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Effect of using the flipped classroom learning strategy on the technical performance of 100 metres hurdles in female university students

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ABSTRACT

This research aimed to study the effect of using the flipped classroom learning strategy on the technical performance of 100 metres hurdles in female university students. The participants of this study were 24 female students of the second year of the College of Physical Education and Sports Sciences of the University of Baghdad, in the academic year 2020-2021. They were divided into two groups (experimental group and control group), each group containing 12 female students. The intervention program used the flipped classroom learning method in the experimental group, while the control group received the usual method of real-time explanation. The duration of the intervention program was 16 hours, with a total of 8 teaching units of 2 hours, implemented during a period of 4 weeks, at a rate of 2 educational units per week. The results of the experimental group were significantly better than the results of the control group ($p<0.05$), both in the technical performance of crossing the barrier and in the overall performance of 100m hurdles. In conclusion, the flipped classroom learning strategy significantly improved the technical performance of 100 metres hurdles in female university students.

KEYWORDS

Classroom; Learning strategy; Performance.

1. INTRODUCTION

The learning process in countries is facing a remarkable development in knowledge progress, and this helps to achieve effective learning, through the emergence of new teaching theories and

strategies, and this in turn calls for the need to improve and develop the performance of both the teacher and the learner in educational situations.

The inverted classroom is considered one of the strategies that achieve the modern learning style, as it combines two theories of learning (traditional learning and active learning). The idea of this type of learning is based on the heart of the educational process. Instead of the learner receiving the information in the classroom and then returning home to perform his/her duties, this process is reversed, as the learner receives new concepts of the educational task at home through the teacher preparing videos, using help programs for a short period of up to ten minutes, and sharing this clip through social networks, where the learner receives the new concepts while sitting at home, through the mobile phone, computers, etc. Also, the learner can repeat the video several times until he/she understands its content more accurately (Al Hussein Khalil, 2015). This strategy employs e-learning resources available via the Internet to inform students of lessons outside the classroom and to teach the teacher to provide content in the form of recorded lectures or video clips. The advantage of this method is that it combines individual self-learning and group learning, and this method treats individual differences between learners, as it provides a great opportunity and open time to watch the exercises.

Hence, it is very important to carry out research about diversity of education for female students using the flipped classroom method, which helps in the interaction of students and motivates them to perform outside the classroom. As 100m hurdles run is one of the difficult activities that need several repetitions for each student, this method is very useful because it allows a longer time for performance. Compared to the usual lesson, this method reduces the time of explanation and presentation by the teacher, thus reaching the desired goal, which is to develop the educational process.

According to the experience of the authors, in female university students of physical education and sports sciences, hurdling learning is a difficult event with risk of falls. Therefore, modern educational methods are required to improve the learning of hurdling in female university students of physical education. These new methods should use information technology techniques. Educational videos allow an unlimited number of students to watch the performance at the same time, and also provide larger time to perform repetitions during the lesson because they reduce the time of explanation and presentation in the lesson.

Therefore, the objectives of this research were: 1) Programming and preparing an educational program in the college for the event of running 100m hurdles for female students using the flipped classroom strategy. 2) Preparing special educational videos for motor performance for each stage of

the technical performance of running 100m hurdles for female students. 3) Studying the effect of learning with the flipped classroom strategy on the technical performance of the 100-meter hurdles running event for female students.

The research hypotheses were: 1) There will be statistically significant differences between learning in the pre and posttests for the experimental and control groups for the technical performance of the 100-meter hurdles run for female students. 2) There will be statistically significant differences between the results of the post-tests of the experimental and control groups in learning the technical performance of the 100-meter hurdles run for female students.

2. METHODS

2.1. Design and participants

The design of this study was experimental, with pre-test and post-test, and with a control group and an experimental group. The study was carried out from 14/12/2020 to 18/01/2021, in the running track of the College of Physical Education and Sports Sciences of the University of Baghdad.

The participants of this study were female students of the second year of the College of Physical Education and Sports Sciences of the University of Baghdad, in the academic year 2020-2021. The section studied consisted of 31 female students, 7 of whom were excluded due to repeated absences during the educational program, so that the final sample consisted of 24 female students. They were divided into two groups (experimental group and control group), each group containing 12 female students. Table 1 shows that the sample was homogenous, and Table 2 shows that the control and experimental groups were equivalent.

Table 1. Homogeneity of the research sample

Variables	Units	Mean	Median	SD	Skewness
Height	Meter	159.81	159.90	1.623	0.326
Weight	Kg	59.71	59.50	1.2407	0.654
Age	Year	19.65	19.55	0.4013	0.412

Table 2. Equivalence of the control and experimental groups in the physical test under study

Physical test	Units	Experimental group		Control group		t value	Standard error	Statistical significance
		Mean	SD	Mean	SD			
Vertical jump test (Sargent Jump Test)	Cm	15.42	0.914	16.02	1.223	1.304	0.924	No sig.

2.2. Instruments and procedures

The materials used in this research were 14 plastic barriers with a height of 50 cm, 12 plastic barriers with a height of 30 cm, 12 legal barriers, 12 small sticks with a height of 30 cm, a video recording command, and 4 CDs.

The performance evaluation test, which is generally used to measure the degree of learning for female students, is based on the grades given by specialized effectiveness assessors for each student. The maximum possible score was 10 and the minimum possible score was 0.

The researchers divided the evaluation into two parts, according to what most of the specialists and teachers agree for athletics activities. Each student is recorded on video individually. The video at normal and slow speed is evaluated by the assessors.

The first part is the evaluation of the technical performance of the test of crossing the barrier step, which consists of running from a standing position for a distance of 8 metres and crossing the first barrier only, at a height of 76 cm. The barrier step contains three stages: getting up before the barrier, flying and crossing the barrier, and landing after the barrier. The score goes from 0 to 10. Three attempts are given to the student, and the best result is chosen.

The second part is the evaluation of the technical performance of the 100-meter hurdles run, which consists of running from the legal starting line to the finish line and passing 10 hurdles at legal distances and at a height of 76 cm. Three aspects are evaluated: running from the starting line until the first hurdle, crossing the hurdles, and running between the hurdles. The score goes from 0 to 10. Two attempts are given to the student, and the best result is chosen.

The intervention program used the flipped classroom learning method in the experimental group, while the control group received the usual method of real-time explanation. The flipped classroom learning method is a very effective learning method that reduces physical fatigue of the teacher. The technical performance is presented by a person who specializes in the activity or the game and is also of an appropriate age, for example the female student who is the best performing 100 metres hurdles. The idea of preparing the learning process in this way, in general, is summarized as follows (Al-Kahili, 2015):

1. The teacher must prepare special videos for each exercise of the educational program.
2. The teacher must prepare printed papers containing instructions for performing each exercise in a very brief manner, in addition to the common mistakes that the learner can make.
3. The motor performance of each exercise is photographed separately and individually.
4. The teacher connects with the students through one group in one of the social media, and send them the instructions one or two days before the date of the lesson.

5. At the time of the lesson and after the preparatory section, the teacher asks some questions to the students about the videos and common mistakes. Then the students begin to apply the exercises directly and work to reach the largest number of repetitions.

The duration of the intervention program was 16 hours, with a total of 8 teaching units of 2 hours, implemented during a period of 4 weeks, at a rate of 2 educational units per week. The first unit was implemented on 21/12/2020 and the last unit on 15/01/2021.

Before the intervention program, on 14/12/2020, the researchers conducted an exploratory experiment on another section of the second year, which numbered 27 students. The aim of this exploratory experiment was to identify the extent to which the students watch the videos, as well as the extent to which they understand the instructions and common errors (Caliph & Al-Din Muhammad, 2015). The pre-tests were carried out on 18/12/2020 and the post-tests on 18/01/2021.

2.3. Statistical analyses

The Statistical Package for the Social Sciences (SPSS), version 24, was used to analyze the data, through means, standard deviations, coefficient of skewness, and t-tests. The significance level was $p<0.05$.

3. RESULTS AND DISCUSSION

Table 3 presents the differences between the post-tests of the experimental group and the control group. The results of the experimental group were significantly better than the results of the control group ($p<0.05$), both in the technical performance of crossing the barrier and in the overall performance of 100m hurdles.

Table 3. Differences between the post-tests of the experimental group and the control group

Tests	Units	N	Experimental group		Control group		t value	Standard error	Statistical significance
			Mean	SD	Mean	SD			
Technical performance of crossing the barrier	Score	12	7.50	0.529	5.75	0.622	7.113	0.002	Sig.
Run 100m hurdles	Score	12	6.80	0.713	4.80	0.421	8.032	0.001	Sig.

The results obtained in this research indicate a clear superiority of the group that participated on learning in the flipped classroom style that the researchers used to teach the 100-meter hurdles running event, which is one of the most difficult activities of the athletics lesson and can even be

classified as one of the most difficult motor skills and games in physical education (El Sherman, 2015). This confirms the effectiveness of the flipped classroom strategy to reach the highest levels of learning, as the concept of reflexive learning ensures optimal learning during the lesson (Jaber, 1999; Marzano, 1998; Muhammad, 2018).

Therefore, flipped classroom style is very effective increasing the speed of learning motor skills. In addition, it is possible for the students to watch the educational videos many times and to watch them in slow motion, which clarifies many things and details of the movements. With this methodology the student is exposed to the study material outside the classroom, with an educational video that the teacher records to explain a particular lesson or with readings related to the topic of the lesson (Salah, Samir, & Gabr, 2018).

The results of this study indicates a high degree of communication, interdependence and relationship between the teacher and the students, and this is one of the most important features of the learning strategy in this method. Also, the flipped classroom style creates an environment of cooperation between students within the lesson, and the students can re-watch the lesson more than once, especially since there are students who feel embarrassed by asking the teacher to repeat it more than once (Brume, 2013; Nagel, 2013).

4. CONCLUSIONS

In conclusion, the flipped classroom learning strategy significantly improved the technical performance of 100 metres hurdles in female university students. Also, this learning strategy helped the students to reduce fear and hesitation when performing the 100 metres hurdles. Considering the results of this study, the authors recommend to use the flipped classroom strategy to teach all difficult activities in the lessons of physical education.

5. REFERENCES

1. Al Hussein Khalil, I. B. (2015). *The effect of using the flipped classroom strategy in developing some components of self-organized learning and the attitude toward the subject among sixth-grade students*. Learning Management in Dubaya.
2. Al-Kahili, I. S. (2015). *The Effectiveness of Flipped Classrooms in Learning.* Al-Madinah Al-Munawwarah, Dar Al-Zaman Library.
3. Brume, C. (2013). *Flipping the classroom*. Vanderbilt University for Teaching.
4. Caliph, H. J., & Al-Din Muhammad, M. Z. (2015). *Effective Teaching Strategies.* Al-Mutanabbi Library.
5. El Sherman, A. (2015). *Blended and Flipped Learning.* Amman Dar Al Masirah.
6. Jaber, A. H. (1999). *Teaching and Learning Strategies.* Cairo, Arab Thought House for Printing and Publishing.

7. Marzano, M. (1998). *Dimensions of Learning - Teacher's Guide*. Cairo, Dar Qubaa for Printing, Publishing and Distribution.
8. Muhammad, H. I. (2018). *The effect of the inverted learning strategy on the university compatibility of female students and the performance of the kinetic formation with the ball in the rhythmic gymnastics.* Master's thesis.
9. Nagel, D. (2013). *Report: The 4 pillars of the flipped classroom.* The Journal: Transforming Education Through Technology.
10. Salah, W., Samir, L., & Gabr, M. S. (2018). *Learning styles and its applications between the teacher and the learner*. Babel.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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