUCATION

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## Abstract

This study aimed at identifying the impact of employing the teaching aid (3D GYM) on learning motivation of some ground movements in gymnastics among the students of the basic stage in the Aqaba directorate of education. The study used the experimental approach due to its compatibility to the study nature and objectives. The study sample consisted of (30) students from the basic stage who were chosen purposively and divided into two groups; the experimental group and the control group. The study sample individuals applied the educational program over a period of (8) weeks in three units. The data were analyzed using (SPSS). The results revealed that the proposed educational program has a positive effect on learning the ground movements in gymnastics among the students of the basic stage in Jordan. The results revealed that using (3D GYM) has an effective role in promoting motivation for learning ground movement skills, and that the learner's motivation is affected by several external factors, including the most exciting and motivating electronic methods of learning the different skills in with the least time and effort.

Based on the results, the researchers recommended the necessity of conducting further researches and studies about gymnastics and integrating (3D GYM) teaching aid with other devices, since the program includes all the sporting devices.

**Key words**: teaching aids, learning motivation, basic stage, (3D GYM).

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## Introduction

Teaching aids are considered amongst the basic elements which employ teaching technology, where this technology is used to target all the learner's senses in the educational process. Indeed, teaching aids are basically based on involving more than one sense in shaping the mental visualization, perceptions and concepts in a better way among learners, as compared to the traditional way (Indoctrination) that is based on verbal instructions and performing a model by the teacher of Physical Education (Khamis, 2003).

It is well-known that students represent the basic pillar and target and content of the educational process. Therefore, most processes and activities are effectively used in the educational process to achieve an acceptable positive level of the influential educational and kinetic performance that contributes to building a competent academic-achieving generation (Salman, Mahmoud, 2009).

Learning motivation has a considerable importance, where it is considered as a basic element in the success of the educational process. It helps the learner to obtain more achievement, contributes to doing more effort among learners and increases his ability to deal with information which is, in turn, reflected on his performance in the classroom in the form of more educational interaction and achievement (Zaki, 2015).

Teaching aids are characterized by their contribution to promoting the learner's self-confidence, increasing competition between learners and making the lesson more effective, where the learners become more involved in the educational process instead of just mimicking their teachers, in addition to the role of teaching aids in facilitating the process of conveying information. Using teaching aids pushes the educational process forward and reduces the time needed for that, where the kinetic performance is affected clearly and the traits of motion become more accurate and well-mastered .

Ground movements represent an important pillar upon which we can depend to promote the sport of gymnastics on devices, and they are related to performing many movements on other different devices; for example, somersaults, turning and leg swinging are similar movements, either performed without devices or by the use of sports devices (Mosamih, 2013).

The devices of ground movements are the most exciting ones among people due to the group of aerobic and anaerobic kinetics that they include side by side with other gymnastics elements, such as the parts of force, balance, flexibility and

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changing direction which are performed in a regular kinetic group within (70) seconds. The requirements specified to the device of ground movements are limited to five skilled sets: (anaerobic elements, front aerobic series, back aerobic series, back aerobic elements with half or side turn, kinetic finishing) (International Gymnastics Federation, 2000).

The study importance lies in its attempt to make advantage of the technological advancement and use it in learning the Gymnastics skills. Also, it is one of the few studies that used (3D GYM) in learning the skills of gymnastics in Jordan and addressed the level of motivation towards learning those skills among students as far as the researchers know.

**The Study Problem**

This era is distinguished by using the electronic educational techniques to promote all the domains of the educational process, where this advancement was accompanied by several teaching aids that contributed to learning the different skills. (3D GYM) is one of these techniques, where it focuses on investigating and analyzing the motor skills, regardless their difficulty. It is a teaching technique that saves more time and effort for both teachers and students, and helps students in acquiring the different kinetic skills, especially learning the skills of gymnastics, since this game is distinctive from others games with regard to judging the difficulty of motion and its technical performance that is not governed by a certain time, but by performance itself. The researchers, based on their experience and work in the domain of teaching, noticed the students' low level in performing the skills of gymnastics. In teaching the skills of gymnastics, teachers usually use the traditional way that is based on explaining the skill and performing a model of it in front of the students; the teacher performs the basic role in the educational process, where this method could be inappropriate and sometimes does not achieve the targeted outcomes. Such a practice doesn't allow learners to participate effectively in the educational situations, and thus they don't acquire the required skilled experiences. Therefore, the researchers conducted the following study to demonstrate the effectiveness of (3D GYM) as an electronic teaching aids in helping students of the basic stages to learn the various gymnastics skills in an interesting way to motivate them to acquire these difficult kinetic skills.

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## The Study Objectives

This study aimed at:

1- Identifying the impact of using (3D GYM) on learning motivation for some ground movements in gymnastics among the individuals of the experimental group from the basic stage students in Aqaba directorate of education.

2- Identifying the impact of using the usual educational program on learning motivation for some ground movements in gymnastics among the individuals of the control group from the basic stage students in Aqaba directorate of education .

3- Identifying the differences between the impact of using (3D GYM) and the usual way of teaching on learning motivation for some ground movements in gymnastics among the individuals of the experimental and control groups.

## The Study Hypotheses

In the light of the study objectives, the researchers hypothesized the following:

1- There are statistically significant differences at ($\alpha \leq 0.05$) between the pre and post measurements in learning motivation for some ground movements in gymnastics among the individuals of the experimental group that used (3D GYM) from the basic stage students in Aqaba directorate of education.

2- There are statistically significant differences at ($\alpha \leq 0.05$) between the pre and post measurements in learning motivation for some ground movements in gymnastics among the individuals of the experimental group that used the usual way of teaching from the basic stage students in Aqaba directorate of education.

3- There are statistically significant differences at ($\alpha \leq 0.05$) between the post measurements for the experimental and control groups in learning motivation for some ground movements in gymnastics among the basic stage students in Aqaba directorate of education.

## The Study Limits

The geographical limit: Jordan – Aqaba governorate –Wadi Araba.

The temporal limit: the second academic semester during (10/3/2019 – 30/5/2019).

The human limits: the basic stage students (fifth, sixth, seventh) in Finan mixed basic school in Aqaba- the South of Jordan.

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The study terms: the study addressed several terms, including:

**Teaching Aids**

Researchers defined it as all the helping tools and devices that teachers use to improve the educational process and achieve the specified educational objectives (* procedural definition).

**Motivation**

It is the auto power that directs the individual's behavior towards achieving a certain objective that the individual needs or feels that it has a physical or morale importance for him. The factors motivating the individual to achieve progress include the feeling of need or importance, the internal or external power that govern the learner's behavior, the learner's surrounding conditions and his effectiveness in shaping them as well as the learner's ambition, ideas, attitudes, values, dispositions and concept about himself and his expectations (Al-Qoutami, Al-Qoutami, 2000).

**The Ground Movements**

They are a number of coordinated and scientifically-designed movements that are performed on the mat of ground movements; they are documented under the laws and regulations of the International Gymnastics Federation, where each movement is given a difficulty score out of (10) and each movement has its own specific nature according to gender for both men and women (* procedural).

**(3D GYM) Program**

It is one of the teaching aids that contribute to learning gymnastics skills, where the program includes several skills that are applied to the different devices for males and females in gymnastics. It includes (850) skills that are displayed in three dimensions. The program is characterized by three-dimension amazing images, effective search engine, Zoom in and out, 360° rotation, various camera angles and various speeds that are displayed via the computer (* procedural).

**Basic Stage Students**

They are the students registered in the records of the directorates of education who are still studying ( the fourth grade – the seventh grade) (* procedural definition).

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## The Study Procedures:

### The Study Methodology

The researchers used the experimental approach with two identical groups ( experimental, control), due to its compatibility to the study nature and objectives.

### The Study Population

The study population consisted of all the basic stage students (fifth, fourth, seventh) in the directorate of education in Aqaba governorate.

### The Study Sample

The study sample consisted of the students of the basic stage (fifth sixth, seventh) in Finan basic mixed school in Aqaba directorate of education in the south of Jordan, where (30) male students were selected purposively from all the targeted classes, with (5) students from each class in each group.

- The experimental group: it consisted of (15) students who applied the proposed program using (3D GYM) teaching aid.
- The control group: it consisted of (15) students who applied the same educational program without using any teaching aid in learning the basic gymnastics skills that are applied in the program, and the same content of the experimental group. Table (1) shows the sample's harmony for the two groups.

Table (1) The harmony between the experimental and control groups in the motivation level for learning gymnastics ground movement skills in the pre-measurement

| Variable | Experimental | | | | Control | | | | Sample | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Variance coefficient | Skewness coefficient | Mean | SD | Variance coefficient | Skewness coefficient | Mean | SD | Variance coefficient | Skewness coefficient |
| Motivation | 1.75 | 0.16 | 9.14 | 1.83 | 1.70 | 0.11 | 6.47 | 0.64 | 1.73 | 0.14 | 8.09 | 1.59 |

The study variables: the study addressed the following variables:

The independent variable: the proposed educational program based on using (3D GYM) teaching aid and the usual program.

The dependent variables: the level of motivation towards learning gymnastics.

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## The Pilot Study

The researchers applied one educational unit from the educational program to a sample that consisted of (10) students from outside the study sample, and used (3D GYM) teaching aid. The educational program was started a week before the pre-tests. The pilot study aimed at verifying the suitable time for applying the program, in addition to verifying the validity of used tools and equipment in applying the program, identifying the most important difficulties that the researchers faced, verifying the suitability of used tests and skills as well as the way of demonstrating the work mechanism, test-application and suitable control over the teaching aid. The procedures were mostly suitable for the study objectives, and everything was ready for applying the main study.

## The Study Instruments

The researchers used the following instruments in applying the study:

-laptop
- Gymnastics mattresses
-Small sports hall at school (10 m long and 8 m wide).
-Medical scale, measurement scale and adhesive tape.
-Data show
-Timing watch and a whistle
-Cones and helping tools in small games.
- Registration form.

## The validity of the study instrument:

The researchers primarily prepared the study tools that included the educational program using (3D GYM) and motivation scale. They were introduced to a number of experts and specialists in the study topic. The researchers took the arbitrators' notices into consideration, where most notices implied modifying the paraphrasing of the motivation scale, by deleting or adding some words. After performing the recommended modifications, the study instrument became applicable. Appendix (2) shows the final version of the study instrument.

## The reliability of motivation scale:

The researchers estimated the reliability of motivation scale towards learning gymnastics skills, where it consisted of (40) items that were rated based Likert 5-point scale (strongly agree, agree, neutral, disagree, strongly disagree). The

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scale was introduced to a number of arbitrators and modified based on the nature of the Jordanian environment and the basic stage applying the program. Cronbach alpha was calculated for the individuals of the pilot study that consisted of (10) students and had a value of (0.761); this value is within the high range of reliability coefficients, and this reflects the reliability of the scale items according to the responses given by the individuals of the study sample.

**The proposed educational program:**

The researchers used (3D GYM) teaching aid as a method that mimic a three-dimensional system, where such a view requires using special sunglasses based on a certain video display method that is compatible with the used sunglasses, allowing the viewer to practically see the three dimensions of the displayed objects. The displayed scenes in the program included videotaping from three angles, where each angle reflects a certain axis, and the three axes were displayed via a bilateral level based on the sample individuals, as well as the study nature and hypotheses. The educational program was applied over a period of (8) weeks, with three educational units each week, where each unit lasts for (60) minutes. The program was applied to the experimental group outside the school day (Sunday, Tuesday and Thursday) at 4:00 p.m. in an attempt to create a healthy educational environment and more concentration among students, where the students view the skill via the program after explaining the skill and performing a model about it by the teacher. After watching the skill, the students learn how to perform it correctly. In this vein, the program operates over the whole learning period, where it is considered as a feedback for students; the role of the teacher is taken into consideration in terms of instructing the students and providing feedback. Appendix (1) shows the final version of the educational program.

As for the control group, the same educational program is introduced without any teaching aid at the same time and frequency applied to the experimental group, but on different days. The skill is explained and the model is introduced by teacher, then it is applied by teacher and student, after that feedback is represented by the teacher and errors are corrected. The program was applied over a period of (8) weeks, in the afternoons of Saturdays, Mondays and Wednesdays.

The proposed educational program consisted of three parts as shown in table (2).

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Table (2) The parts of the proposed program according to period

| Number of educational units | Number of weeks | Educational unit time/ minute | Time in a week/ minute | Total time in 8 weeks/ minute |
|---|---|---|---|---|
| 24 | 8 | 60 minutes | 180 | 1440 |

**The pre-measurement:**

The researchers performed the pretest for the basic skills in gymnastics to the sample individuals on Thursday (14/3/2019), where the tests were applied to all the individuals of the experimental and control groups.

**The Main Study:**

The researchers applied the proposed program on (17/3/2019). After the application, the pretests were performed to the individuals of the experimental and the control groups with the help of a number of colleagues.

**The post measurement:**

The researchers performed the posttests for the basic skills in gymnastics to the sample individuals on Thursday (9/5/2019), where the tests were applied to all the individuals of the experimental and control groups under the same conditions of the pretests.

**The statistical methods:**

The researchers used (SPSS) to calculate the results, and here are some of the used statistical processes that are compatible to the study objectives and hypotheses.

1- Means
2- Standard deviations
3- T-test
4- Variance coefficient
5- Skewness coefficient
6- Cronbach alpha
7- Correlation coefficient

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**Displaying and discussing the results:**

**The first hypothesis:** There are statistically significant differences at (α≤0.05) between the pre and post measurements in learning motivation for some ground movements in gymnastics among the individuals of the experimental group that used (3D GYM) from the basic stage students in Aqaba directorate of education. Second, the level of learning motivation among the individuals of the experimental group.

Table (3) The results of T-test for the differences between the pre and post measurements in the level of learning motivation for some ground movements in gymnastics among the basic stage students (experimental group)

| Variable | Measurement | Number | Mean | SD | t-value | Sig. level |
|---|---|---|---|---|---|---|
| Motivation | Pre | 15 | 1.75 | 0.16 | 42.48 | 0.000 |
| | Post | 15 | 4.18 | 0.13 | | |

Table (3) shows the mean differences between the pre and post measurements in the level of learning motivation for some ground movements in gymnastics among the individuals of the experimental group. The value of significance level between the pre and post measurements was (0.000).When comparing the values of significance level which were suggested at (α≤0.05), it was evident that they were less than (0.05), which means that there are statistically significant differences between the pre and post measurements in the level of learning motivation for some ground movements in gymnastics among the individuals of the experimental group, where the differences were in favor of the post measurement.

The researchers attributed this finding to the impact of using (3D GYM), which increased the learner's motivation to learn and acquire the applied basic skills; motivation increases when there are more exciting teaching aids that take the student's educational level into consideration. This educational program is compatible to all the age categories, where it characterized by the gradualism in learning skills from the easiest to the most difficult; therefore, we find that the student's motivation was in favor of the post test. This finding agrees with (Malouff, Rock, Schutte, Foster, and Bhullar, 2008) which revealed that teachers use several methods to promote students' learning motivation and focused on the necessity of content adjustment with the students' values and objectives. They suggested that such methods help

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students to achieve objectives, persuade students about the learning process, establish positive relationships with the students, reward them for achievement, develop auto learning and use feedback for motivation. Also, (Zaki, 2015) confirmed the importance of learning motivation in promoting academic achievement. The study revealed that there is a significant relationship between learning motivation and academic achievement, where learning motivation is considered as an internal case among learners that directs their performance and promotes them to achieve a certain goal to gain the highest scores that lead to the success of the educational process.

**The second hypothesis**:

There are statistically significant differences at (α≤0.05) between the pre and post measurements in learning motivation for some ground movements in gymnastics among the individuals of the experimental group that used the usual way of teaching from the basic stage students in Aqaba directorate of education.

The level of learning motivation among the individuals of the control group

Table (4) The results of T-test for the differences between the pre and post measurements in the level of learning motivation for some ground movements in gymnastics among the basic stage students (control group)

| Variable | Measurement | Number | Mean | SD | t-value | Sig. level |
|---|---|---|---|---|---|---|
| Motivation | Pre | 15 | 1.70 | 0.11 | 66.84 | 0.000 |
| | Post | 15 | 3.94 | 0.16 | | |

Table (4) shows the mean differences between the pre and post measurements in the level of learning motivation for some ground movements in gymnastics among the individuals of the control group. The value of significance level between the pre and post measurements was (0.000). When comparing the values of significance level which were suggested at (α≤0.05), it was evident that they were less than (0.05), which means that there are statistically significant differences between the pre and post measurements in the level of learning motivation for some ground movements in gymnastics among the individuals of the control group, where the differences were in favor of the post measurement.

The researcher attributed this finding to the case that such basic skills in gymnastics are uncommon and not studied previously by students, where

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they were not addressed in the school sports curriculum. Therefore, it is new to them, since they only practice football or any other group game at school. It is well-known that every new thing is preferable, where students attempt to recognize those skills and acquire them especially if they are compatible with their age category. Therefore, their learning motivation increases, even if the used method is a conventional one; the method used in learning is very important as it affects the learner's motivation. Also, increasing the learning time, the number of repetitions and providing feedback promotes learner's motivation to learn, where (Yun, 2001) suggested that the best teaching situations are those stimulating motivation among learners which, in turn, leads to achieving better outcomes. Also, the types of motivation that we assign for ourselves affect our ability to achieve the targeted outcomes.

**The third hypothesis:**

There are statistically significant differences at ($\alpha \leq 0.05$) between the post measurements for the experimental and control groups in learning motivation for some ground movements in gymnastics among the basic stage students in Aqaba directorate of education .

The level of learning motivation for ground movements skills in the post tests among the individuals of the experimental and control groups from the basic stage students in Aqaba directorate of education

Table (5) The results of T-test for the differences between the experimental and control groups in the level of learning motivation for some ground movements in gymnastics among the basic stage students in the pre and post measurements

| Variable | Group | Number | Mean | SD | t-value | Sig. level |
|---|---|---|---|---|---|---|
| Motivation | Experimental | 15 | 4.18 | 0.13 | 4.69 | 0.000 |
| | Control | 15 | 3.94 | 0.16 | | |

Table (5) shows the mean differences between the experimental and control groups in the level of learning motivation for some ground movements in gymnastics in the two post measurements. The value of significance level between the pre and post measurements was (0.000). When comparing the values of significance level which were suggested at ($\alpha=0.05$),it was evident that they were less than (0.05), which means that there are statistically significant differences between the experimental and control groups in the

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level of learning motivation for some ground movements in gymnastics in the pre and post measurements in favor of the experimental group.

The researcher attributed this finding to using the proposed educational program by using (3D GYM), where it increased the learners' motivation to learn the applied gymnastics skills; the program is characterized by characteristics that help learners to learn easily and interestingly with less time and effort as illustrated by the differences between the experimental and control groups. (Al-Noaimi, 2007) suggested that the effectiveness of the various domains of Physical Education lesson is integrated by making advantage of the surrounding environment and the available technology at school, since it is the most effective way to improve the type of education by developing the relevant technological and sports facilities. In order to have an appropriate Physical Education lesson in a suitable environment, pitches and playground should be safe, where barriers should be removed, safety procedures should be verified and all potentials should be upgraded to advocate the educational development and its initiatives that aim to achieve epistemic economy.

## Conclusions

In the light of the results, the researchers concluded the following:

1- The proposed educational program has a positive effect on learning some ground movements in gymnastics among the students of the basic stage in Jordan.
2- Using (3D GYM) teaching aid has a positive effect on developing learning motivation for learning ground movement skills.
3- The learner's motivation is affected by several external factors, including the most exciting electronic aids that enhance the different skills in gymnastics with the least time and effort.

## Recommendations:

In the light of the results, the study recommended the following:

1- Applying the proposed program to the students of gymnastics courses in the Jordanian Universities.
2- Using the most exciting helping electronic aids in the process of learning gymnastics skills.

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3- Encouraging the prevalence of the sport of gymnastics by making advantage of technology and reviewing all the new knowledge of learning the basic skills in gymnastics.
4- Conducting further studies about gymnastics and integrating (3D GYM) on other devices, since the program includes all the devices.

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