Effects of Using the Systemic Approach on Learning Some Fencing Skills for Junior Fencers

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Abstract: Fencing, as a sport, has undergone several technological advancements and developments. These developments, in turn, led to new modifications and changes in the international rules and regulations to increase the difficulty level of the game. Systemic approach is one of the modern approaches applied by educational researchers to understand phenomena with all its various and inter-connected aspects. The current research aimed at identifying the effects of using the systemic approach on cognitive acquisition and learning some fencing skills besides identifying the sample members' reflections on using the systemic approach. Sample (18 fencers) was randomly chosen from "The Military Institution" sports club and divided into two equivalent groups (9 fencers each). Results indicated statistically significant differences between the means of pre- and post- tests of the experimental group on the performance level and cognitive acquisition in favor of the post-test. The percentage of members who agreed on using the systemic approach is far greater than those who did not agree.

Key words: Systemic approach · Fencing

INTRODUCTION

Massive developments in Tele-communications and the quickness of information flow, due to rapid technological developments and the globalization of most human activities led to greater challenges facing this century's generation and those ho are responsible for educational systems in most countries of the world. All this led to the problem of dated knowledge; this means that knowledge provided to learners is no longer applicable in the future. So, knowledge itself has no value and the real value is concentrated in how to produce knowledge and gain it. Now, we seek total development of learners so that he/she can be a graduate who gained proper knowledge and skills needed for creative work and production.

Physical education is an applied discipline that includes theories and practical applications. It, also,

includes several connected and integrated fields, each of which has its own knowledge structure. But actually the used topics and concepts remain disconnected and finally lead to massive disconnected amount of knowledge that only aims at helping students to pass tests that merely assess the minimum level of knowledge. Fencing, as a sport, has undergone several technological advancements and developments. These developments, in turn, led to new modifications and changes in the international rules and regulations to increase the difficulty level of the game. For example, match duration decreased from 4 minutes to 3 minutes while the number of touches 5 touches remained unchanged. when teaching and training fencing skills, we should concentrate on developing the fencers' sense as the integration of skills and sense is the way to progress [1,2].

Systemic approach is one of the modern approaches applied by educational researchers to understand

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phenomena with all its various and inter-connected aspects. The systemic approach depends on the concept of "system" that means a set of things that accumulate in a certain field and has several inter-relations that aim at achieving specific goals. The importance of the systemic approach is concentrated in its totalitarian view towards the situation or the problem. This leads to enhancing the efficiency of the educational process in a total systemic way [3].

The researchers think that applying the systemic approach in fencing leads the learners to acquire the systemic thinking and the meaningful learning objectives connected to it. This provides the learners with knowledge, facts and concepts and its inter-connected relations in an organized way. According to the researchers' knowledge, there are no previous studies that used the systemic approach in teaching and learning fencing skills. This means that this research represents a newly emergent trend in scientific research that is based on modern approaches leading to total quality in education.

The current research aimed at identifying the effects of using the systemic approach on cognitive acquisition and learning some fencing skills besides identifying the sample members' reflections on using the systemic approach.

The Researchers Hypothesized That:

- There are statistically significant differences between the means of pre- and post- tests of the experimental and control groups on the performance level in favor of the post-test.
- There are statistically significant differences between the means of pre- and post- tests of the experimental and control groups on the cognitive acquisition in favor of the post-test.
- The percentage of member who agreed on using the systemic approach is far greater than those who did not agree.

The Researchers Adopted the Following Terms in the Current Research:
Systemic Approach: identified it as studying concepts or topics through and integrated system where all relations among any concept or topic and the rest of topics or concepts is clear. This makes the student able to link what has been studied to what is going to be studied through a specific plan [4].

Linear Approach: Concepts and topics used are still separated, leading to a disconnected pile of knowledge representing the minimum level of the cognitive aspect [5].

Fencing: It is an attack/defense between two opponents, where each one of them is trying to score touches using a specific weapon (Foil - Sapper - Epee) [6].

MATERIALS AND METHODS

Approach: The researchers used the quasi-experimental approach with tow groups (control/experimental) and pre-/post- measurements.

Community and Sample: Research community was junior fencers of "The Military Institution" sports club (under 13 years). Sample (18 fencers) was randomly chosen and divided into two equivalent groups (9 fencers each). The experimental group used the systemic approach while the control group used instruction approach in learning the same set of investigated skills.

The researchers identified the groups' equivalence in age, height, weight, IQ and some physical tests (Legs ability - coordination -- flexibility - agility- balance).

From table 1, it is clear that there are no statistically significant differences between the means of pre-test for both groups on these variables as (t) calculated values were below (t) table values on p=o.o5. This indicates the equivalence of both groups on these variables.

From table 2, it is clear that there are no statistically significant differences between the means of pre-test for both groups on physical tests as (t) calculated values were below (t) table values on p=o.o5. This indicates the equivalence of both groups on these tests.

From table 3, it is clear that there are no statistically significant differences between the means of pre-test for both groups on technical tests and the knowledge acquisition test as (t) calculated values were below (t) table values on p=o.o5. This indicates the equivalence of both groups on these tests.

Data Collection Instruments and Tests
First: Devices: A restameter for measuring height and weight - Stop watch - Measuring tape - A 40cm height box - Data recoding form

Second: Tests: Intelligence test - Physical tests - Skills test - Knowledge acquisition test - Work sheets using the systemic approach for junior players on fencing skills.

Table 1: Variance significance between the means of pre-test scores of the two groups in age, height, weight and IQ

Variables	Measurement	Experimental		Control		Means difference	(t) value
		Means	SD	Means	SD		
Age	Year	12.63	2.64	12.72	3.06	0.09	0.06
Height	cm	153.03	7.33	158.32	8.93	5.29	1.37
Weight	Kg	42.44	4.94	41.59	4.64	0.85	0.37
IQ	Point	43.89	4.43	42.94	5.78	0.95	0.39

(t) Table values on p=0.05 =1.74

Table 2: Variance significance between the means of pre-test scores of the two groups in physical tests for fencing skills under investigation

Variables	Measurement	Experimental		Control		Means difference	(t) value
		Means	SD	Means	SD		
Flexibility	cm	6.98	2.05	7.35	2.74	0.37	0.32
Agility	Sec	13.44	3.48	14.05	3.89	0.61	0.34
Vertical jump	cm	26.85	6.93	28.81	5.35	1.96	0.67
Balance	Sec	9.34	2.61	8.56	2.09	0.78	0.93
Coordination	Sec	6.73	2.82	7.04	3.78	0.31	0.19

(t) Table values on p=0.05 =1.74

Table 3: Variance significance between the means of pre-test scores of the two groups in technical tests for fencing skills under investigation

Variables	Measurement	Control		Experimental		Means difference	(t) value
		Means	SD	Means	SD		
Stance	Degree	1.96	0.84	2.24	0.67	0.28	0.78
Advance	Degree	1.23	0.56	1.46	0.56	0.23	0.78
Retreat	Degree	1.14	0.37	1.26	0.53	0.12	0.55
Lunge	Degree	0.54	0.64	0.63	0.57	0.09	0.32
knowledge acquisition	Degree	2.4	1.13	1.13	0.78	1.27	0.42

(t) Table values on p=0.05 =1.74

Form for recording junior players' reflections and opinions about the systemic approach (post-test only)

Intelligence Test (Appendix 1): The researchers used the pictured intelligence test (prepared by Ahmed Zaky Saleh) as it is non-verbal test that does not use language and only uses the individuals' abilities on deciding on differences and similarities among shapes and pictures included [7].

Physical Tests (Appendix 2): The researchers reviewed the previous literature related to physical characteristics of fencing. These physical characteristics were put in a form a presented to a group of experts to identify the physical characteristics related to fencing skills under investigation. These characteristics were (flexibility - agility - legs ability - coordination - balance). Validity and stability of the tests were calculated as shown in appendix [8-10].

Skills Tests (Appendix 3) (Prepared by Researchers): The researchers designed a form for evaluating the skills level of fencing skills under investigation (stance - advance - retreat - lunge).

Validity: the researchers presented the form on5 fencing experts (Appendix 4) to judge the form's content and suitability for the sample level. Experts had consent on the validity of the form as it measures what it is meant to measure.

Knowledge Acquisition Test (Appendix 5) (Prepared by the Researchers): The test aims at measuring knowledge acquisition level of the sample about the investigated fencing skills. After reviewing the related literature, the researchers identified three axes of this test (historical evolution of fencing - fencing international rules and regulations - fencing skills). Procedures of preparing the test and calculating its scientific coefficients are shown in Appendix 5.

The approach under investigation: (Appendix 6). After literature review, [3, 5, 11, 12] the researchers followed the steps of preparing the educational unit as shown in Appendix6.

Pilot Study: After preparing the recommended modules, the researchers applied them on a sample of 8 fencers from the same research community and outside the main sample to identify it suitability to fencers' abilities, their understanding and comprehension. They also tested the validity of equipments and means time of each module. The pilot study findings indicated that the module is suitable for its objectives and ready to be applied (Appendix 6).

Pre-test: Pre-test was applied on both experimental and control groups on the performance level of some fencing skills on 1 / 4 / 2010   .

Main Study: After the pre-test, the researchers applied the recommended module, prepared by the systemic approach on the experimental group from 2 / 4 / 2010 to 29 / 4 /2010 (two modules per week for four weeks). Module duration was 90 minutes distributed as follows: administrative work (5 minutes), general physical preparation 10 minutes, specific physical preparation 10 minutes (footwork 5 minutes + wall exercises 5 minutes), educational activity (explaining skills using systemic approach) 35 minutes, applied activity 20 minutes and conclusion 5 minutes. The experimental and control group share the same module beginning and then groups are separated during educational and applied activities [Appendix 7].

Appendix 1: The Pictured Intelligence Test
Prepared by: Dr. Ahmed Zaky Saleh

Name: ……………………………….
Age: ………………………………….
Date: …………………………………

Score   Grade

Scorer's signature
....

Scientific Coefficients of the Test
Validity: to calculate the validity of this test, the researchers used the comparison between the two sample extremes after rating the sample in a descending order as each extreme represents 25% of the total sample.

Post-test: After application of the recommended module, the researchers applied the post-test on both groups on 30 / 4 / 2010.

The Opinions and Reflections about Using the Systemic Approach Questionnaire: This questionnaire aimed at identifying the opinions and reflections of the sample members about using the systemic approach in learning some fencing skills. The researchers designed this questionnaire after reviewing related literature on how to design learning attitudes questionnaires. The questionnaire contained 20 items according to the following conditions:

• Items are easy-to-understand and are not complex.
• The questionnaire is balanced, concerning positive and negative items.

Fencers are asked to give their opinions about each item on three-point-scale (2 agree -1 somehow - 0 do not agree for positive items and 3 do not agree - 2 somehow - 1 agree for negative items).

The questionnaire was applied on the experimental group two weeks after the program as it has not been used on the main community before.

The researchers identified the questionnaire validity by presenting it to 4 sports psychology experts. Experts agreed that the questionnaire is valid to evaluate the affective aspects of fencers and all items were valid. Consensus reached (100%).

The researchers used test/re-test approach to identify the questionnaire stability. Time interval between test and re-test was two weeks and correlation coefficient between the two tests was (0.78) indicating that the questionnaire is stable.

Table 1:Correlation coefficients between test and retest on intelligence test.

|	Test		Retest		
Variables	Means	SD	Means	SD	(r) value
Intelligence test	42.74	5.87	43.98	4.89	0.87*

(r) Table values on p=0.05 =0.707

From table 1, it is clear correlation coefficient between test and retest on intelligence test was (0.87) and this indicates the test validity.

Stability: the researchers used the self-consistency by calculating the square root of the test's validity. This equals (0.93) and this is considered a high value indicating the stability of the test.

Instructions: This test is meant to measure the ability to recognize the differences and similarities between things and objects. The test includes sets of pictures. Each set contains five pictures or shapes. Four of these are similar in one or more characteristics and only one is different. You are asked to find the different shape or picture and put (x) on it.

Now, let's practice on the following examples to make sure that you understand this kind of problems: Find the odd-one-out and put (x) on it.
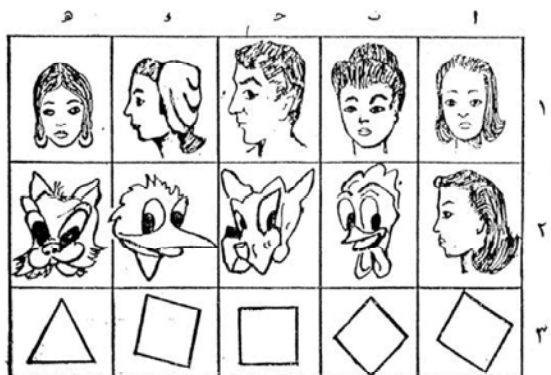

What is the different shape in set (1)?

You may notice that all pictures represent "a girl" or "a woman" except for picture (c) as it represents "a man". So, you should put (x) on it.

- The odd-one-out in set (2) is shape (a), why?
- The odd-one-out in set (3) is shape (e), why?

Now, Answer the Following on Your Own Then Put the Pen Down:

- The odd-one-out in set (4) is shape (d), why?
- The odd-one-out in set (5) is shape (a), why?
- The odd-one-out in set (6) is shape (b), why?
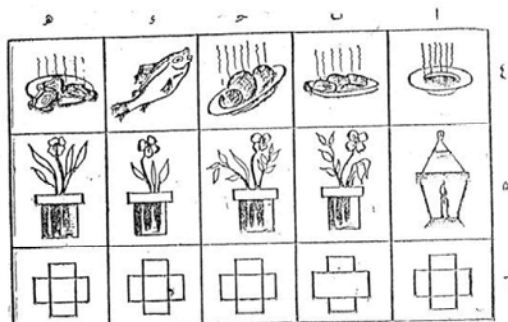
As you understand this kind of problems, you are required to work as fast and accurate as you can without making mistakes. Don't waste too much time in one question. You are only given 10 minutes to answer 60 questions.

You are not supposed to answer all the questions but don't waste too much time on one question.

When you are instructed to begin, answer until you are told to put the pen down.

Don't turn this page before you are allowed to. Don't ask questions that make you lose time.
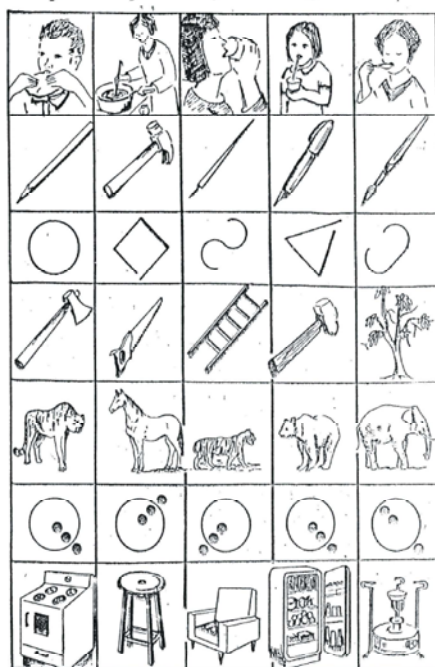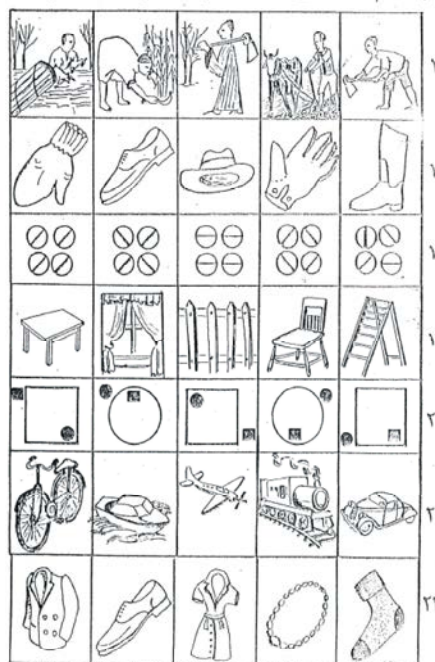
Appendix 2: Physical Characteristics Tests

Validity: to calculate the validity of physical tests, the researchers the distinctive validly by applying tests on two groups; distinct group (8 fencers) and non-distinct group (8 non-fencers). Table 1 shows the validity of these tests.

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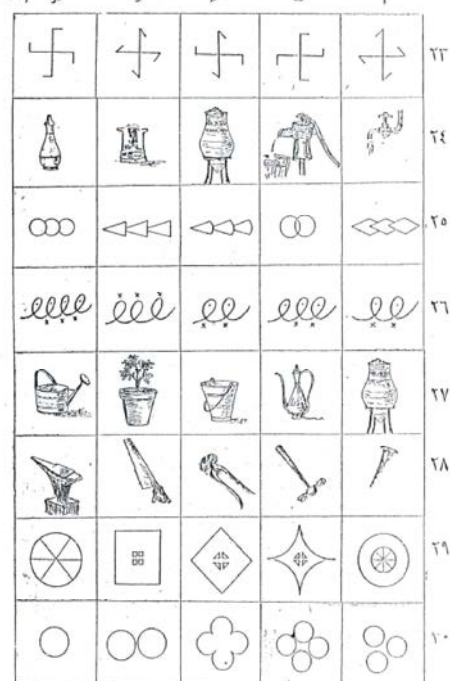Table 1:Difference significance between distinct and non-distinct groups on the investigated tests (n=16)

Variables	Measurement	Experimental		Control		Means difference	(t) value
		Means	SD	Means	SD		
Flexibility	Cm	5.87	1.76	1.53	0.63	4.34	6.56*
Agility	Second	5.84	2.78	11.67	2.74	7.91	*6.89
Legs ability	Cm	28.63	2.75	11.73	2.56	16.90	*7.59
Coordination	Second	5.76	1.08	8.97	1.37	3.10	*4.35
Balance	Second	6.37	1.37	11.74	2.84	5.37	*4.18

(t) Table values on p=0.05 =1.76

Table 1 shows statistical significant differences between distinct and non-distinct groups on physical tests in favor of the distinct group. This indicates tests validity as it is able to show distinctions between different groups.

Stability: to calculate stability, the researchers used test/re-test approach on a sample of (16) junior fencers from the same research community and outside the main sample. Time interval between test and re-test was 3 days. Correlation coefficients between the two applications were calculated as shown in table .

Table 2: Correlation coefficients between the two applications of physical tests (n=16)

Physical tests	Test		Retest		(r) value
	Means	SD	Means	SD	
Flexibility	6.68	1.74	6.64	1.46	*0.87
Agility	10.36	2.03	10.43	2.88	*0.79
Legs ability	23.85	4.37	23.95	4.03	*0.81
Coordination	7.98	2.81	8.13	2.54	*0.79
Balance	6.44	1.83	6.83	2.04	*0.78

(r) Table values on p=0.05 =0.497

Correlation coefficients (r) between test and re-test ranged between 0.78 and 0.87. These values are statistically significant, indicating the stability of these tests:

First Test: Flexibility Test (Bending trunk from standing)

Aim: To measure trunk and thigh flexibility in forward bending from standing.

Tools: A graded ruler (50 cm) - wooden cubic box (each side 50 cm). The ruler is fixed to the box side so that half of the ruler is above the edge and the other half is under the edge.

Performance: From standing position, the player bends his/her trunk forwards and downwards so that his/her hand is in front of the measurement. From this position the player tries to bend his/her trunk as far as possible very hard and slowly without bending his/her knees and holds this position for 2:3 seconds.

Recording: The player records the farthest point that his/her finger tips can reach on the measurement. Points are in negative values if the fingers touch the upper half of the measurement and with positive values if the fingers touch the lower half.

Second Test: Agility Test (rebound running 4x10m)

Aim: To measure agility.

**Tools:** Stop watch - two parallel lines with 10m between them.

Performance: The player stands behind the base line. When the player hears the start signal, he/she runs as fast as possible to the opposite line and passes it with both feet then turns back to pass the baseline with the same method and repeats this until he/she covers 40m.

Recording: The player records the time needed for covering the required distance (4x10m) from the start signal until passing the base line after covering 40m.

Third Test: Coordination Test (numbered circles test)

Aim: To measure coordination.

Tools: Stop-watch - eight numbered circles drown on the ground (each circle is 60 cm In diameter) as shown in the following figure.
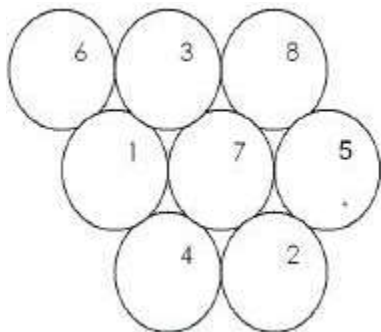
Performance: The player stands in circle (1) and with the signal he/she jumps into circle number (2) then number (3) and so on as fast as he/she can.

Recording: The player records the time used to cover all the eight circles.

Fourth Test: Leg ability Test (wide jump from stance)

Aim: To measure leg muscles ability.

Tools: Flat ground that is not slippery - measuring tape - stat line drown on the ground .

Performance: The player stands behind the start line with feet apart and arms high. Arms swing forwards, downwards and backwards with knees slightly bent and trunk leans forwards until reaching what looks like the swimming start position. From this position, swing arms hard and reach legs alongside the trunk and push the ground with feet. Try to jump forwards as far as you can.

Recording: The player has two trials and records the best of th

Fifth Test: Standing with instep on a cube.

Aim: To measure stable balance.

Tools:

• A cube (10x10x10 cm).
• A stop-watch

Performance:
• The player stands on the cube and puts the second foot either on the cube or on the ground
• With the signal, the player raises the foot on the ground or on the cube and pivots on his/her instep on the cube.
• Balance is maintained for as long as possible then repeat with the other foot.

Directions:
- This test is done without shoes.
- Hands are fixed on the waist during the test.
- Descending the free foot means the end of the test. The same is true for descending the heel of the balance foot.

Recording: The researcher records the period of maintaining balance on the cube from the moment the free foot leaves the ground until touching the ground with any part of the body.

Appendix 3: Evaluation form for the technical performance level of fencing skill Prepared by the researcher

Skill	Technical aspects	Perfect score	Player's score
Preparation	Head, shoulders and trunk: Head is vertical and looks directly to the opponent. Shoulder should not fall down or round. Trunk is vertical without leaning forwards or backwards or to any side	3	
	Arms: For armed arm: the arm and weapon are straight and parallel tow the ground. Upper and lower arms are on more than 90 degrees angle. Elbow is away from the body with one fest. For the free arm: High behind the head with a 90 degree angle between upper and lower arms. Upper arm is extended from the shoulder and parallel to the ground. Wrest and fingers bent towards the head	3	
	Legs: Knees bent outwards and vertical to toes. Distance between feet is almost one and half foot. Forward foot is vertical to the heel of the rear foot and heels are on one line	4	
	Total	10	
Advance	Trunk vertical on pelvic and look towards opponent	2	
	Foot work is sequential as the front foot moves first then the rear foot.	2	
	Feet move for a suitable distance forwards keeping the same distance between them. Moves are performed from knee joint	2	
	Keep knees bent and body straight. Keep the vertical imaginary line between heels of forward and backward feet during movements.	2	
	Advance should be fast and flexible and keep head stable	2	
	Total	10	
Retreat	Trunk vertical on pelvic and look towards opponent	2	
	Foot work is sequential as the rear foot moves first then the front foot.	2	
	Feet move for a suitable distance backwards keeping the same distance between them. Moves are performed from knee joint and landing is done with instep first	2	
	Keep knees bent and body straight. Keep the vertical imaginary line between heels of forward and backward feet during movements.	2	
	Retreat should be fast and flexible and keep head stable	2	
	Total	10	
Lounge	Arms: Armed arm extended flexibly forward towards the opponent's target. Shoulder, arm, fest and weapon are straight lined parallel to the ground. Tip of the weapon is slightly lower than the guard.	2	
	Push the free arm backwards and downwards quickly to be parallel to the rear leg. Palm is upwards without touching the rear leg.	2	
	Legs: Push the rear leg forwards first by extending your knee then quickly move the front leg forwards and touch the ground with heel first then with instep.	2	
	Rear leg is fully extended and foot palm on the ground and knee of front leg is perpendicular to the instep.		2
	Movement should be flowing sequentially and hand should precede foot in movement.	2	
	Total	10	

Appendix 4: List of Experts

Curricula and methodology experts

No.	Name	Title	Place of Work
1-	Zainab Mohamed Amin	Assistant Professor	Faculty of Specific Education - Minia University
2-	Mohsen Ismaeel Ibraheem	Professor	Faculty of Physical Education - Minia University
3-	Wafa Al-Mahy	Professor	Faculty of Physical Education - Minia University
4-	Esam El-Din Azmy	Professor	Faculty of Physical Education - Minia University
5-	Makarem Helmy Abo Harga	Professor	Faculty of Physical Education - Minia University

Fencing experts

No.	Name	Title	Place of Work
1-	Ibraheem Nabeel Abd El-Aziz	Professor	Faculty of Physical Education - Helwan University
2-	El-Sayed Samy Salah El-Din	Assistant Professor	Faculty of Physical Education - Tanta University
3-	Belal Badawy	Assistant Professor	Faculty of Physical Education - Helwan University
4-	Hasan Hosny	Vice president of Egyptian Fencing Federation	Egyptian Fencing Federation

Psychology experts

No.	Name	Title	Place of Work
1-	Azza Shawky Al-Wasimy	Professor	Faculty of Physical Education - Tanta University
2-	Riad Zakaria Al-Menshawy	Professor	Faculty of Physical Education - Tanta University
3-	Ikhlas Abd El-Hafiz	Professor	Faculty of Physical Education - Minia University
4-	Mostafa Hasan Bahy	Professor	Faculty of Physical Education - Minia University

Appendix 5: Knowledge Acquisition Test

Prepared by the Researchers: The researchers prepared a form to identify the experts' opinions (9 experts with PhD degree and not less than 5 years of experience - staff members of faculties of physical education) about the percentage of importance for each axis of the test.

Table 1: percentage of importance for each axis

No	Axis	Percentage of importance
1-	Historical evolution	30 %
2-	Technique	40 %
3-	Rules	30 %

The researchers formulated the test items (items) divided into (3) axes. The researchers considered that each item should have only one meaning and formed in correct language. Difficult vocabulary and words with more than one meaning were eliminated. Items were presented to experts (9) to identify its validity and all experts agreed upon them.

The researchers formed the items and arranged it as all items belonging to the same axis come after each others. The test was formed as a multiple choice test.

Fencers are instructed to read each item and its related choices then choose the correct response accurately and not to leave any item without response. Each item scores only one point.

The initial draft of the test was presented to (5) experts of fencing and physical education methodology to assure its suitability to the level of fencers and its comprehensiveness and that each item has only one response. Number of items was (45) and according to experts opinions the number is reduced to (4) items. Table (8) shows test axes and each axis's items.

Table 2: Axes of knowledge acquisition test according to the levels of knowledge, comprehension and application and each axis's items.

No	Axis	Number of items	Knowledge	Comprehension	Application	Items digits
1-	Historical evolution	12	12	0	0	1 - 12
2-	Technique	16	4	4	8	25 - 40
3-	Rules	12	6	0	6	13 - 24

The researchers analyzed test items through applying it on a sample of (15 fencers) from the research community and outside the main sample. This analysis is meant to identify easiness and difficulty factors of the tests as all items that show difficulty factor over (0.9) or under (0.1) should be discarded. The researchers used the following equation to calculate easiness and difficulty factors:

$$\frac{\text{number of correct responses}}{\text{number of correct responses} + \text{number of wrong responses}} = \frac{cr}{cr + wr}$$

as (cr) referes to number of correct responses and (wr) referes to number of wrong responses

There is a direct disproportional relation between easiness and difficulty as their sum equals 1. This means: easiness factor = 1 - difficulty factor and difficulty factor = 1 - easiness factor.

Table 3: Easiness and difficulty factors of knowledge acquisition test

No	Easiness factor	Difficulty factor	No	Easiness factor	Difficulty factor
1	0.54	0.46	21	0.55	0.45
2	0.52	0.48	22	0.52	0.48
3	0.49	0.51	23	0.48	0.52
4	0.44	0.56	24	0.53	0.47
5	0.51	0.49	25	0.51	0.49
6	0.52	0.48	26	0.43	0.47
7	0.48	0.52	27	0.43	0.47
8	0.55	0.45	28	0.48	0.52
9	0.43	0.47	29	0.51	0.49
10	0.52	0.48	30	0.44	0.56
11	0.47	0.53	31	0.57	0.43
12	0.49	0.51	32	0.45	0.45
13	0.56	0.44	33	0.58	0.42
14	0.51	0.49	34	0.52	0.48
15	0.51	0.49	35	0.49	0.51
16	0.49	0.51	36	0.43	0.57
17	0.48	0.52	37	0.51	0.49
18	0.44	0.56	38	0.46	0.54
19	0.52	0.48	39	0.41	0.49
20	0.48	0.52	40	0.58	0.52

Table showed that easiness factor ranged between (0.47 and 0.54) while difficulty factor ranged between (0.48 and 0.52).

Distinction factor for each item (item stability) and then identifying the ability of each item to make distinction was calculated from the following equation:
Variance = easiness factor x difficulty factor.

Table 4: distinction factor of the knowledge acquisition test:

No	Distinction factor (α)	No	Distinction factor (α)	No	Distinction factor (α)
1	0.25	14	0.25	27	0.25
2	0.25	15	0.25	28	0.25
3	0.25	16	0.25	29	0.25
4	0.25	17	0.25	30	0.25
5	0.25	18	0.25	31	0.25
6	0.25	19	0.25	32	0.20
7	0.25	20	0.25	33	0.25
8	0.25	21	0.25	34	0.25
9	0.20	22	0.25	35	0.25
10	0.25	23	0.25	36	0.25
11	0.25	24	0.25	37	0.25
12	0.25	25	0.25	38	0.25
13	0.25	26	0.20	39	0.39
				40	0.30

From table4, it is clear that items of test has a distinctive value ranging between (0.20 and 0.30). Thus, the test can be used as tool to evaluate knowledge acquisition.

Test was corrected by giving one point for each correct response. The researchers prepared key answers for the test.

Test Time Was Calculated According to the Following Equation:

$$\frac{first\ studen's\ time + last\ student's\ time}{2}$$

Test validity was calculated using internal consistency as the test was applied on a sample of (8) fencers from the same research community and outside the main sample. Correlation coefficients between each item score and total axis score, each item score and total test score and each axis score and total test score.

Table 5:Correlation coefficients between each item score and total axis score (n=8)

Historical evolution		Technique		Rules	
Item number	(r) value	Item number	(r) value	Item number	(r) value
1	*0.78	1	*0.86	1	*0.88
2	*0.83	2	*0.84	2	*0.73
3	*0.76	3	*0.87	3	*0.69
4	*0.89	4	*0.88	4	*0.72
5	*0.79	5	*0.91	5	*0.87
6	*0.89	6	*0.82	6	*0.85
7	*0.82	7	*0.75	7	*0.78
8	*0.74	8	*0.79	8	*0.74
9	*0.88	9	*0.79	9	*0.87
10	*0.89	10	*0.83	10	*0.81
11	*0.91	11	*0.78	11	*0.78
12	*0.86	12	*0.81	12	*0.89
-	-	13	*0.69	-	-
-	-	14	*0.67	-	-
-	-	15	*0.83	-	-
-	-	16	*0.74	-	-

(r) Table values on p=0.05 = 0.622

From table5 , correlation coefficients between items of "historical evaluation" and the axis total score ranged between (0.74 and 0.91). Correlation coefficients between items of "techniques" and the axis total score ranged between 0.67and 0.91 . Correlation coefficients between items of "rules" and the axis total score ranged between (0.69 and 0.89). These values were all statistically significant and indicate each axis internal consistency.

Table 6:Correlation coefficients between each axis score and total test score (n=8)

Item number	(r) value	Item number	(r) value	Item number	(r) value
Historical evolution	*0.68	Technique	*0.78	Rules	*0.85

(r) Table values on p=0.05 = 0.622

From table 6,correlation coefficients between each axis score and total test score ranged between (0.78 and 0.86). These values were all statistically significant and indicate test internal consistency.

Choose the Correct Answer from Brackets:

- Egypt reached the eight-teams round in Berlin Olympics in (1896 - 1897 - 1898)
- In pre-historic ages, man invented weapons to (defend himself - eat with them - help him to walk)
- Ancient Egyptians recorded the first fencing game in *1190 - 1180 - 1170) BC.
- The Italians invented Saber weapon at the end of (16th - 15th - 14th) century.
- De Baron was appointed coach for the weapons club in (1947 - 1948 - 1949)
- The French "Leopold Caesar" was the first to invent (the mask - the sword - the suite)
- The Egyptians weapons club was one of the oldest clubs as it was established in (1892 - 1891 - 1983)
- Fencing turned from battlefields to sports field in (14th - 13th - 15th) century
- The mask appeared in fencing in (1790 - 1780 - 1770)
- Fencing appeared in ancient inscriptions of (ancient Egyptians - Romans - Hindus)
- he Egyptian team was ranked third in the world championship in Cairo in (1949 - 1950 - 1951)
- he Egyptian fencing federation was founded in (1928 - 1927 - 1930)
- he target in Saber is (the hole body except the guard - trunk and chest - back and abdomen triangle)
- aber is (110cm in height and 500g in weight - 110cm in height and 750g in weight - 105cm in height and 770g in weight)
- Fencing best is (14m - 12m - 16m) in length.
- If the fencer purposefully plays rough and hits with guard and handle he/she gets a (yellow - red - black) card
- Yellow card is given for invalid equipments and this is repeated a (red - black - yellow) card is given.
- Maximum diameter of the Saber guard is (14x15cm - 14x14cm - 13x14cm)
- The two fencers compete in the preliminary round until one of them gets five touches in maximum time of *4 minutes - 3 minutes - 5 minutes)
- If the fencer get out of the best with one foot, this action (deserves a warning - deserves nothing - deserves a black card)
- The width of the fencing best is (2m - 1m - 1.5m)
- The two back lines of the best are (7m - 5m - 4m) away from the mid line.
- Length of the Saber blade is (90 cm - 100cm - 80cm)
- In looser-out matches, the match continues for fifteen touches in maximum time of (8 minutes - 9 minutes - 10 minutes)
- In stance positions, feet form (obtuse - right - acute)
- Distance between feet in stance should be (foot - pelvic - arm) wide apart
- Center of gravity in stance is distributed on (front foot - rear foot - both feet equally)
- In stance, elbow of armed arm is (2 fists - one fist - 3 fists) away from trunk
- In stance, palm of the armed arm faces (upward - downward - sideward)
- In stance, upper arm of the free arm is parallel to (the armed arm - the ground - the forearm)
- In stance, both knees are bent, facing outwards and perpendicular to (the ground - feet - insteps)
- In advance, movement should be done from the (knee - foot - thigh) joint
- In advance, you should descend first on the (instep - whole - heel) of the front foot
- Advance should be quick and flowing while maintaining the stability of the (arms - trunk - head)
- In retreat, you should descend first on the (instep - whole - heel) of the rear foot
- In retreat, the body center of gravity shifts (forward - to the middle - backward)
- The armed arm should be fully extended towards the target so that the shoulder, arm, fist and weapon are on a straight line when performing (advance - lunge - retreat)
- In lunge, the free arm is pushed backwards and downwards quickly so that it is parallel with the (rear foot - ground - front foot)
- In lunge, palm of the free arm faces (the ground - upwards - downwards) without touching the rear foot
- In lunge, knee of the front foot is perpendicular to (the ground - feet - insteps)

Appendix 6: Opinions and reflections towards using the systemic approach questionnaire

S	Statements	Junior's opinions		
		Yes	Somehow	No
	The used approach helped me in achieving the following goals			
1-	Performing the required skills			
2-	Inventing simple and inexpensive teaching aids			
3-	Responding to the instructor's directions when performing the skill			
4-	I didn't feel any progress in learning the skill			
5-	Made me cooperative with my group			
6-	Increased my self-confidence during learning the skill			
7-	Taking responsibility when joining the coach in equipments preparation			
8-	Respecting rules of this skill			
9-	I feel aggressive towards the others			
10-	I depend on myself in modifying and correcting my mistakes			
11-	I keep discipline and obey orders.			
12-	I got bored when learning the skills			
13-	Solving problems that face me			
14-	Controlling myself in difficult situations			
15-	Made me interested in modern teaching approaches			
16-	It enhanced my sense of sequencing and connection among skills			
17-	Doing my best to enhance my performance level			
18-	The ability to autonomously correct my mistakes			
19-	The ability to explain skills to my mates			
20-	I felt happy when I learned fencing skills			

Appendix 7 : A sample of educational unit using the systemic approach for learning "Stance" skill

Unit: 1   Week: 1   Duration: (90) minutes.

| No	Part	Duration	Component	Behavioral objectives	Equipments
1-	Administrative work	5 minutes	Taking absence and preparing equipments	Learners gets used to order and obeying instructor's orders	Balls - ladder - rims
2-	General physical preparation	10 minutes	Running around the court with swinging right arm forwards then backwards then repeating with left arm	Learners gets used to warm-up exercises and doing warm-up	Cones - rimes
3-	Specific physical preparation	10 minutes	(standing) trunk bent forwards and downwards with pressure (standing) arms high and palms hold each other and press upwards (long sitting) trunk bent forwards and downwards and hold feet and press (long sitting) knee bent inwards and hold feet and press (inclination) hold feet with arms and press upwards (standing - arms at sides) pull arms backwards with partner's help and stand still	Learner performs stretches and flexibility exercises	
4-	Educational activity	50 minutes	*Seven steps to be followed	Learner performs stance skill and correct technical performance Learner acquires knowledge of historical and legal aspects of fencing	
5-	Cool down	5 minutes	Relaxation exercises Jogging with wide steps and swinging arms to regulate pulse	Learner gets used to relaxation exercise Learner gets used order in signing out and leaving	

*Seven steps to be followed:

- Instructor introduces the stance skill to learners through a system consisting of several components. Each component is integrated with the others. If anything goes wrong with one component, the skill will not be performed correctly.
- The instructor asks learners about fencing and how to take a correct stance (facing or sideways) to avoid touches so that learners' attention is stimulated.
- The instructor gives several examples of the correct stance until learners reach the correct position.
- The instructor explains the stance as a general concept then divides it into its components (legs - trunk - arms - head).
- The instructor analyzes each component alone and shows the relation between each component's parts and the relations of each component and other components. Then the instructor gives his/her perspective about the system then explains the relations among the unit concepts.
- From the systemic figure, the instructor concludes the identified relations (for example 1 and 2) then continues to the unidentified relations.
- The learner performs. When performing a part of the skill, the learner ticks this relation to assure he/she knows it.
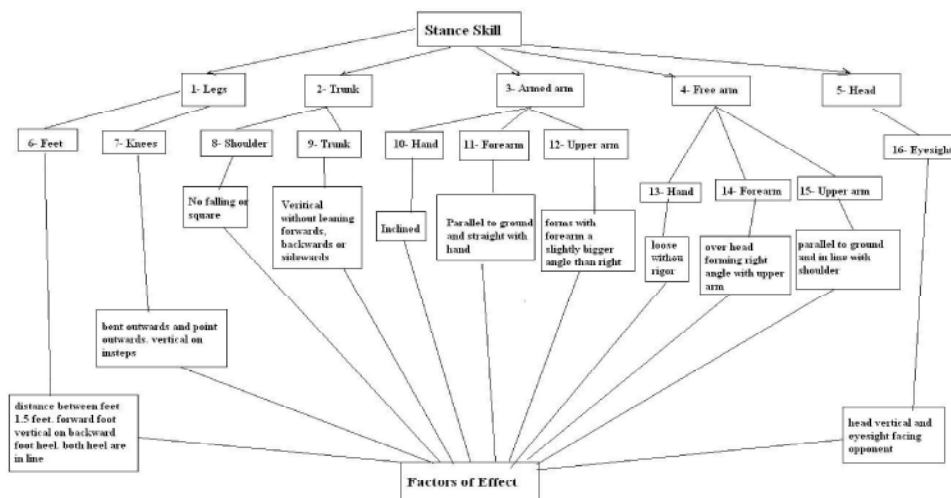
No.	Relations	Notes
1-	Relation between legs and feet	
2-	Relation between legs and knees	
3-	Relation between trunk and shoulder	
4-	Relation between trunk and legs	
5-	Relation between armed arm and forearm	
6-	Relation between forearm and upper arm	
7-	Relation between free arm and hands	
8-	Relation between forearm and hands	
9-	Relation between upper arm and forearm	
10-	Relation between trunk and head	
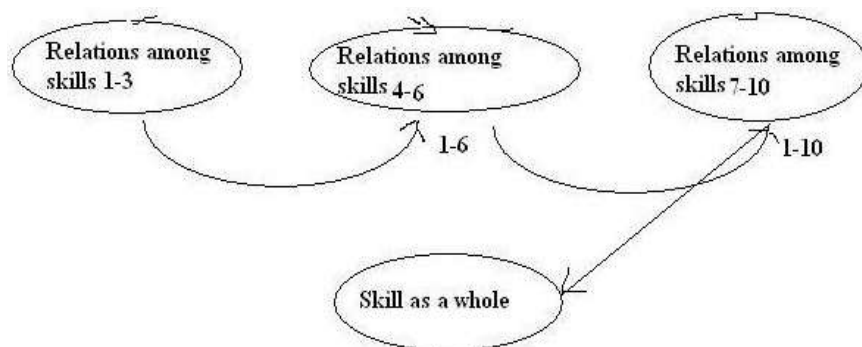
From the previous figure, it is clear that when teaching with systemic approach, each system takes from the preceding system and gives to the following one in a whole integrated framework representing the interchangeable and complex relations among the system's components.
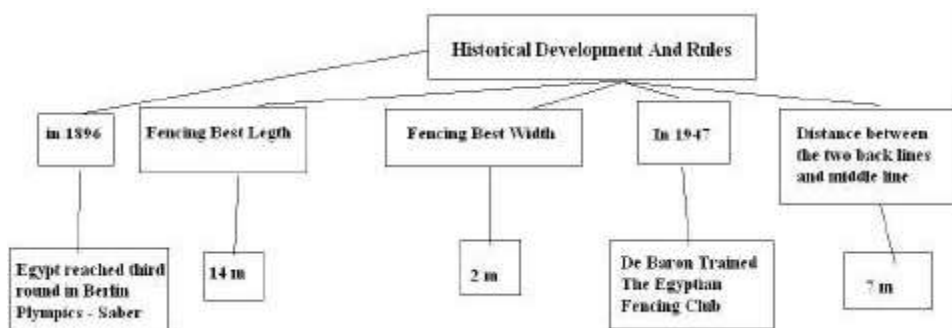
Evaluation:
What is the stance skill and why is it important?

Complete the Following:

- In stance position, feet from ……………. Angle.
- In stance position, feet are …………… width apart.
- In stance position, center of gravity is distributed on ……….

Tick (×) or (√)

- In stance position, elbow of armed arm is two fists away from trunk. (   )
- In stance position, palm of armed arm faces up. (   )
- In stance position, free arm elbow is parallel to forearm. (   )
- In stance position, knees are bent, pointing outwards and vertical on insteps.( )

Answer the Following:

- What is the width of fencing best?
- What is the length of fencing best?
- In what year did Egypt reach 3rd round?
- When did De Baron train the Egyptian fencing club?
- How far are the back lines from the middle line

RESULTS AND DISCUSSION

From table 5, there are statistically significant differences between the pre- and post- tests of the control group on skills tests under investigation in favor of the post-test as (t) calculated values were higher than its table values on p=0.05.

From table 6, there are statistically significant differences between the pre- and post- tests of the experimental group on skills tests under investigation in favor of the post-test as (t) calculated values were higher than its table values on p=0.05.

From table 7, there are statistically significant differences between the means of post- tests of both groups on skills tests under investigation in favor of the experimental group as (t) calculated values were higher than its table values on p=0.05.

From table 8, there are statistically significant differences between the pre- and post- tests of the control group on knowledge acquisition test in favor of the post-test as (t) calculated values were higher than its table values on p=0.05.

From table 9, there are statistically significant differences between the pre- and post- tests of

Table 5: difference significance between pre- and post-tests of the control group on skills tests under investigation

Tests	Pre Means	SD	Post Means	SD	Differences Means	SD	(t) Values
Stance	1.96	0.84	6.87	2.04	4.91	2.83	*6.67
Advance	1.23	0.56	7.02	1.12	5.79	1.39	*13.78
Retreat	1.14	0.37	6.93	1.72	5.79	2.07	*9.87
Lunge	0.54	0.64	7.78	1.04	7.24	1.73	*17.78

(t) Table values on p=0.05 =1.86

Table 6: difference significance between pre- and post-tests of the experimental group on skills tests under investigation.

Tests	Pre Means	SD	Post Means	SD	Differences Means	SD	(t) Values
Stance	2.24	0.67	8.83	1.82	6.59	1.85	10.19
Advance	1.46	0.56	8.98	1.03	7.52	1.79	19.24
Retreat	1.26	0.53	8.93	0.67	7.67	1.84	26.93
Lunge	0.63	0.57	8.94	0.54	0.31	1.08	31.75

(t) Table values on p=0.05 = 1.86

Table 7: Difference significance between means of post-tests of both groups on skills tests under investigation

Tests	Experimental group Means	SD	Control group Means	SD	Means difference	(t) Values
Stance	8.83	1.82	6.87	2.04	1.96	*2.15
Advance	8.98	1.03	7.02	1.12	1.96	*3.86
Retreat	8.93	0.67	6.93	1.72	2.00	*3.25
Lunge	8.94	0.54	7.78	1.04	1.16	*2.97

(t) Table values on p=0.05 = 1.74

Table 8: Difference significance between pre- and post-tests of the control group on knowledge acquisition test

Tests	Pre Means	SD	post Means	SD	Differences Means	SD	(t) Values
Knowledge acquisition test	2.4	1.13	28.65	2.56	26.25	2.78	28.14*

(t) Table values on p=0.05 = 1.86

Table 9: Difference significance between pre- and post-tests of the experimental group on knowledge acquisition test.

Tests	Pre Means	SD	post Means	SD	Differences Means	SD	(t) Values
Knowledge acquisition test	1.13	0.78	34.05	3.27	32.92	2.73	29.37*

(t) Table values on p=0.05 =1.86

Table 10: Difference significance between means of post-tests of both groups on knowledge acquisition test.

Tests	Experimental group Means	SD	Control group Means	SD	Means difference	(t) Values
Knowledge acquisition test	34.05	3.27	28.65	2.56	5.40	3.90*

(t) Table values on p=0.05 = 1.74

the experimental group on knowledge acquisition test in favor of the post-test as (t) calculated values were higher than its table values on p=0.05.

From table 10, there are statistically significant differences between the means of post- tests of both groups on knowledge acquisition test in favor of the experimental group as (t) calculated values were higher than its table values on p=0.05.

DISCUSSION

Table 5 indicates statistically significant differences between the pre- and post- tests of the control group on skills tests under investigation in favor of the post-test. This indicates a positive effect of the traditional approach on learning the under investigation skills. The researchers think that is due to the steps of the traditional approach (verbal explanation of skills - role modeling by instructor - learner's repetition of skill - instructor's correction of mistakes during learning process). This is consistent with who indicated that when the learner is given a clear idea about performance, his/her performance becomes more effective. Besides, punctuality and continuity of practice and learning and continuous competition among learners enhance their performance level [13]. When the learner is fully aware of the learned skill, he/she knows how to perform it correctly [10, 14]. Imagination, also, plays a major role in learning the required movement. This is in agreement with the results of previous studies [8, 15].

Table 6 indicates statistically significant differences between the pre- and post- tests of the experimental group on skills tests under investigation in favor of the post-test. This indicates a positive effect of the systemic approach on learning the under investigation skills. The researchers think that is due to the fact that using the systemic approach helps comprehending basic concepts related to these skills. Besides, putting these skills in systemic shape identified the relations among concepts and related skills and increased the ability to use them accurately during application. This leads to integrated learning of these skills as they represent related and interactive experiences from the learner's prospect. This is in agreement with the results of previous researches [11, 16-18] as these results indicated that the effect of systemic approach on learning basic skills was great and it has a positive effect on increasing learners' motivation towards a better learning than what is acquired from traditional approaches.

Table 7 indicated statistically significant differences between the post- tests of both group on skills tests

under investigation in favor of the experimental group. This indicates a positive effect of the systemic approach on learning the under investigation skills. The researchers think that using the systemic approach helped junior fencers in acquiring various thinking skills and helped developing their inclusive perspective as skills were graded from easy to difficult. Besides, it motivates the learner's thinking and interest to become a positive learner as the instructor introduces suggestions, in the form of questions and the learner identifies the relations trough his/her experience and not through responding to given information. Dividing the skill into a sequence of logical steps in a progressive and organized manner helps the learner to increase his/her focus to understand each part easily. This increased the success opportunities and decreased wrong responses. This is in agreement with previous researches [19-21] as they indicated the effectiveness of the systemic approach in achieving the skills objectives.

Table 8 indicated statistically significant differences between the pre- and post- tests of the control group on the cognitive test under investigation in favor of the post-test. This indicates a positive effect of the traditional approach that presented new information about history, rules and regulations and techniques of fencing skills under investigation during the instructional unit. This affected the learners' level of knowledge acquisition during the program. This is in agreement with previous studies [16, 21].

Table 9 indicates statistically significant differences between the pre- and post- tests of the experimental group on the cognitive test under investigation in favor of the post-test. This indicates a positive effect of the systemic approach on knowledge acquisition as it introduced learning aspects in the form of integrated systems that enabled them to acquire different thinking skills, especially systemic thinking and developing their comprehensive view. It also facilitates clarifying the interchanging relations among concepts, concluding a systemic scheme that shows the relations among lesson elements, organizing the learners' knowledge structure then finally using suitable methods of responses. This is in agreement with previous researches [17,18,22,23] indicating that the effectiveness of the systemic approach in knowledge acquisition is due to its link to learning theories of Osobel and Bruno and the structural theory that were concerned with reorganizing the knowledge structure, organizing the content and learner's activity, beginning with the whole then the parts and not with random connection among stimuli and responses.

Table 11: Opinions and reflections of the experimental group about using the systemic approach in learning some fencing skills

No	Agree	Somehow	Disagree	Percentile	Chi^2
1-	8	1	0	94.44	12.67
2-	7	2	0	88.89	8.67
3-	8	1	0	94.44	12.67
4-	0	2	7	88.89	8.67
5-	7	1	1	83.33	8
6-	7	1	1	83.33	8
7-	8	1	0	94.44	12.67
8-	8	1	0	94.44	12.67
9-	8	1	0	94.44	12.67
10-	7	1	1	83.33	8
11-	9	0	0	100	18
12-	0	1	8	94.44	12.67
13-	8	0	1	88.89	12.67
14-	8	1	0	94.44	12.67
15-	9	0	0	100	18
16-	9	0	0	100	18
17-	7	1	1	83.33	8
18-	7	1	1	83.33	8
19-	8	1	0	94.44	12.67
20-	9	0	0	100	18

Table 11 indicates that sample responses on each of the questionnaire items were statistically significant on p=0.05.

Table 10 indicated statistically significant differences between the post- tests of both group on the cognitive test under investigation in favor of the experimental group as (t) calculated value was higher than its table value on p=0.05. the researchers think that this is due to the increase of learners' concentration to achieve the learning objectives because of the systemic approach. The systemic approach, also, considered the individual differences among learners and increased their activity, effectiveness and desire to learn. It also encouraged scientific thinking. This is in agreement with previous researches [16, 17 ,24 ,25].

Table (11) showed the opinions and reflections of the experimental group. Results were statistically significant in favor of those who agreed. This is a good indicator that the systemic approach was effective in changing the sample attitudes towards learning. This is in agreement with previous studies [25,26] emphasizing on the importance of individualizing learning as it has positive effects on beginners' attitudes and tendencies, besides developing their mental abilities on transforming and utilizing information and ideas in new usages. Fahmy and Abd El-Sabour [3] assured that the emotional aspect can not be developed with mere reading about it or listening too its merits. Opportunities should be allowed to students to practice and form emotions towards their surrounding so that they can respond to it.

CONCLUSION

The Researchers Conclude the Following:

- Instruction has a positive effect on learning some fencing skills and knowledge acquisition for the sample.
- Systemic approach has a positive effect on learning some fencing skills and knowledge acquisition for the sample.
- The experimental group, using the systemic approach, was higher than the control group learning some fencing skills and knowledge acquisition for the sample.
- The percentage of those who agreed on using the systemic approach was higher than those who did not.

Recommendations
The Researchers Recommend the Following:

- Using the systemic approach in learning some fencing skills as it has positive effects on learning outcomes.
- Training teachers on modern teaching approaches to enable them develop their teaching practices.
- Performing more research using the systemic approach on other skills and sports activities.

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