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Original Article

The Effect of Electronic Educational Modules on Skill Performance and Digital Achievement in the Javelin Throw Competition for Female Students

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Abstract

The research aims to design an educational program to examine the impact of using electronic educational modules on the skill performance level and digital achievement in the javelin throw competition among female students of the Faculty of Physical Education at University of Sadat City. The researcher employed the experimental method, using a quasi-experimental design with a post-test for two groups: an experimental group and a control group. The research sample was deliberately selected from first-year female students at the Faculty of Physical Education, University of Sadat City (2023-2024), totaling 760 students. The researcher implemented the proposed educational program using the electronic educational module for the experimental group, starting from Wednesday, February 28, 2024, until Wednesday, March 20, 2024. The educational program was implemented over one month, comprising eight educational sessions delivered at a frequency of two sessions per week. The study's key findings indicated statistically significant differences between the post-test means of the experimental group (which used the electronic educational modules under investigation) and the control group (which followed the traditional method) in both skill performance and digital achievement in the javelin throw.

Keywords: *Electronic Educational Modules, Skillful Performance Level, Javelin, Personal Record.*

Introduction

Since the beginning of the third millennium, there has been significant scientific advancement across various fields, particularly in education. With societal progress, the educational process has increasingly relied on modern pedagogical curricula aimed at developing and enhancing learners' personalities. This aligns with contemporary physical

education curricula, which emphasize the role of physical education classes in fostering students' overall growth.

According to Shereen Ghalab (2010), the continuous development in the educational process has shifted specialists' perspectives on education. The learner is now at the center of the learning experience, while the teacher's role has evolved to focus on facilitation, guidance, and instruction. Consequently, experts have sought innovative methods and strategies that emphasize learner engagement and motivation. One such approach is self-learning, which has led to the development of various instructional systems, including instructional modules (Ghalab, 2010, p. 387).

Hamill and Geer (2000) highlighted that instructional modules are a form of self-learning applicable across all age groups and educational levels, including pre-service and in-service training (Hamill & Geer, 2000, p. 112).

According to Hassan Zeitoun and Kamal Zeitoun (2003), an instructional module is "a set of integrated learning experiences designed to achieve specific and comprehensive objectives, commonly used in individualized learning, allowing students to control their engagement with activities, recall appropriate responses, and regulate their learning paths" (Zeitoun & Zeitoun, 2003, p. 134).

Zaher Ahmed (2012) emphasized that implementing instructional modules requires a fundamental shift in the teacher’s role. The teacher must act as a facilitator and guide, making informed decisions regarding instructional strategies. Instead of merely delivering content and simplifying educational units, the teacher's role involves deep subject-matter expertise, selecting activities that align with curricular goals, and structuring the syllabus into logically sequenced instructional modules. This approach enables students to progress systematically from one module to the next. Furthermore, teachers must precisely define objectives for each module to convey key concepts and guide learners in utilizing available resources to achieve mastery learning based on their individual abilities and characteristics (Ahmed, 2012, p. 76).

Ali Abdel-Meguid (2005) argued that track and field events form a core component of physical education teacher training programs. These activities serve as the foundation of various sports and are integral to school-based physical education. Track and field events have been a fundamental part of the Olympic Games, both ancient and modern, evolving into their current format for both men and women. Due to their significance in fostering physical, psychological, and overall well-being, track and field events are often referred to as "the mother of all sports" or "the jewel of sporting competitions" (Abdel-Meguid, 2005, p. 33). Madbouly, M., & Mohamed, R. (2022), This study aimed to examine the impact of using instructional modules on skill performance level and digital achievement in the track and field events course (200-meter sprint, javelin throw, and high jump) for second-year female students at the Faculty of

Physical Education for Girls – Zagazig University. The key findings indicated the superiority of the experimental group, which used instructional modules, over the control group, which followed the traditional explanation and model demonstration method, in all three skills (200-meter sprint, javelin throw, and high jump).

Badr, N. (2019), This study aimed to develop an educational program using instructional modules and investigate its impact on cognitive learning, skill performance, and digital achievement in the triple jump competition among second-year female students at the Faculty of Physical Education – University of Sadat City . The results confirmed that both instructional methods had a statistically significant positive impact; however, the experimental group outperformed the control group in post-test measurements concerning the cognitive aspect of the triple jump, skill performance level, and digital achievement.

Mahmoud, I. (2018), This study aimed to explore the effect of using the guided discovery method on movement satisfaction, skill performance level, and digital achievement in the javelin throw event among students enrolled in the track and field course at Yarmouk University's Faculty of Physical Education. The findings revealed that the educational program employing the guided discovery method had a positive impact on enhancing movement satisfaction, skill performance level, and digital achievement in the javelin throw event among physical education students.

Through teaching experience in athletics courses to students at the Faculty of Physical Education, University of Sadat City , the researcher observed the potential benefits of electronic instructional modules in education. Specifically, she noted challenges that students faced in comprehending the technical steps required for successful performance in the javelin throw competition. Several factors contribute to these difficulties, including the lack of a clear model for ideal motor performance. Students often view skill demonstrations from a single angle or perspective, which may limit their understanding. Additionally, the absence of an ideal performance model or well-defined instructional sequences further hinders skill acquisition, resulting in lower technical proficiency.

The use of electronic instructional modules has the potential to enhance skill performance and improve digital achievement more effectively than traditional methods. The javelin throw event is a track and field competition that requires achieving the greatest possible horizontal distance using the javelin. This event involves a distinctive sequence of movements, including a straight-line approach run, a five-stride rhythm, javelin positioning, release, and follow-through to prevent stepping over the throwing arc, which would result in a failed attempt.

Thus, the researcher implemented electronic instructional modules as an alternative to traditional teaching methods to examine their impact on skill performance and digital

achievement in the javelin throw competition among female students at the Faculty of Physical Education, University of Sadat City. The study aims to design an educational program to examine the impact of using electronic instructional modules on skill performance level and digital achievement in the javelin throw competition among students of the Faculty of Physical Education – University of Sadat City

Study Hypotheses:

1- There are statistically significant differences between the pre- and post-measurements of the experimental group, which follows the electronic instructional modules, in terms of skill performance level and digital achievement in the javelin throw competition among students of the Faculty of Physical Education – University of Sadat City, in favor of the post-measurements.

2.There are statistically significant differences between the pre- and post-measurements of the control group, which follows the traditional method (explanation and model demonstration), in terms of skill performance level and digital achievement in the javelin throw competition among students of the Faculty of Physical Education – University of Sadat City , in favor of the post-measurements.

3.There are statistically significant differences between the post-measurements of the experimental and control groups in terms of skill performance level and digital achievement in the javelin throw competition among students of the Faculty of Physical Education – University of Sadat City , in favor of the experimental group.

Materials and Method

The researcher employed the experimental method, utilizing a pretest-posttest experimental design with two groups: an experimental group and a control group. This approach was chosen due to its suitability for the nature of the study.

Participants

The research population consisted of first-year female students at the Faculty of Physical Education, University of Sadat City , enrolled in the second semester of the 2023-2024 academic year, with a total of 760 students. The research sample was intentionally selected from the study population, comprising 100 students, representing 13.16% of the total population. The following table illustrates the classification of the research sample.

Table (1) presents the classification of the research sample, where the total sample size is distributed as follows:

- Control Group: (50) students from the first-year class, accounting for **6.58%** of the total population.

- Experimental Group: (50) students from the first-year class, accounting for 6.58% of the total population.
- Pilot Study Sample: (20) students from the first-year class, accounting for 2.63%, and are not part of the main study sample. Additionally, 20 second-year students were included to support the pilot study procedures.

Table 1. Classifications of research groups of participants

Sample Category		Number of Students	Percentage	Purpose of the Sample
Pilot Study Sample		20	2.63%	Conducting scientific validation procedures for physical tests, skill performance evaluation form, and motor satisfaction assessment.
Main Study Sample	**Experimental Group**	50	6.58%	You are subject to the educational program using educational modules.
	Control Group	50	6.58%	Subject to the traditional method
Total of Main Study		100	13.16%	
Total Research Population		760	100%	

Normality of the Research Sample Distribution

To ensure that the research population follows a normal distribution and exhibits normality, the skewness coefficient was calculated. Table (2) presents the skewness coefficients for the research population.

Table (2) indicates that the skewness coefficients for all variables under study fall within the range of ±3, with values ranging between -2.79 and 2.57. This confirms the homogeneity of the research population in the specified variables and its adherence to the normal distribution curve, thereby ensuring the validity of the statistical analyses.

Equivalence of Research Groups

To ensure comparability between participants in the two research groups across the fundamental variables under study and to control for any confounding factors, the following table presents the statistical analysis.

Table (3) demonstrates that the calculated "T" values are less than the tabulated "T" value, indicating that the differences are not statistically significant. This confirms that there are no significant differences between the experimental and control groups in terms of growth rates, skill performance evaluation, and digital achievement. Therefore, the two research groups can be considered equivalent at the baseline level.

Table 2. Homogeneity of the experimental and pilot groups in growth rates, physical tests, skill performance evaluation, and digital achievement (n=120)

Variables		Mean	Median	St.Dv.	Skewness
Growth Rates	Age (Year)	18.91	19.00	0.74	-0.37
	Height (Cm)	164.98	164.00	5.47	0.54
	Weight (Kg)	62.37	61.00	7.90	0.52
Physical Tests	Step-up and Down on a Swedish Bench (30 sec)(Rep)	5.73	6.00	1.07	-0.74
	Throwing a 3 kg Ball for Maximum Distance (m)	4.84	5.00	0.75	-0.65
	Sprint (30m) from a Standing Start (Sec)	4.93	4.81	0.52	0.69
	Barrow Zigzag Run (Sec)	8.41	8.23	0.66	0.79
	Standing Trunk Flexion (Cm)	7.93	8.00	0.96	-0.23
	Figure-8 Running Test (Sec)	9.24	9.26	0.60	-0.11
	Hand Target Shooting on Intersecting Rectangles (Rep)	14.79	16.00	3.47	-1.04
	Sit-ups from Lying Position (20 sec) (Rep)	10.08	10.00	0.81	0.28
Skill Performance Evaluation Form	Javelin Grip (Score)	0.31	0.00	0.46	1.99
	Carrying the Javelin (Score)	0.43	0.00	0.50	2.57
	Ready Position (Score)	0.37	0.00	0.48	2.27
	Approach Run (Score)	0.27	0.00	0.44	1.80
	Throwing Steps (Score)	0.13	0.00	0.33	1.13
	Throwing and Balance	0.17	0.00	0.37	1.34
Total Javelin Throwing Skill (Score)		1.66	1.00	1.75	1.13
Personal record (Score)		2.66	2.00	0.94	2.10

Data Collection Tools and Methods

The researcher used tools and devices to collect data related to the research, such as stopwatch, measuring tape, javelins, javelin throwing clip, and Cameras.

Data collection methods varied depending on the type of data. They were

- data analysis, records,
- tests (physical ,skill)
- Forms (experts survy, datacollection).

Table 3. Significance of Differences Between the Experimental and Control Groups in Growth Rates, Skill Performance Evaluation, and Digital Achievement (n1=n2=50)

Variables		Control Group		Experimental Group		Difference Between Means	Calculated "T" Value
		M	SD	M	SD		
Growth rates	Age (Year)	18.84	0.82	19.06	0.65	0.22	1.47
	Height (Cm)	164.70	4.94	165.44	6.09	0.74	0.66
	Weight (Kg)	62.28	7.86	61.65	7.53	0.63	0.41
Physical Tests	Age (Year)	5.72	0,88	5.84	1.18	0.12	0.57
	Throwing a 3 kg Ball for Distance (m)	4.82	0.71	4.87	0.78	0.05	0.33
	Sprint (30m) from a Standing Start (Sec)	4.93	0,53	4.92	0.51	0.01	0.11
	Barrow Zigzag Run (Sec)	8.40	0,66	8.41	0.66	0.01	0.08
	Standing Trunk Flexion (Cm)	7.90	0.97	8.04	0.92	0.14	0.73
	Figure-8 Running Test (Sec)	9.16	0.59	9.22	0.64	0.06	0.51
	Hand Target Shooting on Intersecting Rectangles (Rep)	14.88	3.50	14.78	3.47	0.10	0.14
Skill Performance Evaluation Form	Javelin Grip (Score)	0.32	0.47	0.30	0.46	0.02	0.21
	Carrying the Javelin (Score)	0.50	0.44	0.42	0.50	0.02	0.20
	Ready Position (Score)	0.38	0.49	0.36	0.48	0.02	0.20
	Approach Run (Score)	0.28	0.45	0.26	0.44	0.02	0.22
	Throwing Steps (Score)	0.14	0.35	0.12	0.33	0.02	0.29
	Throwing and Balance (Score)	0.18	0.39	0.16	0.37	0.02	0.26
Total Javelin Throwing Skill (Score)		1.74	1.51	1.62	1.79	0.12	0.36
Personal Record (Score)		2.82	0.87	2.80	0.88	0.02	0.11

*Tabular "T" Value at df = (n1 + n2) - 2 = 98, at (0.05) = 2

Pilot Studies

The researcher conducted the exploratory study during the period from Saturday 2/10/2024 AD until Monday 2/12/2024 AD on a sample consisting of (20) female students from the research community and outside the main sample.

Physical Tests Validity

The pilot studies was for testing the validity of the physical tests. It was assessed by calculating discriminant validity. This was done by administering the tests to:

- A non-distinguished sample of 20 first-year students (pilot study group)
- A distinguished sample of 20 second-year students (pilot study group)

The tests were conducted on February 10, 2024, (Appendix 4). The validity was determined by calculating the significance of differences between the mean scores of the distinguished and non-distinguished groups, as presented in Table (4).

The table demonstrates statistically significant differences at the 0.05 level between the distinguished and non-distinguished groups in all physical tests under investigation. The differences are in favor of the distinguished group, indicating that these tests can effectively differentiate between individuals of varying performance levels. This confirms their validity in assessing the intended physical abilities.

Table 4. Significance of Differences Between Distinguished and Non-Distinguished Groups in Physical Tests (n1=n2=20)

Variables	Non-Distinguished Group		Distinguished Group		Difference Between Means	"t" Value*
	M	SD	SD	M		
Step-up and Down on a Swedish Bench (30sec) (Rep)	5.50	1.18	1.24	7.65	1.00	4.69
Throwing a 3 kg Ball for Maximum Distance (m)	4.80	0.50	0.78	5.80	0.70	3.40
Sprint (30m) from a Standing Start (Sec)	4.96	0.70	0.56	4.26	0.98	5.40
Barrow Zigzag Run (Sec)	8.42	0.35	0.70	7.45	1.80	5.20
Standing Trunk Flexion (Cm)	7.70	1.10	1.03	9.50	1.00	6.51
Figure-8 Running Test (Sec)	9.48	0.47	0.48	8.48	5.45	6.55
Hand Target Shooting on Intersecting Rectangles (Rep)	14.60	0.69	3.56	20.05	4.05	15.41
Sit-ups from Lying Position (20 sec) (Rep)	10.20	0.79	0.83	14.25	2.15	5.48

* Tablular "t" value at (n1 + n2 - 2) degrees of freedom and significance level (0.05) = 2

Physical Tests Reliablity

The reliability of the physical tests was established using the Test-Retest Method. The tests were applied and re-applied to the pilot study sample (20 first-year students) with a one-

week interval under identical conditions and instructions. The results of the correlation coefficients between the initial and repeated applications are presented in table (5).

The correlation coefficients between the initial test and the retest for the physical tests under investigation range from 0.85 to 0.98, all of which are statistically significant at the 0.05 level. This confirms the reliability of these physical tests, indicating their consistency in measuring the targeted attributes over time.

Table 5. Correlation Coefficient Between Test and Retest in Physical Tests (n= 20)

Variables	Test		Retest		Difference Between Means	"r" Value
	M	SD	M	SD		
Step-up and Down on a Swedish Bench (30 sec)(Rep)	5.50	1.24	5.40	1.10	10.0	0.89*
Throwing a 3 kg Ball for Maximum Distance (m)	4.80	0.78	4.75	0.72	0.05	*0.98
Sprint (30m) from a Standing Start (Sec)	4.96	0.56	5.02	0.53	0.06	0.95
Barrow Zigzag Run (Sec)	8.42	0.70	8.38	0.72	0.04	0.96
Standing Trunk Flexion (Cm)	7.70	1.03	7.60	0.99	0.10	*0.90
Figure-8 Running Test (Sec)	9.48	0.48	9.44	0.44	0.04	*0.98
Hand Target Shooting on Intersecting Rectangles (Rep)	14.60	3.56	14.80	3.27	0.20	*0.97
Sit-ups from Lying Position (20 sec) (Rep)	10.20	0.83	10.30	0.80	0.10	0.85

Validity of the Skill Performance Level Evaluation Form

The validity coefficients of the skill performance level assessment form (under study) were calculated by finding discriminant validity, by applying the form to the exploratory study sample of first-year female students (non-distinguished group), numbering (20) students, and to the exploratory study sample of second-year female students (distinguished group), numbering (20) students, Annex (5), on 2/11/2024 AD, then calculating the significance of the differences between the means of the distinguished and non-distinguished group, as shown in Table (6).

Table (6) shows statistically significant differences at the 0.05 significance level between the measurements of the pilot study sample (distinguished and non-distinguished groups) in the Skill Performance Evaluation Form. The differences favor the distinguished group, which indicates that this evaluation form effectively differentiates between groups of varying skill levels. Therefore, the form is valid for its intended purpose.

Table 6. Significance of Differences Between the Distinguished and Non-Distinguished Groups in the Skill Performance Evaluation Form (n1=n2= 20)

Variables	Non-Distinguished Group		Distinguished Group		Difference Between Means	"t" Value
	M	SD	M	SD		
Javelin Grip (5 points)	0.30	0.47	3.70	1.13	3.40	12.12
Javelin Carry (5 points)	0.40	0.50	4.55	0.51	4.15	25.25
Preparation Stance (5 points)	0.35	0.49	4.20	0.70	3.85	19.73
Approach (5 points)	0.25	0.44	3.40	0.99	3.15	12.60
Throwing Steps (5 points)	0.10	0.31	2.90	0.64	2.80	17.17
Throwing and Balance (5 points)	0.15	0.37	3.05	0.69	2.90	16.25
Total Javelin Throw Skill (30 points)	1.55	2.24	21.80	3.12	20.25	22.99

*Tabular value of "t" at 0.05 significance level = 2

Table (7) demonstrates that the correlation coefficients between test and retest applications of the Skill Performance Evaluation Form (under study) ranged between 0.79 and 0.97, all of which are statistically significant at the 0.05 level. This indicates that the evaluation form is reliable and produces consistent results over time.

Table 7. Correlation Coefficient Between Test and Retest in the Skill Performance Evaluation Form (n= 20)

Variables	Test		Retest		Difference Between Means	"r" Value
	M	SD	M	SD		
Javelin Grip (5 points)	0.30	0.47	0.25	0.44	**0.05**	**0.88**
Javelin Carry (5 points)	0.40	0.50	0.35	0.49	**0.05**	**0.90**
Preparation Stance (5 points)	0.35	0.49	0.30	0.47	**0.05**	**0.89**
Approach (5 points)	0.25	0.44	0.20	0.41	**0.05**	**0.87**
Throwing Steps (5 points)	0.10	0.31	0.15	0.37	**0.05**	**0.79**
Throwing and Balance (5 points)	0.15	0.37	0.20	0.41	**0.05**	**0.84**
Total Javelin Throw Skill (30 points)	1.55	2.24	1.45	2.24	**0.10**	**0.97**

Educational Program

1- Objective of the program

The educational program aims to study the impact of using electronic learning modules on skill performance level and digital achievement in the javelin throw competition among female students at the Faculty of Physical Education – University of Sadat City.

2- Principals of the educational program:

a. Implementing the electronic learning modules program based on the course description for first-year female students under study.
b. Adhering to the time distribution of the course description.
c. Ensuring that the program content aligns with the set objectives.
d. Adjusting the time of each unit to fit within the lecture duration.
e. Achieving engagement and excitement for students.
f. Considering individual differences among students.
g. Ensuring safety and security during implementation.

Table 8. Key Aspects of Research Experiment Implementation

Aspects	Experimental Group
Number of Weeks	4 Weeks
Number of Lectures per Week	2 Lectures
Skills	Javelin grip, javelin holding, stance preparation, approach, throwing steps, throwing and balance, maintaining balance

Table (8) shows that the program extends over four weeks, with two lectures per week, focusing on developing fundamental javelin throwing skills through electronic learning modules.

Main Study

Pre- measurements

Pre-measurements were conducted for the experimental research group, starting from Saturday, February 17, 2024, and continued until Thursday, February 22, 2024, during the second semester of the 2023/2024 academic year.

The Educational Program

The proposed educational program, using the e-learning module, was implemented on the experimental research group from Wednesday, February 28, 2024, until Wednesday, March 20, 2024, during the second semester of the 2023/2024 academic year..

Post measurements

After the main experiment was completed, the researcher conducted post-measurements for the experimental and control groups on the physical tests on Wednesday, March 27, 2024. Post-measurements for the experimental and control groups on the skill level assessment form were conducted by a panel of judges from Monday, April 1, 2024, to Wednesday, April 3, 2024.

Statistical Treatments

According to the objectives and hypotheses of the study, the author used the following statistical treatments:

Mean - Standard Deviation Stdev.- Median - Skewness - Pearson's simple correlation coefficient- Spearman-Brown correlation coefficient- T-Test for significance testing - Mann-Whitney test- Improvement percentages- Improvement percentage.

Results and Discussion

The values in the table indicate statistically significant differences at the (0.05) significance level between the pre-test and post-test measurements of the experimental group in the skill performance evaluation form and digital performance, favoring the post-test results. This demonstrates the effectiveness of the proposed educational module in improving skill performance and digital achievement in javelin throw.

Table 9. Significance of Differences Between the Mean (Pre-test, Post-test) Measurements of the Experimental Group in the Skill Performance Evaluation Form and personal record (n = 50)

Variables	Pre		Post		Difference Between Means	"T" Value
	mean	St.Dv	mean	St.Dv		
Javelin Grip (5 points)	0.46	0.30	3.64	0.48	3.34	34.308*
Javelin Hold (5 points)	0.50	0.42	4.50	0.51	4.08	45.523*
Preparation Stance (5 points)	0.48	0.36	4.14	0.61	3.78	34.998*
Approach (5 points)	0.44	0.26	3.38	0.64	3.12	26.000*
Throwing Steps (5 points)	0.33	0.12	2.88	0.92	2.76	20.338*
Throwing and Balance (5 points)	0.37	0.16	3.04	0.95	2.88	19.907*
Total Javelin Throw Skill (30 points)	1.79	1.62	21.58	1.33	19.96	63.259*
Digital Performance	2.80	0.88	14.14	0.76	11.34	66.511*
Digital Performance (Repeated Entry)	2.80	0.88	14.14	0.76	11.34	66.511*

The values in the table indicate statistically significant differences at the (0.05) significance level between the pre-test and post-test measurements of the experimental group in the skill performance evaluation form and digital performance, favoring the post-test results. This demonstrates the effectiveness of the proposed educational module in improving skill performance and digital achievement in javelin throw.

From Table (9) and the data represented in Figure (1), it is evident that the calculated "T" value is greater than the tabulated "T" value, indicating statistical significance. This confirms the presence of statistically significant differences between the mean scores of the pre-test and post-test measurements of the experimental group, in favor of the post-test scores.

The researcher attributes the improvement in technical performance and digital achievement in the javelin throw competition for the experimental group to the use of electronic modular learning, which enhanced the students' acquisition of knowledge and scientific facts related to the javelin throw. This was achieved through the interactive engagement between the learner and the instructional content, which was divided into mini-modules allowing learners to progress at their own pace. Advancement from one module to the next was only permitted upon successful completion of the previous module, requiring a minimum achievement of 80% of the intended learning objectives. Additionally, instant feedback through the electronic learning module facilitated continuous performance improvement and enhanced digital achievement in the javelin throw competition among students.

This finding aligns with the conclusions of Merwin & Schneider (2001) and Martin & Brien (2008), who emphasized that electronic modular learning is based on individualized learning principles. The modular approach provides learners with various pathways to reach their goals, allowing them to choose the most suitable methods and resources according to their own pace, abilities, and prior experiences, all under the supervision and guidance of the instructor. This learning model ensures that learners achieve their goals in a way that best suits their learning style.

Furthermore, these results are consistent with the findings of Eman Gamal (2019), Mona El-Marsy (2019), Mona Magd (2019), and Nada Mohy El-Din (2020), which highlighted the importance of modular learning methods in mastering different aspects of learning.

In this context, Kamal Zeitoun (2014) also emphasized the significance of using electronic modular learning, as it serves as an effective tool for structuring and sequencing educational experiences, delivering scientific material in a highly efficient manner with minimal effort. It also helps instructors identify learners' weaknesses during their study of the module, facilitating the evaluation process.

Thus, the first hypothesis of the study is confirmed:"*There are statistically significant differences between the mean pre-test and post-test measurements of the experimental group using (electronic modular learning) in developing skill performance and digital achievement in the javelin throw competition among students of the Faculty of Physical Education, University of Sadat City, in favor of the post-test measurements*.''

From Table (10) and the data represented in Figure (2), it is evident that the computed "T" value is statistically significant ($p \leq 0.05$). This indicates the presence of statistically

significant differences between the mean scores of the pre-test and post-test measurements of the control group, favoring the post-test scores.

The researcher attributes the improvement in the level of technical performance and digital achievement in the javelin throw competition among the members of the control group to the program followed (the learning by command method), which affected the students' responses to the learning process as a result of training, practice, and drill, The similarity of the control group to the experimental group in the educational environment in terms of capabilities, the time period for learning, and the student's knowledge of the performance content of the javelin throw competition. All of this helped in forming a clear picture of the javelin throw competition, In addition to the presence of the teacher who gives a clear idea of how to perform properly (model and verbal explanation), and provides feedback to the students during the implementation of the lesson content, which led to an improvement in the level of technical performance and digital achievement in the javelin throw competition among the members of the control group, This result is consistent with what Marley & Lolas (2006) (17) indicated, that the educational process in the traditional method depends primarily on the teacher, who is the one who explains, interprets, and observes. He is the one who makes decisions and has an effective role through intervention to find possible motor solutions and repeating that until reaching better motor solutions. Therefore, we expect individuals to learn appropriately as a result of the presence of the teacher.

Thus, the second hypothesis is validated, stating that: "*There are statistically significant differences between the mean pre-test and post-test measurements of the control group, which follows the traditional method (demonstration and explanation), in terms of skill performance and digital achievement in the javelin throw event among students of the Faculty of Physical Education, University of Sadat City, in favor of the post-test measurements*."

Table 10. Significance of Differences Between the Mean Pre-test and Post-test Measurements of the Control Group in the Skill Performance Evaluation Form and Digital Achievement (n=50)

Variables	Pre-test		Post-test		Mean Difference	"T" Value*
	M	SD	M	SD		
Javelin Grip (5 points)	0.32	0.47	2.52	0.61	2.58	24.958
Javelin Carry (5 points)	0.44	0.50	3.02	0.65	2.44	20.040
Preparation Stance (5 points)	0.38	0.49	2.82	0.63	2.10	19.471
Approach (5 points)	0.28	0.45	2.38	0.60	1.94	17.29
Throwing Steps (5 points)	0.14	0.35	2.08	0.67	1.98	15.310
Throwing and Balance (5 points)	0.18	0.39	2.16	0.82	13.24	38.948
Total Javelin Throwing Skill (30 points)	1.74	1.51	14.98	1.93	9.32	50.072
Digital Achievement	2.82	0.87	12.14	0.83	2.20	17.665

(*) Statistically significant at $p \leq 0.05$.

The data presented in Table (11) and Figure (3) indicate that the calculated "T" value is greater than the tabulated "T" value, confirming its statistical significance. This suggests that there are statistically significant differences between the post-test mean scores of the experimental and control groups in the skill performance evaluation form and digital achievement, favoring the post-test mean of the experimental group.

The researcher attributes the superiority of the experimental group over the control group in technical performance and digital achievement in the javelin throw event to the effectiveness of the educational program based on electronic instructional modules. The program provided structured and well-sequenced content tailored to students' abilities, incorporating progressive skill drills from simple to complex, along with visual feedback through static and animated instructional images. These elements positively contributed to the learning and mastery of both skill-based and cognitive aspects of the javelin throw, leading to an increase in students' motor satisfaction regarding their performance in track and field competitions. Meanwhile, the control group relied solely on the command-style learning approach.

Table 11. Significance of Differences Between the Post-Test Means of the Control and Experimental Groups in the Skill Performance Evaluation Form and Personal record (n1=n2=50)

Variables	Pre-test		Post-test		Mean Difference	"T" Value	Improvement
	M	SD	M	SD			
Javelin Grip (5 points)	2.52	0.61	3.64	0.48	1.12	10.02	44.44%
Javelin Carry (5 points)	3.02	0.65	4.50	0.51	1.48	12.53	49.01%
Preparation Stance (5 points)	2.82	0.63	4.14	0.61	1.32	*10.58	46.81%
Approach (5 points)	2.38	0.60	3.38	0.64	1.00	*8.00	42.02%
Throwing Steps (5 points)	2.08	0.67	2.88	0.92	0.80	*4.94	38.46%
Throwing and Balance (5 points)	2.16	0.82	3.04	0.95	0.88	*4.93	40.06%
Total Javelin Throwing Skill (30 points)	14.98	1.93	21.58	1.33	6.60	*19.71	44.06%
Digital Achievement	12.14	0.83	14.14	0.76	2.00	*12.44	16.47%

* Tabular "T" value at (df = 98) at (0.05) = 2

These findings align with the results of previous studies, including those by Iman Gamal (2019), Mona El-Marsy (2019), Mona Magd (2019), and Nada Mohy El-Din (2020), which

highlighted the effectiveness of instructional module-based learning in mastering various learning aspects compared to the command-style learning method.

Furthermore, this result is consistent with the findings of Hannon et al. (2008) and Mohamed El-Sayed (2012), who emphasized that instructional modules possess unique characteristics compared to other teaching methodologies. These modules include integrated components such as information, guidelines, supplementary instructional media, and phased and final assessment methods, making this system widely accepted by educational institutions for its superior outcomes compared to traditional methods.

Additionally, the findings align with Davison & Neale (2007), who stated that traditional teaching methods reinforce errors in skill execution due to repeated incorrect practice by students. This is attributed to the delayed feedback from instructors, who often fail to provide corrective guidance immediately after an error occurs.

Conclusion

Considering the research objectives, hypotheses, methodology, findings, and statistical analyses, and within the limitations of the study sample, the researcher concluded the following:

- The use of electronic instructional modules under investigation with the experimental group had a positive impact on skill performance and digital achievement in the javelin throw competition.
- The use of the traditional teaching method with the control group also had a positive impact on skill performance and digital achievement in the javelin throw competition.
- There were statistically significant differences between the post-test means of the experimental group (which used the electronic instructional modules under investigation) and the control group (which used the traditional method) in skill performance and digital achievement in the javelin throw competition among female students of the Faculty of Physical Education at University of Sadat City, favoring the experimental group.
- The improvement rate for the skill performance assessment form in the javelin throw skill was 44.06%, and the improvement rate for digital achievement was 16.47%.

Recommendations

Based on the research objectives, methodology, and results, the researcher recommends the following:

- Implementing the electronic instructional modules under investigation in teaching the javelin throw competition.
- Organizing training workshops for faculty members to enhance their skills in designing electronic instructional modules.

- Conducting further studies on the use of electronic instructional modules in learning different sports disciplines.

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