The Effect of Flipped Learning Program on Learning Some Gymnastics Skills on Parallel Bars and Cognitive Achievement

Hamdy Ahmed El-Sayed Wetwet[1]

[1] Department of Exercise and Gymnastics, Faculty of Physical Education, El-Sadat City University, Egypt

Abstract

this research aims to design an educational program using flipped learning to get to know its effects on Learning some skills on parallel bars device ,Academic achievement level of research sample members with respect to skills in question ,the research sample included(160) students of first year at the Faculty of Physical Education, University of Sadat City were divided into (50) students as an experimental group and (50) students as controlled group, also (50) students were excluded to conduct surveys and (10) students were remaining to re engagement ,the researcher used experimental approach, the result had appeared There are significant statistical differences between the averages of two post measurements of (the experimental and controlled) groups in learning some skills of gymnastics on the parallel bars under discussion for the average of the post measurement for the experimental group, There are significant differences between the averages of pre and post measurements of (experimental/controlled) groups in the cognitive achievement level for the average of the post measurement of the experimental group

Keywords: flipped learning, gymnastics skills, parallel bars.

Introduction and Research Problem

The flipped learning model depends on the learner first study the subject on his own by using video-tutorials are prepared by the teacher or shared by another teacher, in the classroom learner applied knowledge through problem solving and practical work under the supervision and support by the teacher. (18)

Khan was noted that (2013), this model can enable the teacher of guiding his students to implement certain educational projects, which help them learn educational content deeper and moves them to the level of skill training and makes the possibility of receiving feedback from the teacher possible and most effective, teacher can spend more time training his students and help them develop and build their skills and directing them to learn by implementing various educational projects. (15)

Saterbak (2014) also indicates that flipped learning needs to get several digital techniques which are used to transfer and explain the educational content for learners such as presentations, educational videos and social networks as educational files can be put on CDs or made available to the learner through the Internet and through one of the social networking sites such as You Tube or exchanged and shared with the teacher via smart phones to be a learner whereby able to learn anytime and anywhere. (19)

Refers both, "Hassan al-Khalifa, wrought Zia" (2015) that the idea of learning upside down based on the basis of its composition to concepts such as active and effective students and participation of learning, in the chapter are converted intentional separation time to a training workshop through which students discuss what they want His research on the scientific level, and they can test their skills in the application of knowledge and communicate with each other while performing classroom activities, and during the time of teachers with similar functions to the functions of trainers and encourage students to individual research and survey the collective effort of cooperative and effective, in other words that the idea of learning upside down t Awnings on exchanges are usually done in the classroom, the student and what you are doing at home is usually done at home from training and exercises and activities performed at the time of separation (22: 65).

Education in its traditional form has become unconvincing and unsatisfactory for many ambitious learners and teachers as educational models in education depends on the teacher explains and displays various educational materials and learners must listen and take notes that they're going to remember the speech teacher at them during the show and explain and clarify where the demands of learners at the end of the lesson to do assignments and homework, that was reinforced towards the spread model provides opportunity for learning for practice by relying on different technology tools, flipped learning model is one of the important models in education because of its advantages that contribute to make changes in the educational process which makes the researcher to think about designing a tutorial using flipped learning and identify its impact on learning some gymnastics skills on parallel bars and the level of cognitive achievement for members of the research sample.

Objectives

This research aims to design an educational program using the flipped learning and identify its impact on both: -

1- Learning some gymnastics skills on parallel bars in research sample members.

2- Level of cognitive achievement for research sample members in the skills under discussion.

Thesis Hypotheses

1- There are significant statistical differences between the averages of two post measurements of (the experimental and controlled) groups in learning some skills of gymnastics on the parallel bars under discussion for the average of the post measurement for the experimental group.

2- There are significant differences between the averages of pre and post measurements of the experimental group in the cognitive achievement level for the average of the post measurement.

3- There are significant differences between the averages of pre and post measurements of the controlled group in the cognitive achievement level for the average of the post measurement.

4- There are significant differences between the averages of pre and post measurements of (experimental/controlled) groups in the cognitive achievement level for the average of the post measurement of the experimental group.

Procedures

The methodology

The researcher used the experimental approach by using experimental design for the two groups, one an experimental used the flipped learning and the other a controlled used the traditional program due to the suitability of the nature of research.

Community and sample of the thesis

The research community included on (160) students of the first year, Faculty of physical Education, University of Sadat for academic year 2016/2017 were divided into (50) students as an experimental group and (50) students as controlled group, also (50) students were excluded to conduct surveys and (10) students were remaining to re engagement.

Homogeneity of the sample members

Table (1)
Description of research community and sample (n=160)

Variables	Unit	Mean	s.t	Skweens
Length	c.m	167.939	8.355	0.424
Age	Year	17.99	0.333	0.388
Wight	k.g	77.372	8.709	0.831

it is shown in table (1) that measure of skewness of the research sample in the age variables may be confined between ($\pm$ 3) which indicates the homogeneity of the sample individuals in those variables.

Data collection methods and tools

Equipment and tools used in the search:

* Gymnastics mattresses* Rstamitr device to measure length * medical thermometer to measure the weight* video camera.

*Parallel bars.

Auxiliary parallel bars.

Wall-mounted Pull-Up bar - a computer connected to the Internet.

The forms:

- student measurements registration form in variables (age – length – weight) annex No. (1).

- Skillful performance evaluation form annex No. (2)

- The names of the jury form. annex No. (3)

- The names of the experts form. annex No. (6)

- The cognitive achievement test. (4)

- the program.(5)

The researcher in the preparation of the cognitive achievement test adopted the following steps: -

Determining the purpose of the test

This test is designed to measure the level of he cognitive achievement of research sample in cognitive information on the technical aspects of sporting skills under discussion in the artistic gymnastics, men on parallel bars, the researcher took into account that the objectives of this test is consistent with the age group.

Determining themes of the test

In the light of the purpose of the test, the researcher select the theme, which is based on the technical side of the skills under discussion, where this theme is identified through a survey of previous studies and research, after reviewing the specialized references in physical education for gymnastics this theme was put in a form that contains (23) statements, annex No. (4), that were examined by the experts from the staff members of Faculty of Physical Education to express an opinion on the most important phrases that fit with the nature of research and its sample.

The formulation of the test terms

The researcher studied the terms of the test and the conditions written in accordance with the rules cited by scientific references and previous studies, that match with the research sample.

Determining the type of test questions

The researcher has chosen two types of questions to formulate a cognitive test phrases which multiple choice

questions and true and false questions, the researcher took into account at the test questions the availability of the following conditions.

- Appropriateness to the level of research sample.

- Objectivity.

- Comprehensiveness

- Measuring the content of the program's objectives.

- The term is not possible (point) more than meaning.

-The initial outline of the cognitive test annex No. (4).

The researcher had conduct the initial outline of the test to measure the level of he cognitive achievement of skills under discussion, where the test included in the initial outline of the 23 phrases were examined by a group of experts in the field of gymnastics for guidance, modification, deletion or addition of phrases.

-The final outline of the cognitive test annex No. (4).

The forms were collected after examined by the experts and unloading data and the result was accepting all terms of the test.

Test correction

The researcher has corrected the test by giving each correct answer only one degree of each phrase of the test phrases to become a test of 23 degrees.

Specify the time needed to the test

To determine the time required for applying the cognitive test, the researcher using the following equation.

The test time = time is taken by the first student + time is taken by the last student

Thus determining the time required to apply the cognitive test (13 m).(8:278)

Scientific transactions for the cognitive test.

The test validity

The researcher calculates the differentiation validity between the upper and lower quartile on the exploratory study sample of (50) students and the following table shows the test validity.

Table (2)
Indication of the differences between the top and lowest quarter
in the Collection of knowledge under research

Variables	N	Mean of ranks	Sum of ranks	(Z) value	Asymp.sig
Collection of knowledge	13	7.12	92.50	4.319*	00.00
	13	19.88	258.50		
	26				

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

Significant differences between the upper and lower quartile of the cognitive test under discussion

it is shown in table (2) there are significant statistical differences between the upper and lower quartile, as the values of "Z" calculated is greater than the value of (Z) Tabulated at the level (0.05), which refers to the test validity and ability to distinguish between groups.

The test stability

To calculate the test stability under study the researcher used the method of applying and re-applying on a sample of (50) students from the research community and the original sample with a time lag between the first and second duration applications (6) days and the researcher to find the correlation coefficient between the two applications and table (3) shows the correlation coefficient between the two applications.

Table (3)
The correlation coefficient between the first and second applications
for the cognitive test under discussion (N=50)

Variables	The first application		The second application		"R" value
Collection of knowledge	MEAN	S.T	MEAN	S.T	
	4.35	0.982	4.57	0.992	0.909*

The value of tabular "R" at the abstract level (0.05) = (0.273)

it is shown in table (3) that a statistically abstract level (0.05) between the first and second application for the cognitive test with correlation coefficient between the first and second application (0.909)and it is a high degree and a function which shows the highly stability of the test.

The suggested educational program using the flipped learning. annex No. (5)

The researcher has designed the educational program using the flipped learning.by designing a website connected to the Internet under the heading http://hamdywet.wixsite.com/hamdywet.

Characterized as follows: -

http://hamdywet.wixsite.com/hamdywet

- The ability to download and view word files containing all information about the research topics.

- The ability to download and view video files, which include technical and educational aspects and methods of support for the skills under discussion.

- The ability to download and display the pictures files with extension of jpg.

- Adding comments or queries about everything related to the skills under discussion.

- Possibility to access the site from anywhere or anytime.

The program objective

The program aims to learn some gymnastics skills on parallel bars, in addition to the cognitive aspects of sample members of research by designing a website depends on a self-learner in learning.

The exploratory study

The first exploratory study

The first exploratory study was conducted on Wednesday 2/11/2016 to conduct the scientific transactions (validity and the first application) for the cognitive test under study.

The second exploratory study

The second exploratory study was conducted on Tuesday 8/11/2016 to conduct the scientific transactions (stability) for the cognitive test under study.

Pre measurement

The researcher has conducted the pre measurements of the two groups of experimental and controlled research

in the cognitive achievement level on Wednesday 11/09/2016.

Applying program under study

The researcher has applied the supposed program from Wednesday 13/11/2016 to Wednesday, 21/12/2016.

Table (4)
Distributionof the proposed educational program units

Unit time	No. of units per week	Total units per program	No. of weeks of the program	No. of months of the program
45 min	2 units	12 units	6 weeks	a month and two weeks

Post measurements:

The post measurement was made on Sunday, 24/12/2016 for the cognitive achievement level and Wednesday, 28/12/2016 for the skills under discussion, by the test panel consisting of faculty members at the end of the first semester of the department of exercise and gymnastics University of Sadat City.

The statistical treatment used in the search

- mean- standard deviation- skewness- Pearson's correlation coefficient - T.test - improvement ratio – non parametric statistics .

Presentation and Discussion of the Results

Viewing the results of the first hypothesis

Table (5)
Significance of differences between the post measurements of (the experimental and controlled) groups in the skills under discussion (N=50)

variables	Experimental		controller		Different between means	percentage	T" value"
	mean	st	mean	st			
Swing	7.52	0.909	5.44	0.812	2.08	38.24%	11.255*
Stand on shoulders	7.78	0.887	5.62	0.697	2.16	38.43%	12.206*
front opened to stand on the shoulders	6.90	0.707	5.34	0.557	1.56	29.21%	12.447*
Back Swing landing	7.14	0.808	5.54	0.734	1.6	28.88%	10.983*

The value of tabled "T" at level (0.05) = (1.684)

it is shown in table (5) there are significant statistical differences between the averages of two post measurements to the controlled and experimental groups in the skills under discussion for the experimental group, where the value of calculated "T" is greater than the value of tabular "t".

As shown in Table (5) improvement rates between the two pre and post measurements for the two experimental and control groups in the skills under discussion.

Discussing the results of the first hypothesis

it is shown in table (5) there are significant statistical differences between the averages of two post measurements to the controlled and experimental groups

in the skills under discussion for the experimental group, where the value of calculated "T" is greater than the value of tabular "t".

As indicated in table (5) improvement rates between the two pre and post measurements for the two experimental and control groups in the skills under discussion was (38.24%) in trapezes, and (38.43%) in standing on the shoulders, and (29.21%) In the front opening of the rolling stand on shoulders, (28, 88%) In rear-weighted turn down.

The researcher attributed these differences and this improvement to the educational program using the flipped learning where depended on a self-learner in learning skills under discussion on the parallel bars by using Internet site included video contains examples of

the skills used in the research, in addition to a set of exercises that serves as educational steps you can take to learn those skills as well as a set of images also included technical aspects of each skill of research skills, and the site also features it enables students access it at any time and from anywhere connected to the Internet which helps the learner to review their information storage their own information in the memory of the long-term, which helps him to remember and performance skills within lectures better than traditional methods.

The use of video to explain the course content helps students understand and absorb it, leading to improved performance in the tests. (14: 12-17)

The flipped learning is considered an effective strategy to support the learning processes of students in higher education to use video to record the sound and image of the lectures and make them available to students well in advance before attending formal lectures, this allows time for the formal lecture to discuss, resolve problems and clarify difficult concepts, answering the questions of students, allows students more opportunities to actively participate during the lecture time (20:79).

Bergmann & Sams (2012) confirm that through the flipped learning, students learn individually and personally, so take into account this strategy effectiveness of students during the time of the lecture in terms of discussions and posts that overcomes the disadvantages of traditional lectures that may be boring in many often or may not allow students rich educational opportunities. (10: 186).

This result is consistent with the results of each of Sally Mohamed Abdel Latif (2016) (5), and the Eman Ibrahim Al Sisi (2016) (3), and Tayeb Ahmed Hassan and Mohammed Omar Musa (2015) (1).

Thus the first hypothesis is achieved, which states that "There are significant statistical differences between the averages of two post measurements of (the experimental and controlled) groups in learning some skills of gymnastics on the parallel bars under discussion for the average of the post measurement for the experimental group".

Viewing the results of the second hypothesis

Table (6)
Significance of differences between the two measures (pre and post) for the experimental group at the cognitive achievement level n=50

variables	measuring unit	pre		Post		"T" value
		mean	s.t	mean	s.t	
Cognitive achievement level	Mark	4.50	0.909	19.32	1.449	65.511*

The value of tabular "T" at the abstract level (0.05) = (1.658)

it is shown in table (6) there are significant statistical differences between the averages of pre and post measurements to the experimental group in the cognitive achievement level for the average of the post measurement, where the value of calculated "T" is greater than the value of tabular "T".

Discussing the results of the second hypothesis

it is shown in table (6) there are significant statistical differences between the averages of pre and post measurements to the experimental group in the cognitive achievement level for the average of the post measurement, where the value of calculated "T" is greater than the value of tabular "T".

The researcher attributed these differences to the educational program under discussion as adopted when

applied to design an educational site on the Internet through uploading video and files that contain information about the technical aspects, educational steps, common mistakes and ways of the support plus serial images for each skill under discussion on the parallel bars, which helped students to increase their knowledge in addition to the possibility of getting back to that information at any time. This is achieved by the flipped learning students self-reliance in the acquisition of knowledge and information skills, achieving self-learning theory and that is what is intended by the research, which in turn helps saving time and effort for the teacher and the learner during lectures contrary to the traditional methods.

This is what (strayer 2007) refers that the flipped learning provides a balance between direct and indirect

teaching methods, giving students greater confidence in learning imparting knowledge, information and understanding of ideas by watching videos autonomously outside the lecture, provides the student what he needs from the knowledge and information to be applied during the lecture and discussion with his colleagues and the teacher. (21:26)

The flipped learning style seeks to reshape the educational process to be changing the traditional role played by educational institutions so that each of them replace the other, which gave the style its name and the students interact in a different way with educational material than used in the traditional style, the students react with educational material more deeply, which deepens their understanding and love it and necessarily

and reflected on what they have achieved through the acquisition of knowledge and information related to the learning material. (7)

This result agrees with the result of each of Abdul Rahman Mohamed Al Zahrani (2015) (6), de Los Arcos (2014) (12) and Lisa Johnson (2012) (16), Graham Brent (2013) (17) and Kara Amarlo (2012) (11)

Thus the second hypothesis is achieved, which states that "There are significant differences between the averages of pre and post measurements of the experimental group in the cognitive achievement level for the average of the post measurement".

Viewing the results of the third hypothesis

Table (7)
Significance of differences between the two measures (pre and post) for the controlled group at the cognitive achievement level

variables	measuring unit	pre		Post		"T" value
		mean	s.t	mean	s.t	
Cognitive achievement level	Mark	4.32	0.913	13.48	1.266	49.071*

The value of tabular "T" at the abstract level (0.05) = (1.658)

it is shown in table (7) there are significant statistical differences between the averages of pre and post measurements to the controlled group in the cognitive achievement level for the average of the post measurement, where the value of calculated "T" is greater than the value of tabular "T".

Discussing the results of the third hypothesis

it is shown in table (7) there are significant statistical differences between the averages of pre and post measurements to the controlled group in the cognitive achievement level for the average of the post measurement, where the value of calculated "T" is greater than the value of tabular "T".

The traditional education depends on the lecture method where the teacher explains the educational material during the lecture courses then the students go home to do homework and dealing with problems on their own, which could lead to a reluctance of educational material sometimes or frustration of not being able to overcome the problems at other times.

But that does not mean that the traditional method does not have advantages, where the use of the traditional method (verbal explanation) that depends on the method of memorization provides more information about the technical stages for learning skills. .

Amani Mahmoud barhoum also refers (2013) that traditional method does not need expensive physical capabilities and can be used in classes with large numbers of learners in addition to the ease of application to all academic levels (2:35).

This result agrees with the result of each of Abdul Rahman Mohamed Al Zahrani (2015) (6), de Los Arcos (2014) (12) and Lisa Johnson (2012) (16), Graham Brent (2013) (17) and Kara Amarlo (2012) (11)

"Thus the third hypothesis is achieved, which states that "There are significant differences between the averages of pre and post measurements of the controlled group in the cognitive achievement level for the average of the post measurement".

Viewing the results of the fourth hypothesis

Table (8)
Significance of differences between the two post measurements for the experimental and
controlled groups at the cognitive achievement level (N=50)

variables	measuring unit	Experimental		Controlled		"T" value
		mean	s.t	mean	s.t	
Cognitive achievement level	Mark	19.32	1.449	13.48	1.226	12.991*

The value of tabular "T" at the abstract level (0.05) = (1.658)

it is shown in table (8) there are significant statistical differences between the averages of two post measurements to the controlled and experimental groups in the cognitive achievement level for the experimental group, where the value of calculated "T" is greater than the value of tabular "T".

Discussing the results of the fourth hypothesis

it is shown in table (8) there are significant statistical differences between the averages of two post measurements to the controlled and experimental groups in the cognitive achievement level for the experimental group, where the value of calculated "T" is greater than the value of tabular "T".

The researcher attributed these differences to the educational program that based on the flipped learning, which enabled students the ability to review information on the technical and educational aspects, common mistakes and ways to support each skill of the skills under discussion at any time and from any location connected to the Internet through the website designed by the researcher thus making this information available to the student at any time, contrary to the traditional method, which is confined to the verbal explanation from the teacher during the lectures only.

This is indicated by Eman Ibrahim (2015) that the use of the modern methods of education must adopt technology as an essential part in the teaching and learning process, and not a subject , so that today's students expect information quickly and clearly with audio and video via different channels, which requires educators to get acquainted with this technological evolution. (3)

This result agrees with the indicated Donal (2006) that education with the help of the means of educational technology is being used as an assistant teacher in teaching where is used in the explanation and exercises, educational toys as a booster helps strengthen learners through providing them with various feedback, which gives them the opportunity to work quickly and

provides them with an element of thrill, as it provides a learning environment as close as possible to the educational attitude (13 :20- 21).

Also agree with what indicated by " Makarem Abu Hrjah and others " (2001) that the use of teaching aids provide key elements of the learning elements are an active participation on the part of the learner, and the element of feedback. (9:19).

This result agrees with the results of each of Sally Mohamed Abdel Latif (2016) (5), Eman Ibrahim Al Sisi (2016) (3), Tayeb Ahmed Hassan, Mohammed Omar Musa (2015) (1),.Abdul Rahman Mohamed Al Zahrani (2015) (6), de Los Arcos (2014) (12), Lisa Johnson (2012) (16), Graham Brent (2013) (17) and Kara Amarlo (2012) (11)

Thus the fourth hypothesis is achieved, which states that "There are significant differences between the averages of pre and post measurements of (experimental/controlled) groups in the cognitive achievement level for the average of the post measurement of the experimental group".

Conclusions

1- The educational program using the flipped learning has a positive impact on learning some of the skills under discussion on the parallel bars.

2- The educational program using the flipped learning has a positive impact in the level of cognitive achievement of the experimental research sample members.

3- There are significant statistical differences between the averages of two post measurements of (the experimental and controlled) groups in learning some skills of gymnastics on the parallel bars under discussion for the average of the post measurement for the experimental group.

4- There are significant differences between the averages of pre and post measurements of the

experimental group in the cognitive achievement level for the average of the post measurement.

5- There are significant differences between the averages of pre and post measurements of the controlled group in the cognitive achievement level for the average of the post measurement.

6- There are significant differences between the averages of pre and post measurements of (experimental/controlled) groups in the cognitive achievement level for the average of the post measurement of the experimental group.

Recommendations

1- Applying the educational program under discussion on other samples of students of Physical Education.

2- Using the flipped learning approach to teach different skills in gymnastics.

3- Using the modern technology in the education process specially that relies on self-education.

4- trying to avoid using the traditional methods in the educational process.

5- Using the flipped learning approach in teaching other sports

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