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The effect of an educational curriculum based on driver's model on learning the stages of technical performance and achieving shot put performance for students

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Abstract

Through the researcher's experience in the field of track and field as a lecturer in the College of Physical Education and Sports Sciences, in addition to her review of research, theses, dissertations, and some scientific sources, she noticed the limited use of active educational models in physical education classes in Iraqi universities. These universities relied on traditional models and methods that do not make the student a part or a focal point of the educational process. Furthermore, the researcher observed some students' reluctance to perform the technical stages of shot put. Learning and achieving performance in shot put depends on the extent to which performance-enhancing methods and techniques in sports activities influence reaching the required level of performance. Therefore, educational models, including Driver's model, are considered key aspects in the success of educational programs. Through our observation of professors' teaching methods for academic subjects according to the curriculum, some of them lack modern models. Thus, the researcher decided to use an educational curriculum based on Driver's model in learning the stages of technical performance and achieving shot put performance for students. The research aimed to:

1. Prepare an educational curriculum according to (Driver's model) for learning the stages of technical performance and achieving shot put performance for students.
2. Identify the effect of the curriculum according to (Driver's model) on learning the stages of technical performance and achieving shot put performance for students.

The most important conclusions were

1. Driver's model contributed to learning the stages of technical performance and achieving shot put performance for students.
2. The exercises used by the teacher helped in learning the stages of technical performance and achieving shot put performance for students.
3. The superiority of Driver's model contributed to learning the stages of technical performance and achieving shot put performance for students.

Keywords: Educational curriculum, driver's model, technical performance, shot put performance

1. Introduction

One of the manifestations witnessed in developed countries is the application of effective learning theories and the continuous and remarkable development in the educational system in general, and in teaching sports skills in schools in particular. This is due to these countries' reliance on effective curricula and models, which has increased achievement rates and elevated scientific and athletic levels. Many scientists and specialists in motor learning and teaching methods, through reviewing research and studies, have agreed that learners do not respond to the learning process in a single way or style, and that it is necessary to use diverse and effective educational models or strategies to build and develop their cognitive, intellectual, physical, and motor abilities. This is based on the premise that educational scientific institutions are among the most important pillars on which the state relies in building a correct and cohesive society, and that these institutions have a significant and influential role in

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nurturing individuals and developing all values and principles within them. Thus, it has become necessary to attempt to apply these active models with the adopted teaching methods that are limited to acquiring information and storing it in the minds of learners.

The technical stages of shot put performance are important and difficult stages for many students. Therefore, it is necessary to use a model to introduce students to each stage of the technical stages of the activity, including Driver's model. The basis on which sports activities are built is learning the skills for each activity and attempting to achieve the best performance and develop motor performance. The field of motor learning has witnessed significant development in order to prepare educational situations in a way that stimulates learners' motivations and achieves the goal of the educational process. The learning process relies on an important means of transferring information and knowledge from the teacher to the student, and this means is the learning method. The more appropriate the method, the better, faster, and with less effort the learning process occurs. More effective educational models can be employed and applied to enable learners to reach the best levels of performance. These models make the learner a focal point of the educational process and help them understand themselves, make decisions, and utilize their energies to achieve interaction with others in how to choose the appropriate method and style for performance. This is because educational models according to the constructivist theory are a guiding plan that proposes, based on a specific learning theory, a set of predetermined outcomes that facilitate the coach's planning of their activities at the level of objectives, implementation, and evaluation. The educational model usually contains principles or foundations for an organized set of steps, whether they are (actions and behaviors) that the teacher and learner should perform, in addition to a description of the necessary supporting systems and methods for evaluating and developing the learner. The importance of the research lies in using an educational curriculum based on Driver's model in learning the stages of technical performance and achieving shot put performance for students. According to the researcher's knowledge, Driver's model will be applied for the first time in physical education classes for students.

1.1 Research Problem

Through the researcher's experience in the field of track and field as a lecturer in the College of Physical Education and Sports Sciences, in addition to her review of research, theses, dissertations, and some scientific sources, she noticed the limited use of active educational models in physical education classes in Iraqi universities. These universities relied on traditional models and methods that do not make the student a part or a focal point of the educational process. Furthermore, the researcher observed some students' reluctance to perform the technical stages of shot put. Learning and achieving performance in shot put depends on the extent to which performance-enhancing methods and techniques in sports activities influence reaching the required level of performance. Therefore, educational models, including Driver's model, are considered key aspects in the success of educational programs. Through our observation of professors' teaching methods for academic subjects according to the curriculum, some of them lack modern models. Thus, the researcher decided to use an educational curriculum based on Driver's model in learning the stages of technical performance and achieving shot put performance for students.

1.2 Research Objectives

1. Prepare an educational curriculum according to (Driver's model) for learning the stages of technical performance and achieving shot put performance for students.
2. Identify the effect of the curriculum according to (Driver's model) on learning the stages of technical performance and achieving shot put performance for students.

1.3 Research Hypothesis

1. Driver's model has a positive effect on learning the stages of technical performance and achieving shot put performance for students.

1.4 Research Scope

- **Human Scope:** First-year students at the University of Babylon for the academic year 2024-2025.
- **Time Scope:** From September 16, 2024, to January 10, 2025.
- **Spatial Scope:** The track and field stadium at the University of Babylon.

2. Research Methodology and Field Procedures

2.1 Research Methodology

The researcher used the experimental method with a two-group design (control and experimental).

2.2 Research Population and Sample

The research population was randomly selected from first-year students at the College of Physical Education and Sports Sciences at the University of Babylon for the academic year 2024-2025, totaling 127 students. The research sample consisted of 30 students, randomly selected and divided into two groups.

2.3 Information Collection Tools, Devices, and Equipment Used

2.3.1 Information Collection Tools

- Arabic and foreign sources.
- Observation and experimentation.
- Personal interviews.
- Tests and measurements.
- Questionnaire form.

2.3.2 Devices and Equipment Used in the Research

- HP laptop.
- Device for measuring height and mass.
- Sanyo M7 video camera (Japanese-made) for filming with a projector.
- Various measuring tools.
- Shot puts of different weights.

3 Measuring the Level of Motor Performance for Shot Put Activity

The researcher analyzed the content of scientific sources in her field of research, namely (Al-Rabdi, 1998) and (Sarih Abdel Karim, 2010), to prepare a questionnaire form in which the motor stages of shot put skill were divided. This form was presented to a number of experts and specialists in the field of athletics to ensure its validity, with the aim of assigning a score to each section of the skill, and distributing the score of each section among its items according to the method of parts of the activity, provided that the score for each section is (10 points) for evaluating technical performance by the esteemed

arbitrators in the pre- and post-tests. The evaluation of each movement according to a specific score expresses whether the performance has improved or not. Accordingly, the technical performance stages of shot put skill were divided into:

- Grip
- Stance
- Glide
- Power Position
- Release
- Reverse
- Balance

3.1 Method for Identifying Difficult Parts in Learning Technical Performance in Shot Put Activity for Students

In light of the analysis of scientific references, namely (Al-Rabdi, 1998), (Carl: 1976), and (Hussein *et al.*, 1990), and based on the sections of the apparent structure of the activity, the shot put skill was divided as follows:

1. Preparatory Section: a. Grip b. Initial Position (Stance) c. Coiling Phase
2. Main Section: a. Glide (Backward) b. Shot Put (Drive) c. Release (Launch)
3. Concluding Section: Reverse and Balance:

The researcher prepared a questionnaire for this purpose and presented it to experts and specialists in the field of track and field to determine the values of the difficult parts and assign a score to each part according to its difficulty. The results that obtained 75% or more of the opinions of experts and specialists were relied upon. The sequence of identifying difficult parts in learning technical performance according to the method of difficult parts in shot put activity was as follows. The sequence of difficulty level was as follows:

1. Release (Launch)
2. Shot Put (Drive)
3. Glide
4. Coiling Phase
5. Grip
6. Stance
7. Reverse
8. Balance

3.2 Field Research Procedures

3.2.1 Pilot Study

The researcher conducted a pilot study on 10 students on September 22, 2024, to control the factors affecting the filming of motor (technical) performance. After 5 days, the experiment was re-conducted on September 27, 2024, with the aim of:

1. Ensuring the validity of the equipment and tools used.
2. Ensuring the research team's understanding of conducting tests and measurements.
3. Ensuring the ease of applying tests and their suitability for the sample's level.

4. Identifying potential obstacles and avoiding errors and interference in the work.
5. Calculating the time required to perform the tests.
6. Camera height.
7. Camera angle.
8. Camera distance from the shot put circle.

3.3 Scientific Foundations for Tests

3.3.1 Test Validity

The researcher presented the skill tests under study to experts and specialists to ensure the validity of these tests. Thus, the true scores of the tests are the criterion to which validity is attributed ^[1].

3.3.2 Test Reliability

This term refers to the application of the test such that if the test is repeated once or more on the same sample after a time interval, with the same specifications and under the same conditions, the same result or a close result is obtained ^[1]. To calculate the reliability coefficient of the tests, the researcher used the retest method, with a time difference of 5 days, the test was re-administered to the same sample and under the same conditions. The data obtained from the results of the two tests were statistically processed by calculating Pearson's simple correlation coefficient, which was 0.91.

3.3.2 Test Objectivity

One of the important conditions that a good test must meet is objectivity, which means that the test results or measurements are not affected by the subjective factors of the corrector, such as their mood and relative judgment ^[1]. The researcher used evaluators who are experienced and scientifically specialized professors, and the data was processed by calculating Pearson's simple correlation coefficient, which was 0.95.

3.7 Pre-tests

The researcher conducted the pre-tests on September 30, 2024, at 9:00 AM at the track and field stadium for the shot put activity for the research sample.

3.7.1 Homogeneity and Equivalence of Research Groups

Table (1): Distribution of Sample Individuals Normally in Some Anthropometric Variables

Variables	Mean	Standard Deviation	Median	Skewness Coefficient
Age (years)	19.60	0.26	19	0.022
Height (m)	1.71	0.67	1.71	-0.607
Mass (kg)	71.31	10.81	69	0.484

From Table (1), we observe that all skewness values were between ± 1 , which means that the sample individuals are normally distributed.

Table 2: Equivalence of the Two Groups in Performance Evaluation Scores for Shot Put Motor Stages

No.	Stages	Control Group (Mean)	Control Group (SD)	Experimental Group (Mean)	Experimental Group (SD)	Calculated t-value	Sig.	Significance
1	Grip Stage	1.5	0.4	1.35	0.35	0.79	0.184	Random
2	Stance Stage	1.35	0.5	1.55	0.4	0.54	0.273	Random
3	Coiling Stage	1.4	0.61	1.45	0.6	0.74	0.117	Random
4	Glide Stage	1.35	0.3	1.50	0.7	0.42	0.173	Random
5	Power Position	1.75	0.62	1.5	0.8	0.38	0.209	Random
6	Release Stage	1.55	0.55	1.30	0.66	0.71	0.300	Random
7	Reverse Stage	1.6	0.3	1.4	0.7	0.92	0.231	Random
8	Balance Stage	1.5	0.6	1.35	0.6	0.61	0.413	Random
9	Achievement	5.27	1.36	5.12	1.48	0.30	0.151	Random

From Table (2), we observe that the calculated t-values were greater than 0.05, which indicates random differences between all variables, meaning that the two groups are equivalent.

3.8 Educational Curriculum with Driver's Model

The control group's curriculum was followed according to the method used by the subject teacher after defining and standardizing the investigated skills for both the control and experimental groups. An educational curriculum was prepared for the experimental group that applied Driver's model, for the period from October 2, 2024, to December 4, 2024. The application of this curriculum lasted for eight weeks, with two educational units per week, and the duration of each educational unit was 90 minutes, as explained below:

3.8.1 Control Group Curriculum

This group practiced the curriculum prepared for the first semester of the academic year 2024-2025.

3.8.2 Experimental Group Curriculum

The researcher prepared an educational curriculum according to Driver's model, whose steps were applied in the main section of the educational unit according to the following steps for the educational unit:

First: Preparatory Section (General and Specific Warm-up) (15 minutes).

Second: Main Section (65 minutes): The curriculum of this model was introduced in the educational and practical part of the unit according to the following steps:

1. Orientation step.
2. Elicitation of ideas step.
3. Restructuring of ideas step.
4. Application of ideas step.
5. Review of change in ideas step.
 - Educational Part (15 minutes):
 - Practical Part (50 minutes):
 - Third: Final Section (10 minutes).

3.9 Post-tests

The researcher conducted the post-tests for the sample on December 5, 2024, under the same conditions as the pre-tests, with the assistance of the research team.

3.9.1 Statistical Methods

The researcher used the statistical package (SPSS) for statistical data processing, most importantly:

1. Mean.
2. Standard Deviation.
3. Median.
4. Skewness Coefficient.
5. t-test for independent samples.
6. Pearson Correlation Coefficient.
7. t-test for paired samples.

4. Presentation and Discussion of Results

4.1 Presentation of Learning Level Results Between Pre- and Post-tests for the Control Group

Table 3: Results of the Control Group

No.	Stages	Pre-test (Mean)	Pre-test (SD)	Post-test (Mean)	Post-test (SD)	Calculated t-value	Sig.	Significance
1	Grip Stage	1.5	0.4	2.75	0.56	2.03	0.000	Significant
2	Stance Stage	1.35	0.5	2.65	0.32	2.11	0.000	Significant
3	Coiling Stage	1.4	0.61	2.71	0.71	2.07	0.000	Significant
4	Glide Stage	1.35	0.3	3.11	0.91	3.21	0.000	Significant
5	Power Position	1.75	0.62	2.8	0.67	1.97	0.002	Significant
6	Release Stage	1.55	0.55	2.65	0.45	2.15	0.000	Significant
7	Reverse Stage	1.6	0.3	2.8	0.07	2.19	0.000	Significant
8	Balance Stage	1.5	0.6	2.6	0.34	2.01	0.000	Significant
9	Achievement	5.27	1.36	7.73	1.22	2.40	0.000	Significant

The table above shows that the differences were in favor of the post-test in the control group, being significant at a significance level of (0.000) for all tests.

4.2 Presentation of Learning Level Results Between Pre- and Post-tests for the Experimental Group

Table 4: Results of the Experimental Group

No.	Stages	Pre-test (Mean)	Pre-test (SD)	Post-test (Mean)	Post-test (SD)	Calculated t-value	Sig.	Significance
1	Grip Stage	1.35	0.35	4.35	0.61	4.48	0.000	Significant
2	Stance Stage	1.55	0.4	5.45	0.72	4.71	0.000	Significant
3	Coiling Stage	1.45	0.6	5.29	0.95	4.18	0.000	Significant
4	Glide Stage	1.50	0.7	5.88	0.25	5.02	0.000	Significant
5	Power Position	1.5	0.8	6.76	0.47	6.73	0.000	Significant
6	Release Stage	1.30	0.66	5.58	0.69	5.19	0.000	Significant
7	Reverse Stage	1.4	0.7	5.34	0.46	4.88	0.000	Significant
8	Balance Stage	1.35	0.6	6.47	0.28	5.39	0.000	Significant
9	Achievement	5.12	1.48	9.37	1.40	4.94	0.000	Significant

The table above shows that the differences were in favor of the post-test in the experimental group, being significant at a significance level of (0.000) for all tests.

4.3 Presentation of Learning Level Results Between Pre- and Post-tests for the Experimental Group:

Table 5: Results of the Experimental and Control Groups

No.	Stages	Control Group (Mean)	Control Group (SD)	Experimental Group (Mean)	Experimental Group (SD)	Calculated t-value	Sig.	Significance
1	Grip Stage	2.75	0.56	4.35	0.61	3.31	0.000	Significant
2	Stance Stage	2.65	0.32	5.45	0.72	3.44	0.000	Significant
3	Coiling Stage	2.71	0.71	5.29	0.95	3.18	0.000	Significant
4	Glide Stage	3.11	0.91	5.88	0.25	2.94	0.000	Significant
5	Power Position	2.8	0.67	6.76	0.47	4.69	0.000	Significant
6	Release Stage	2.65	0.45	5.58	0.69	3.81	0.000	Significant
7	Reverse Stage	2.8	0.07	5.34	0.46	2.94	0.000	Significant
8	Balance Stage	2.6	0.34	6.47	0.28	3.91	0.000	Significant
9	Achievement	7.73	1.22					

The table above shows that the differences were in favor of the post-tests, being significant at a significance level of (0.000) for all tests and in favor of the experimental group.

4.4 Discussion of Results

Through the presentation and analysis of the test results, it was shown that there are significant differences in favor of the post-tests for both the experimental and control groups. The researcher attributes the differences shown in the results in favor of the post-tests of the control group to the educational curriculum prepared by the teacher, due to the application of the educational units by the subject teacher using the traditional method, with sufficient attention given by the physical education teacher to the research sample for the activity, which yielded positive results in the post-tests. This is in addition to the educational units during the research application period for this group containing exercises with an educational and practical nature that work to apply the technical stages positively as a result of using varying methods in developing the activity, in proportion to the students' abilities and capabilities. The researcher attributes this superiority and advantage of the experimental group to the application of the educational curriculum of Driver's model due to its suitability in terms of organization and presentation for this group, as it is one of the effective educational methods. This type of model increases students' interest and keeps their attention for a longer period, given their engagement with the assigned tasks during the educational unit and their interaction with them, as active learning methods aim to teach the learner how to learn? How to think? And how to participate effectively? Through its strategies, which make learners more effective and develop new skills that help them adapt to new developments, and through which they transform from a passive state to an active dynamic state, which helps in acquiring educational experiences effectively ^[1]. The reasons for the experimental group's superiority over the control group are through the effective steps of this model, which include preparing students' minds and attracting their attention and curiosity in the first step of this model in orientation by presenting activities or models about the content or topic to direct their thoughts towards it, and preparing the scientific information they already possess or that has aroused their interest and motivating them to think and accept what is presented with eagerness and enthusiasm, i.e., a brief orientation to introduce students to what they will learn. This is what some studies have indicated makes students capable of acquiring specific skills, knowledge, and attitudes, and it is learning that learners enjoy immersing themselves in, thus transforming the educational process into an enjoyable partnership between students ^[2]. Through observing the tables, it was noted that the experimental group that used Driver's model achieved the

highest results in the post-tests they acquired through motor imagery, as practical performance is nothing but the application of knowledge and information. Schmidt (1991) emphasizes that learning is a crucial state of our existence and results from the interaction between experience and definition, and that the ways in which individuals learn are their ability and capacity to acquire new knowledge and skills that lead us to a strong and enjoyable state of learning ^[1]. Wajih Mahjoub (2002) also emphasizes that learning is a set of processes related to practice and experience that lead to relatively stable changes in skilled, accurate behavior ^[2]. As for Yaarob Khayoun (2002), he emphasizes that students' application of educational and practical units for the skills under study is a result of repetition and training, not a result of maturity or motivation, and this result is natural for the development in performance ^[3]. The stages of this model emphasized giving students the opportunity to encourage them to interpret a phenomenon or conduct an experiment independently to strengthen their sensory perception, and highlight strengths and weaknesses to create interaction and moral harmony between the learner and the teacher, which will greatly contribute to facilitating the procedures, activities, and objectives to be followed in the next stage by diagnosing students' misconceptions and anticipating the justifications that students may resort to in defending their misconceptions and relying on themselves in self-assessment. Salah Abdel Samie emphasizes that the educational activity performed by the learner, driven by their self-desire, aims to develop their aptitudes and abilities for their inclinations and interests, thereby achieving the development of their personality and its integration and successful interaction with their society by relying on themselves and trusting their abilities in the teaching and learning process ^[4]. Zakia Ibrahim (2007) states that the learner can achieve good performance if knowledge and abilities are consolidated from one lesson to another, and here comes the role of the teacher in presenting them in stages for the purpose of learning the art of performance. The researcher also attributes the superiority of students in the experimental group to the restructuring of their ideas in cooperative groups to clarify and exchange ideas and opinions and conduct activities and experiments, and their awareness of conflicting meanings and their conceptual errors and their acceptance of abandoning and changing them. In this stage, students, through presenting concepts, reached the existence of obstacles that caused the creation of a new experience for them through experimentation and conducting activities through which they gradually discover the contradiction between what the student possesses in their cognitive structure and what they have achieved, so they rephrase ideas correctly and each group presents their results as an evaluation of this step. The philosophy of this model, through the application of educational units for its stages, is for

students to rephrase what they hear or discover and compare it with others' results, which leads them to manage their ideas and reflect on them independently, relying on themselves, and improving them to yield fruitful results in improving the technical stages of shot put theoretically and practically. Ahmed Maher (2007) emphasizes in this regard regarding students' self-learning that the student can learn independently according to their special abilities and teach themselves (independently) through a specially prepared program that allows information to be divided into small parts and arranged logically and behaviorally so that the learner responds to it gradually and immediately confirms the correctness of their response until they finally reach the desired final behavior ^[1]. As for the section on applying and reviewing ideas for this model, the researcher attributes the level of superiority of the experimental group to the construction or formulation of new ideas by using them again in familiar and new situations through students' application of the information they obtained in the previous stage to increase their understanding and clarity, which helped them identify those points that were not well understood. This stage has great psychological importance as it consolidates and reinforces information and prepares it for new learning, which increases students' self-confidence and gives them strength to proceed with further learning. All that is learned at university is merely a means to facilitate practical life and utilize all its potentials. As for reviewing ideas after application.

5. Conclusions and Recommendations

5.1 Conclusions

1. Driver's model contributed to learning the stages of technical performance and achieving shot put performance for students.
2. The exercises used by the teacher helped in learning the stages of technical performance and achieving shot put performance for students.
3. The superiority of Driver's model contributed to learning the stages of technical performance and achieving shot put performance for students.
4. Driver's model contributed to enhancing and activating the role of students by stimulating their motivation towards learning technical stages and achievement.

5.2 Recommendations

1. Adopting the educational curriculum prepared by the researcher using Driver's model due to its role in learning the stages of technical performance and achieving shot put performance for students.
2. The necessity of conducting workshops in the field of specialization and introducing teachers to modern educational models, as this positively reflects on the level of learning and the success of the educational process.
3. The necessity of conducting similar studies using the same model for other activities and games.

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