Design educational units according to the Nedham model to learn some basic skills in tennis

Diseñar unidades didácticas según el modelo Nedham para aprender algunas habilidades básicas del tenis

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How to cite in APA

Noor Ali Hussain. (2025). Design educational units according to the Nedham model to learn some basic skills in tennis. *Retos*, *67*, 1396–1401. https://doi.org/10.47197/retos.v67.114323

Abstract

Objective: The purpose of this paper is to preparing educational units for some basic tennis skills according to the Nedham model, and identifying the effect of educational design according to the Nedham model in learning some basic tennis skills.
Research methodology: The researcher used the experimental method using the two equivalent groups method to suit the nature of the research problem. The research sample was selected from the second-stage students in the Department of Physical Education and Sports Sciences, whose number was (45) students. They were divided into two experimental and control groups, each group (20) students, and the remaining students are the individuals of the exploratory sample (5) students. In light of this, the researcher conducted equivalence and homogeneity for the two research groups before applying the program prepared by the researcher.
Result: The researcher attributes the reason the educational design according to the Needham model and its role in the learning process for some basic skills in tennis, as it had a positive impact due to the variety of exercises it contains, which were chosen with extreme precision. The researcher also attributes the differences that appeared in favor of the experimental group to the educational design according to the Needham model
Conclusions: The number of educational units according to the Needham model that were used was more appropriate and suitable in learning some basic skills in tennis.

Keywords

Educational units; Nedham; basic skills; tennis.

Resumen

Objetivo: El propósito de este trabajo es preparar unidades educativas para algunas habilidades básicas del tenis según el modelo de Nedham e identificar el efecto del diseño educativo según el modelo de Nedham en el aprendizaje de algunas habilidades básicas del tenis.
Metodología de investigación: El investigador utilizó el método experimental utilizando el método de dos grupos equivalentes para adaptarse a la naturaleza del problema de investigación. La muestra de investigación se seleccionó de los estudiantes de segundo nivel del Departamento de Educación Física y Ciencias del Deporte, cuyo número fue de (45) estudiantes. Se dividieron en dos grupos experimentales y de control, cada grupo (20) estudiantes, y los estudiantes restantes son los individuos de la muestra exploratoria (5) estudiantes. A la luz de esto, el investigador realizó equivalencia y homogeneidad para los dos grupos de investigación antes de aplicar el programa preparado por el investigador.
Resultado: El investigador atribuye la razón del diseño educativo según el modelo de Needham y su papel en el proceso de aprendizaje de algunas habilidades básicas en el tenis, ya que tuvo un impacto positivo debido a la variedad de ejercicios que contiene, que fueron elegidos con extrema precisión. El investigador también atribuye las diferencias que aparecieron a favor del grupo experimental al diseño educativo según el modelo de Needham
Conclusiones: El número de unidades educativas según el modelo de Needham que se utilizaron fue más adecuado y adecuado en el aprendizaje de algunas habilidades básicas del tenis.

Palabras clave

Unidades educativas; Nedham; habilidades básicas; tenis.

Introduction

Nedham's model is one of the constructivist theory models that provides the opportunity for learners to form new knowledge and link it to previous knowledge with logical links between them (Al-Ashqar , 2018). Through this model, the learner has a positive role in learning and helps learners to cooperate and reach new scientific knowledge. It also depends on the extent of the learner's participation and activity within the group. Based on his previous cognitive experiences, he discusses with his colleagues in groups and forms hypotheses, collects information, applies ideas, expands the concept and reflects on the results he has reached. This requires in-depth processing of scientific knowledge . The results of several studies conducted in the field of physical education have shown that there are differences between students' learning through modern educational models and their learning through traditional lessons, as students find greater enjoyment and motivation when they use multimedia educational programs, and their attention and focus are greater. Hence, the importance of the study in studying and designing educational units according to the Nedham model and its relationship to learning some basic skills in tennis.

Research problem

Good skill performance leads to achieving the best achievements, and it is well known that when performing some kinetic skills for different sports, there are difficult stages when performing, and these stages constitute a complex in the educational process and we need to stop at them and care about mastering them, as this represents the essence of teaching the kinetic skill, especially when the skill requires the performer to change the position of the body when performing and comprehensive use of the senses in a way that is consistent with achieving the goal, and the opposite leads to major obstacles in teaching those skills and raising their level. Through the researcher's experience and field observations in previous years, she found that there is a failure by learners when performing some basic skills in tennis, and therefore it requires the teacher to constantly think about finding and applying methods that would raise the level of learning and the capabilities of students and their kinetic abilities, so the researcher studied this problem and developed appropriate solutions for it by designing educational units according to the Nedham model that would raise the reality of the kinetic abilities of students so that their performance is integrated from all aspects to be positively reflected in the level of students' performance.

Research objective

- Preparing educational units for some basic tennis skills according to the Nedham model.
- Identifying the effect of educational design according to the Nedham model in learning some basic tennis skills.

Research hypotheses

- There are no statistically significant differences between the pre- and post-tests of the experimental group in favor of the post-tests.
- There are no statistically significant differences in the post-tests between the experimental and control groups in favor of the experimental group.

Research fields

- Human field: Second-stage students / Department of Physical Education and Sports Sciences / College of Basic Education / Mustansiriyah University.
- Time field: (20/9/2023) to (28/12/2023)
- Spatial field: The outdoor field in the Department of Physical Education and Sports Sciences / College of Basic Education / Mustansiriyah University.

Method

Research techniques

The researcher used the experimental method using the two equivalent groups method to suit the nature of the research problem.

Community and sample research

The research sample is the part that represents the original community or the model on which the researcher conducts the overall and axis of his work. (Al-Amoudi, 2019). The research sample was selected from the second-stage students in the Department of Physical Education and Sports Sciences, whose number was (45) students. They were divided into two experimental and control groups, each group (20) students, and the remaining students are the individuals of the exploratory sample (5) students. In light of this, the researcher conducted equivalence and homogeneity for the two research groups before applying the program prepared by the researcher.

Table 1. Shows the homogeneity of the equivalence of the individuals of the research sample

Variables	Measuring unit	Experimental group		Control group		T value calculated	Type Sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation		
Shaffer and Neider Test of Serving Power	degree	12.82	0.712	11.25	0.623	0.411-	Non sig
Forehand Accuracy Test		14.87	0.411	12.09	0.256	0.614	Non sig
Backhand Accuracy Test		12.44	0.347	10.22	0.295	0.235-	Non sig

Table T value = 2.02 at a significance level of 0.05 and with a degree of freedom of 38

Data collection methods

Information collection methods

(Arabic sources - tests and measurements - personal interviews - support team).

Tools and devices used

(Tennis court - tennis rackets, number (20) - tennis balls, number (30) - rope - colored tapes - electronic stopwatch, number (2) - whistle)

Research tests

The researcher used the appropriate skill tests for the research sample to measure the accuracy of basic skills in tennis (serving, forehand, backhand) and designed for Iraqi university students (Mahmoud , 2012).

Exploratory experiment

The researcher conducted her exploratory study on Sunday, September 24, 2023, on (5) students from outside the research sample in the outdoor tennis court in the Department of Physical Education and Sports Sciences / College of Basic Education / Mustansiriyah University, to identify the extent to which the sample individuals comprehended the test items and to know the validity of the tools used and the time required to implement the tests.

Pre-tests

The researcher conducted the pre-tests for the research sample on Tuesday, September 27, 2023.

Proposed educational design

By reviewing scientific sources and previous studies on basic skills in tennis, educational units were prepared according to the educational design of the Nedham model for the skills under study, and appropriate exercises were developed, and vocabulary was formulated to be appropriate for the research sample members, divided into (12) units, with two educational units per week and a time of (90) minutes per unit for the period from 28/9/2023 to 29/12/2023. Each unit contained a set of exercises with the exercises progressing from easy to difficult. The exercises were applied in the main section of the educational unit with a gradual increase in the difficulty of the exercises in the full performance of basic skills in tennis. The researcher followed the following steps in applying them to the experimental group in general, and in order to ensure the integrity of the proposed educational curriculum, the researcher presented the exercises to a group of experts and specialists in the field of tennis and kinetic learning.

Post-tests

After completing the application of the educational curriculum, the researcher conducted the post-tests on the day 29/12/2023 with the same conditions as the pre-tests and with the help of the support team.

Statistical methods

The researcher used the statistical package spss.

Findings

Presentation, the research results for the experimental and control groups in the tests studied

The (table 2) shows the results of the pre-test for the arithmetic mean, standard deviation and calculated (T) value, which is greater than the tabular (T) at a significance level of (0.05) and a degree of freedom of (19). This indicates the presence of a significant difference between the pre-test and post-test in favor of the post-test. experimental group.

Table 2. Shows the results of the pre- and post-tests for the experimental group.

Variables	Measuring unit	Pre-test		Post-test		T value calculated	standard deviation of differences	arithmetic mean of difference	Type Sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation				
Shaffer and Neider Test of Serving Power	degree	12.82	0.712	15.22	0.347	3.66	2.4	0.154	Sig
Forehand Accuracy Test	degree	14.87	0.411	17.14	0.647	4.05	2.27	0.426	Sig
Backhand Accuracy Test	degree	12.44	0.347	18.68	0.241	5.19	6.24	0.942	Sig

The T-Test table value reached 2.09 at a significance level of 0.05 and with a degree of freedom of 19.

Presentation the results of the pre- and post-tests for the control group

The (table 3) shows the results of the pre-test for the arithmetic mean, standard deviation and calculated (T) value, which is greater than the tabular (T) at a significance level of (0.05) and a degree of freedom of (19). This indicates the presence of a significant difference between the pre-test and post-test in favor of the post-test control group.

Table 3. Shows the results of the pre- and post-tests for the control group

Variables	Measuring unit	Pre-test		Post-test		T value calculated	standard deviation of differences	arithmetic mean of difference	Type Sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation				
Shaffer and Neider Test of Serving Power	degree	11.25	0.623	13.41	0.24	3.12	2.16	1.06	Sig
Forehand Accuracy Test	degree	12.09	0.256	13.01	0.87	2.99	0.92	0.89	Sig
Backhand Accuracy Test	degree	10.22	0.295	10.90	1.75	4.02	0.68	2.61	Sig

The T-Test table value reached 2.09 at a significance level of 0.05 and with a degree of freedom of 19.

Presentation the results of the post-tests for the two research groups (experimental and control)

The (table 4) shows the results of the pre-test for the arithmetic mean, standard deviation and calculated (T) value, which is greater than the tabular (T) at a significance level of (0.05) and a degree of freedom of (38). This indicates the presence of a significant difference between the pre-test and post-test in favor of the post-test control group.

Table 4. Shows the results of the post-test for the two research groups

Variables	Measuring unit	Experimental group		Control group		T value calculated	Type Sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation		
Shaffer and Neider Test of Serving Power	degree	15.22	0.347	13.41	0.24	4.27	Sig
Forehand Accuracy Test		17.14	0.647	13.01	0.87	3.87	Sig
Backhand Accuracy Test		18.68	0.241	10.90	1.75	6.04	Sig

The T table reached = 2.09 at a significance level of 0.05 and with a degree of freedom of 38

Discussion

By presenting and analyzing the results for the two research groups, it appeared that there were significant differences in favor of the experimental group in all skills. The researcher attributes the reason for these differences to the educational design according to the Needham model and its role in the learning process for some basic skills in tennis, as it had a positive impact due to the variety of exercises it contains, which were chosen with extreme precision. (Shaalan, et al., 2022).The researcher also attributes the differences that appeared in favor of the experimental group to the educational design according to the Needham model, as it relied on the learning and teaching process to present the educational material in an organized manner based on its work on modern sources and the inclusion of moving images and programs for including video clips with sound on the site designed by the researcher, which contains a group of exercises that work in the same kinetic paths of the skill, through which situations are presented to the student in the form of video or photographic images that match one of the reflective thinking skills, which is observation, and contemplation based on finding and knowing the relationships between parts of the problem through visual observation (Abdel Majeed, 2016) .

The program also helped students develop Their way of thinking and performance and organizing their chain of ideas and presenting them in an organized manner, which helped the members of the experimental group learn better and thus make the students able to link previous cognitive experiences with acquired cognitive experiences and the topics are presented in the form of situations, or confusing problems that cause excitement in the minds of the students and thus will lead them to raise more questions about the topic to determine the pillars of the problem and produce many ideas through the use of previous experiences, which in turn leads to raising the level of learning skills in a better way by retrieving all the information related to the previous problem through the processes of remembering and this leads them to speed up learning and mastering skills (Shaheen, 2010)

Conclusions

- The number of educational units according to the Needham model that were used was more appropriate and suitable in learning some basic skills in tennis.
- The application of the proposed program had a significant impact on developing the capabilities of the experimental research sample individuals in learning some basic skills in tennis.

Recommendations

- Work on organizing the content of the study material and designing the classroom environment according to the designs of the Needham model and in a manner that is consistent with achieving the set educational objectives.
- Training educational bodies on the Needham model because it is one of the modern models in teaching.
- Using the Needham constructive model in university education.
- Conducting similar studies on students and knowing the impact of using educational design according to the Needham model and in various ways and for other study materials.

Acknowledgements

The author is grateful for the support of their College of Basic Education, Department of physical education and sport science/Mustansiriyah University.

Financing

This investigation was funded by the Mustansiriyah University.

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