The Effect of Inverted Education on Diving And Handstand Skills on The Ground Mat

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ABSTRACT
Objective: This study evaluates the efficacy of the flipped learning technique within the flipped classroom framework in improving diving and handstand skills in third-year female students at the Faculty of Physical Education and Sports Sciences. Its goal is to determine whether this novel educational model improves skill acquisition more than traditional teaching methods.
Methodology: To compare flipped learning to traditional training, an experimental approach with pre- and post-tests was used. The project began with assessments and a survey to identify research challenges and improve methods. The experimental group received instructional films to help them learn new topics at home, whereas the control group received in-class teaching. Both groups had equal ability evaluations before and after the intervention.
Findings: Both experimental and control groups increased their diving and handstand skills. However, the experimental group, which used flipped learning, outperformed the control group.
Originality/Value: Flipped learning may be a better way to teach physical education. This study promotes new teaching methods and reduces gaps in sports sciences education by connecting with the Sustainable Development Goals.

Keywords: Flipped Learning, Diving, Handstand, Flipped Classroom, Physical education, Instructional videos

1. INTRODUCTION

The management of education has been significantly changed by the integration of the Internet into educational processes, which has transformed teaching methods and student-teacher interactions. The Internet's revolutionary impact on education is demonstrated by innovations such as online learning, learning management systems, blended learning, and reflective learning. Reflective learning, in particular, has emerged as a consequence of the advent of new tools and capabilities and the advancements in educational technology rather than from pre-existing theories or research.
The principles of traditional and active learning theories are integrated in a reflective learning environment. The fundamental idea of reflective learning is to reverse the conventional educational process: rather than receiving new information and concepts in class and completing assignments at home, learners interact with new material at home through videos created by teachers using a variety of assistance programs. Learners can replay these videos multiple times to gain a full grasp of the content as they are shared through multimedia platforms or social networks.
By prioritizing practical approaches over academic approaches, students' learning experiences may be enhanced. This strategy is most valuable in careers and sports. Educators must use current techniques and approaches rather than old traditional routine methods to increase the efficiency of learning.
The researchers, who were instructors of artistic gymnastics, endeavored to integrate reflective learning into the educational process in order to diverge from conventional teaching methods. This method allows students to develop their diving and handstand abilities autonomously. As a result, the researchers sought to determine whether learners could effectively employ the inverted classroom model to acquire these skills. This study investigates the influence of reflective learning on the development of diving and handstand abilities on the ground mat [1].
The following primary concerns are the focus of the current study:

1. Do the skills of dropping on the ground mat of movements change as a result of flipped education?
2. What is the impact of flipped education on the ability to perform a handstand on a floor mat?

1.1. Study Objectives

In order to evaluate the impact of a reflective education program on the diving and handstand abilities of third-year students in the College of Physical Education and Sports Sciences for Girls at the University of Baghdad.

1.2. Research Hypotheses

The pre-and post-test results of the research groups indicate a statistically significant difference.

2. METHODOLOGY

The researcher determines the most suitable method to resolve the issue based on the character of the problem. "The researcher has the choice of research designs, methods of observation, methods of measurement, and types of analysis" [2]. To ascertain the influence of the dependent variable on the independent variable, a pre-and post-test experimental design was implemented for both the control and experimental groups [3].

2.1. Research Community and Sample

The research community was composed of third-year students from the Faculty of Physical Education and Sports Sciences for Girls at the University of Baghdad, who were randomly selected from a specific age group. Experimental and control groups were distributed at random to one division and the other. Similarity analyses were not conducted as a result of the advanced performance stage. The research sample consisted of two students per group, who were randomly selected. Students who could not maintain regular attendance or practice in gymnastics were removed [4]. **(Table 1)**

Table 1. The population and the sample

Grades	Total	People	No. of female students	Exclusions	Research samples	percentage
Third stage	Officer	A	28	8	20	18.5
	Experimemtal	D	89	9	20	
	The rest of the people	B-C	51	No	-	

To establish equivalence, a t-test was conducted on the samples that were anticipating diving and handstand abilities on the ground carpet movements of the two groups to begin from a single starting point [5]. The equivalence of the experimental and control groups in the pre-test of the two skills is illustrated in **Table 2**.

Table 2. The equivalence of the experimental and control groups in the pre-test of the two skills

Skills	Unit of measurements	Calculated value	T-statistical significance	The Real Significance
Dives	Degree	0.485	0.621	Random
Handstand	Degree	0.452	0.720	Random

2.2. Steps to perform the research

1. Preparation of Reflexive Class: Explanatory videos were created for the participants to study at home, covering the skills of diving and handstands. These videos provided exercises and a detailed explanation of the skills, eventually progressing to the full skill and its associated exercises.
2. Assessment of Skill Performance: Four artistic gymnastics experts assessed the diving and handstand performances on a scale of 10 points. The final score was determined by averaging the remaining scores, with the highest and lowest scores being discarded [4, 6]. (Figure 1)

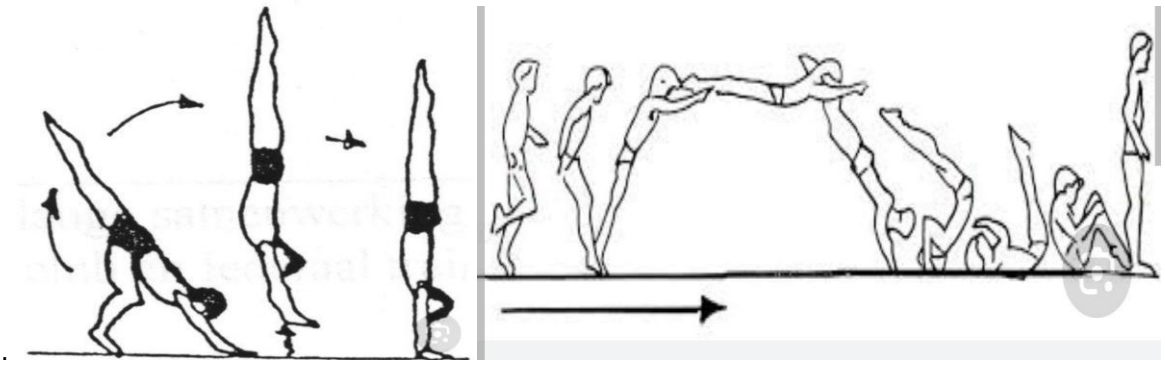

Figure 1. Artistic gymnastics experts assessed the diving and handstand performances

2.3. Exploratory experiment

In order to get smooth results, exploratory research was conducted, which is important because operation and research are both dependent on this step [7]. Features like identification of potential problems, the verification that the questionnaire is appropriate for the sample, the testing of the safety and effectiveness of the instruments, and the assistance of staff are all easier to carry [3, 8]. The experiment was carried out on 15th March 2023 with a sample of 10 students in the third year who were a different sample from the main research sample.

2.4. Pre-Test

A pre-test for diving and handstand skills was conducted in the gymnastics hall of the College of Physical Education and Sports Sciences for Girls at the University of Baghdad. The evaluations were conducted to verify the learners' abilities. They were put through the exam in order to determine their capabilities.

2.5. The main experiment

Eight educational modules of each ability, lasting sixty minutes, were implemented over eight weeks. The experimental group participated in traditional class discussions; however, the control group developed their skills through video-based learning and discussion.

2.6. Post-test

After the educational units were completed, both the control group and the experimental group were administered a post-test. The post-test was carried out in the gymnastics hall at the College of Physical Education and Sports Sciences for Girls at the University of Baghdad, in the same settings as the pre-test [9].

2.7. Statistical Processing

The research findings were extracted by processing the data using SPSS software and applying relevant statistical procedures [10].

3. RESULTS AND DISCUSSION

Tables 3 and 4 show the arithmetic media, standard deviations, and significant differences of the pre-and post-test for the experimental and control groups. For the purpose of knowing the differences between the two tests.

Table 3. Pre-test and Post-test Results for Experimental Group

Variables	Experimental		Adjuster		T value Calculated	Sig	troupes
	Going to	+-p	Going to	+-p			
Dives	8.052	0.498	6.601	0.813	4.827	0.000	Moral
Handstand	8.153	0.476	6.357	0.415	9.064	0.000	Moral

Moral < = (0.05) at 18 degrees of freedom

Table 4. Pre-test and Post-test Results for Control Group

Variables	Totals	Pre-test		Post-Test		T value Calculated	Sig	troupes
		Going to		+-p				
Dives	Experimental	8.052	0.498	6.601	0.813	4.827	0.000	Moral

Handstand	Experimental	8.153	0.476	6.357	0.415	9.064	0.000	Moral

Tables 3 and 4 show statistical differences between the pre-and post-tests of the two research groups. The value of statistical significance for each level (0.005) for the two skills indicates that the two groups learned the two skills (diving and handstand).
To identify significant differences between experimental and control post-tests, the researchers used the (t-test) test for the unexpected samples, as in **Table 4.**

Table 5. Comparative Pre-test and Post-test Results for Experimental and Control Groups

Variables	**Totals**	**Pre-test**		**Post-Test**		**T value Calculated**	**Sig**	**troupes**
		Going to		+-p				
dives	Adjuster	8.052	0.498	6.601	0.813	4.827	0.000	Moral
Handstand	Adjuster	8.153	0.476	6.357	0.415	9.064	0.000	Moral

Moral < (0.05)

Tables 3, 4, and 5 show that the pre-and post-tests for both research groups, as well as the experimental and control groups in the post-tests, demonstrate statistically significant differences. It is obvious that the ground mat effectively facilitated the learning of the skills of diving and handstands by both groups. Both groups' superior performance can be attributed to the efficacy of the flipped classroom approach for the experimental group and the traditional teaching methods used in the control group.
According to the researchers, the experimental group's remarkable performance compared to the control group is due to the instructional videos and the modified classroom. To attain the appropriate level of performance for the experimental group, these videos provided them with a great deal of opportunities and time. The learners' attention was captured, their senses were engaged, and they were encouraged to participate in goal-setting and problem-solving activities thanks to the inverted classroom, which established an educational atmosphere that was engaging from the beginning [11].
With the help of the videos, the development of diving and handstand abilities was further assisted by the passion and inspiration that was inspired by the videos. Students were able to improve their physical perception through the utilization of these movies, which enabled them to comprehend and rely on the appropriate movement patterns. This was accomplished by seeing and following the artistic performance through the video model, in addition to receiving explanations related to the performance. As a result of their physical perception, students are able to develop distinct mental representations of their abilities, which is a key component of the learning process for skills themselves [12].
The flipped classroom method, which produced a learning environment that was both engaging and suspenseful, encouraged a sense of rivalry and mutual benefit among the students. As a result, the students were highly motivated during the semester. The enhanced performance of the students was a clear indication of the interactive character of the flipped classroom as well as its utility in directing behavior toward effective learning, improving attention, and employing feedback to fix performance faults and motor pathways. Continuous performance evaluation also offered a clear knowledge of the progress that each student was making in the learning of the two abilities that were the focus of the study. Hence, the control groups' remarkable achievement and their consistency must be appreciated. The traditional method's structured and systematic approach also contributed to the control group's improvement.

4. CONCLUSION

The researchers determined that the learning of diving and handstand skills on the floor mat was positively influenced by both the traditional method and the reversed classroom approach after analyzing and discussing the results. It should be noted, however, that the magnitude of this influence varied between the two groups. When compared to the control group, which showed only moderate progress, the experimental group's learning outcomes were dramatically improved by the flipped learning strategy, which made use of virtual classrooms. This resulted in a better degree of skill acquisition for the experimental group.
In the experimental group, the execution of flipped classrooms and inverted education approaches significantly boosted the students' interest and enthusiasm for learning and performing the abilities being investigated. As a result of this increased level of engaged participation, the experimental group finally achieved a higher level of performance than the control group. In light of the data, it appears that the researchers' implementation of the flipped learning technique has a significant and favorable impact on the learning process.

Based on these findings, the researchers suggest that the flipped learning technique be utilized indefinitely because it has been shown to be beneficial. Furthermore, the implementation of flipped classrooms in the instruction of other artistic gymnastics abilities is strongly encouraged. This is because it offers a variety of learning methods that have the potential to boost students' interest and participation in the learning process.

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