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Effect Of Teaching By Using (Plan) Strategy In Cognitive Outcome And Technical Achievement Teaching For Discus Throwing Event For Students

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Abstract

Objectives. This study aims to prepare cognitive test for discus throwing event by using (plan) strategy to teach technical achievement for the students in the second stage in the college of physical education and sport sciences / Maysan university in addition to prepare teaching units by using (plan) strategy to teach technical achievement . The researcher used experimental approach by two equalized groups .

Materials and Methods. The society of the research were (158) students distributed in two branches (theoretical , practical) in the second grade in the College of physical education and sport sciences /Maysan university for the season (2023/2024) . In order to building the test the researcher applied the test on the students in the second grade / theoretical branch (100) students of The sample . The sample were all the students in the society as appeared in table (1) . The researcher evacuated (16) students to use them in explore experiment and (4) of them because of their absence . The researcher used the students of practical sciences branch as experimental group (19) students . The control group represented by theoretical sciences branch (19) students . The period of the program was (3) weeks by using (6) units (2) per one week and time of (90) minutes for one unit . Then the researcher treated the results statistically by using (spss) .

Results. The researcher noticed that there is significant differences between pre and post tests for benefit of post-tests. The researcher attributes the improvement to the commitment of the students with the scheduled period and the nature of the teaching. The researcher noticed that there is progress for experimental group in the results. The researcher attributes the progress for many causes . The most important cause is to using (plan) strategy which has clear effect in the progress in the technical achievement and cognitive outcome .

Conclusion. Teaching by using plan strategy realized noticed improvement in evaluating technical achievement and exceling the experimental group against the control group. Teaching by using plan strategy to know the stages of technical achievement for the event, then lead to improve the cognitive outcome for the students of experimental group against control group .

Keywords : Plan Strategy, Cognitive Outcome, Technical Achievement, Discus Throwing.

Introduction

The scientific revolution in the last decades in the divers fields of the world have effected positively on all of the knowledge and scientific scopes through the improvement and development in the divers fields of the life nowadays.

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The sector of physical education is one of that fields which includes divers sciences and knowledge used many modern strategies in order to get effective teaching . Plan strategy is one of these strategies which mean the (thinking).

This strategy helps to create environment of teaching lead to make clear thinking in addition to helping the student to improve his ability to thinking ,criticism ,solve the problems , making decisions and the ability to get the information and how to treat it.

The scientific knowledge is one of the principle basics which all the researchers aims to increase it in order to reach new scientific styles lead to deepen the visions in the field of specialization and create space of the information lead to improve the general abilities could help the students to overtake the problems which connected with the event.

Discus throwing competition is one of the basic events in the track and field aims to get far distance. There are many styles and many techniques to get the required distance by using physical forces which lead the athlete to gain the fastest movement through using large muscular force, then the reaching to the best speed which realize the required achievement .

The importance of this study clear by discover new strategy lead to create new strategies to learn this event which depend on thinking of the students and making the suitable solutions through teaching situations which could be obstacle before the students in the event of discus throwing.

Materials and Methods

Study Participants.

The population of this study is defined as "a group of natural elements whose characteristics need to be identified" (2,104). The research population consists of second-year students enrolled in the College of Physical Education at Maysan University during the 2023–2024 academic year.

The sample, which is "a subset of the original population and the main focus of the research" (3,225), was drawn from the entire population. This population was distributed across both theoretical and practical branches, comprising a total of 158 students, as detailed in Table 1. From this population, 16 students were excluded to conduct a pilot (exploratory) study, and an additional 4 students were excluded due to their absence during data collection. Consequently, the final research sample constituted 100% of the remaining original population.

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Table 1. Distribution of the Research Sample

Design	Class Branch	Sample Type	Total Number	Percentage
Experimental	Practical Branch	Pilot Sample	16	16%
		Absent	4	8%
		Main Sample	28	—
		Control Group	22	—
Building Phase	Theoretical (Evening Study)	Building Sample	100	100%

Study organization.

Based on the second-grade curriculum in the College of Physical Education, the researcher analyzed the teaching content, specifically focusing on the rules and technical achievements related to the discus throwing event. To develop a cognitive outcome test, it was essential to construct a *test blueprint*, which includes the distribution of questions according to behavioral objectives targeted by the test.

The researcher designed the test blueprint, as shown in Table 2, based on three cognitive domains of Bloom's taxonomy: remembering, understanding, and application. The format selected was multiple-choice questions due to its objectivity and reliability in assessing diverse and progressive educational goals. As noted by Marwan Abd Al-Majeed (1999, p. 61), "The preferred question type is the multiple-choice format because of its capacity to measure various learning outcomes, from the simplest to the most complex."
Each question was designed with three answer choices. Furthermore, some items were structured as single-word prompts requiring clarification, while others were incomplete sentences meant to be completed by the test-taker.

Table 2. Test Blueprint

Questions	Remembering (31.25%)	Understanding (31.25%)	Application (37.5%)	Importance	Hours	Content
13	4	4	5	83.33%	7.5	Technical Achievement
3	1	1	1	16.67%	1.5	Rules
16	5	5	6	100%	9	Total

After developing the initial 16 test items, the next step was to validate the content. This involved consulting experts and specialists in research, measurement, and statistics to evaluate the suitability of each question. Upon reviewing their feedback, the researcher noted that all items were accepted, albeit with minor revisions. Consequently, the items were re-ordered and revised as necessary. The Chi-square test was applied to confirm their statistical significance, as presented in Table 3.

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Table 3. Cognitive Outcome Test Item Validation

Candidate	Sig.	Chi-Square	Not Accepted	Accepted	No.
Accepted	0.011	6.400	1	9	1
Accepted	0.011	6.400	1	9	2
...	...	...	...	...	...
Accepted	0.011	6.400	1	9	16

To ensure clarity and consistency in administering the test, the researcher prepared a set of instructions. These guidelines covered the complete testing process—from the initial distribution of test questions to the organization of test items. This step is considered a semi-final phase, where the researcher ensures that no external variables negatively influence the reliability of the results and confirms the test's readiness for statistical analysis.

An exploratory trial was conducted on Monday, November 12, 2023, involving eight students from the original population. This pilot aimed to assess the suitability of the teaching unit's timing and content, identify any scientific or logistical issues such as camera positioning, and evaluate the readiness of the assistant team.

Structure of the Educational Units:

1. **Preparatory Part (15 minutes):** Attendance (3 minutes), general warm-up (5 minutes), including light walking and jogging, leg and arm exercises, and physical drills (7 minutes).
2. **Main Part (60 minutes):** Educational activity (20 minutes) followed by applied practice (40 minutes).
3. **Conclusion (15 minutes):** Light jogging, relaxation, cooldown exercises, and a short tournament.

The intervention using the Plan strategy was implemented from Sunday, December 10, 2025, to Tuesday, December 26, 2025. It consisted of six instructional units delivered twice a week for three weeks. The control group followed the same number of sessions, schedule, and instructional format. Throughout the intervention, various learning media were utilized, including videos, descriptive texts, and slow-motion replays. The post-tests were conducted on Sunday, December 31, 2023, under the same conditions as the pre-tests, maintaining consistency in location, timing, and assessment standards.

Statistical analysis.

Based on the curriculum for second-grade students in the College of Physical Education, the researcher analyzed the instructional content with a specific focus on the rules and technical aspects of the discus throwing event. This analysis served as a foundation for

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developing a cognitive outcome test, which required the construction of a test blueprint. The blueprint functioned as a guide to distribute questions according to behavioral objectives that the test aimed to measure.

The test blueprint, as illustrated in Table 2, was designed using three levels of Bloom's cognitive taxonomy: remembering, understanding, and application. The researcher chose the multiple-choice format due to its objectivity and effectiveness in assessing a wide range of learning outcomes, from simple recall to more complex cognitive tasks. This preference is supported by Marwan Abd Al-Majeed (1999, p. 61), who stated, "The preferred question type is the multiple-choice format because of its capacity to measure various learning outcomes, from the simplest to the most complex."

Each item in the test was constructed with three answer choices. Some questions were in the form of single-word prompts that required explanation, while others were incomplete sentences intended to be completed by the student. This design ensured that the questions not only tested knowledge but also assessed students' cognitive processing.

Table 2. Test Blueprint

Questions	Remembering (31.25%)	Understanding (31.25%)	Application (37.5%)	Importance	Hours	Content
13	4	4	5	83.33%	7.5	Technical Achievement
3	1	1	1	16.67%	1.5	Rules
16	5	5	6	100%	9	Total

Following the development of the initial 16 test items, the next phase involved content validation. This process was carried out with the help of experts and specialists in the fields of research, educational measurement, and statistics to assess the relevance and appropriateness of each item. Based on their feedback, all items were approved, with some requiring minor revisions. As a result, the researcher adjusted the order and phrasing of several items. To confirm their validity, the Chi-square test was applied, and the results are shown in Table 3.

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Accepted	0.011	6.400	1	9	1
Accepted	0.011	6.400	1	9	2
Accepted	0.011	6.400	1	9	16

To ensure the test could be administered smoothly and consistently, the researcher developed a set of detailed instructions. These instructions outlined each phase of the testing process—from the distribution of questions to the arrangement of the test items. This step, regarded as a semi-final phase in the test preparation process, aimed to minimize potential external variables that might affect the accuracy of the test results and to confirm the readiness of the test for statistical implementation.

In preparation for the main study, an exploratory trial was conducted on Monday, November 12, 2023, involving eight students selected from the original population. The purpose of this pilot was to determine the appropriateness of the teaching unit's duration and content, identify technical and logistical challenges such as camera placement, and ensure the availability and preparedness of the assistant research team.

Structure of the Educational Units:

1. **Preparatory Part (15 minutes):** Included attendance (3 minutes), general warm-up (5 minutes)—such as light walking, jogging, and leg/arm exercises—followed by physical drills (7 minutes).
2. **Main Part (60 minutes):** Consisted of educational activities (20 minutes) and applied practice (40 minutes).
3. **Conclusion (15 minutes):** Included light jogging, relaxation exercises, cooldown routines, and a short tournament.

The main intervention utilizing the Plan strategy was carried out from Sunday, December 10, 2025, to Tuesday, December 26, 2025. It consisted of six instructional units delivered over three weeks, with two sessions per week. The control group received the same number of sessions with identical timing and structure. During the implementation, the

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researcher integrated various learning media such as educational videos, descriptive texts, and slow-motion replays to enhance comprehension.

Finally, the post-tests were administered on Sunday, December 31, 2023, under the same conditions as the pre-tests. This ensured consistency in terms of location, timing, and evaluation procedures, thus maintaining the reliability and fairness of the data collection process.

Results

Table 8. Results of the post and pre-tests for Technical achievement and Cognitive outcome

Sig. level	Sig. value	T value	Post test		Pre test		Measurement unit	Groups	Test
			St.d	M.	St.d	M.			
Positive	0.000	22.594	0.764	7.157	0.341	2.815	degree	Experiment	Technical achievement
positive	0.000	17.205	0.512	5.526	0.404	2.947	degree	Control	
Positive	0.000	15.810	1.470	12.947	1.315	5.789	degree	Experiment	Cognitive outcome
positive	0.000	12.164	1.177	10.052	1.169	5.421	degree	Control	

Table 9. Shows t-test for post-tests for Technical achievement and Cognitive outcome for two groups for discus throwing

Sig. level	Sig. value	T value	Experiment group		Control group		Test
			St.d	M.	St.d	M.	
positive	**0.000**	**7.723**	**0.764**	**7.157**	**0.512**	**5.526**	**Technical achievement**
positive	**0.000**	**6.697**	**1.470**	**12.947**	**1.177**	**10.052**	**Cognitive outcome**

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Discussion.

According to the results of pre and post-tests in table (9) to learning technical achievement and cognitive outcome for two groups , the researcher noticed that there is significant differences between pre and post-tests for benefit of post-tests . The researcher attributes the improvement to students commitment with the scheduled period and the nature of the teaching .

The researcher noticed through table (9) their progress for experimental group in the results . The researcher attributes the progress for many causes . the most important cause is (plan) strategy which has clear effect in the progress in the technical achievement and cognitive outcome . Plan strategy helped learners to understand the content of learning subject through its stapes which stimulated brain cells and their senses towards the subject ,while control group followed the manner of the teacher . also plan strategy in learning unit made the learner as axis of the learning operation in addition to participation of all the students in achievement of discus throwing which lead to keep the informations and remembering it for long period . It clear that that plan strategy lead to improve the abilities of the students to understand the ideas and discover the styles which could be depended to use it . (Gaverly) referred that plan strategy contributed improvement of learning approach in addition to understanding of learning texts (14,1995,209) . (Gawdat saada) remembered benefits of learning said that participating of the students and applying academic concepts through practical experiences and academic cognitive trainings could lead to increase the trust of the students with his abilities to discover new styles to overtake the obstacles and the difficulties (3,2014,103) . Realizing and gaining the high degrees of the ability in learning situations related to learning approach because of its importance to systemize the subject according to graduated stapes (7,1997,466). Also the researcher attributes the results in table (8) and the improvement in the learning of control group to natural situations for learning which could make positive effect in the learning if the teacher fellows the correct procedures for learning and implements all the stapes of the approach accurately . using of feedback by various styles through giving information to correct the achievement and its shape and achievement and its result , but they did not reach to the level which experiment group reached to it. (mohamad zaglool) referred that the dividing of learning situation could lead to the chances of success and decrease the false request which lead to increase positive position to gain the experience (10,1995,7).

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Conclusions.

The implementation of the Plan strategy successfully achieved the intended learning objectives in teaching the technical aspects of the discus throwing event, as evidenced by the superior performance of the experimental group compared to the control group. This strategy enabled students to better identify and understand the technical steps involved in discus throwing, thereby enhancing their cognitive outcomes. Furthermore, teaching through the Plan strategy emphasized student-centered learning, positioning students as the key element in the educational process and consequently improving the overall learning experience. Based on these findings, it is recommended to adopt the Plan strategy for teaching discus throwing, to conduct similar studies applying this strategy to other track and field events, and to explore its effectiveness in various sports and with different sample groups.

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Conflict of interest

Have no conflict of interest to declare.

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