The effect of using programmed concept maps on some defensive basic skills in Basket ball

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Research Abstract:

This study aims to design an educational program by using concept maps programmed to teach some defensive basic skills in Basketball (studied in the research) to the female students of the 4th year in Physical education faculty - El Sadat City University. The researcher used the experimental method through the experimental designing of two groups (experimental – control) as it suits the nature of the study. The research sample was chosen deliberately from the female students of the 4th year - Physical education faculty - El Sadat City University who are registered in the scholar year 2014/2015. They were divided into two groups: the experimental was (28) female students on which the method of (programmed concept mapping) is applied, the other is the control group contains (28) female students on which the (traditional method) is applied. In addition to (15) female students as the pilot study, and (7) female students were excluded to remain for repetition. The researcher performed the conformity procedure on the total research sample (basic & pilot). Also the procedures of before and after measurements were performed in physical fitness, intelligence, skill tests and knowledge acquisition tests: an educational program was designed by using concept maps programmed to teach some defensive basic skills in basketball (studied in the research) for the 4th year female students in physical education faculty; the researcher concluded the following: the effectiveness of using concept maps programmed to teach some defensive basic skills in basketball in teaching basketball skills, and increasing knowledge & information level of 4th year female students in physical education faculty in learning some basketball skills and the existence of an improving in the after measurement in favor

of the experimental group in some basketball skills of 4th year female students in physical education faculty.

Research Introduction & Problem:

Preparing a learner who is capable of performing a positive role requires a necessary search for teaching strategies which help the learner to find a meaning of what he is learned and develop his ability to solve problems; so he depends on himself in learning and does not wait the teacher to offer him ready-made solutions for the scientific problems he faces. (1: 53)

Basketball is considered one of the games that obtained a special attention in the field of physical education and sport considering its popularity, its diverse skills and its wide practice especially in the Egyptian society. Therefore, improving the student level in basketball is associated with a connected and integrated series of phases which are built on scientific bases contain the operations of programs preparing and training suitable for different age phases.

Basketball player must have a huge amount of different skills on top of which is the ability to defense play, and he should be prepared well to perform different defensive skills either individually or among the team.

Ahmed Amin & Abdel Aziz Salama (1986) see that defense is the best way to attack in basketball because good defense is the basis to build an effective attack. (2: 139)

Also many coaches see that the only way to win a game is achieved through alert defense; the team that has a consistent defense widely controls game outcomes.

Faye young & wayhecoffey (1984) add that good defense is a kind of good attack, as good defense makes the team present in the whole game not in the attack only. (3:93)

GLENN WILKES (1994), Whidden reynolds (1982), dick barnett (1971) assure that defense is required to make the play successful and its importance cannot be neglected in basket ball. The main factor in the difference between basketball ordinary teams and the teams which

reach top of the championship in the end of the season lies in the ability to perform defense. basketball player must possess a diverse group of different skills on top of which is the ability to perform a well prepared defense which means that he is distinguished with the ability to perform defense in addition to attack. (4: 47), (5: 59), (6: 47)

During the researcher's work in teaching for male & female students of Physical Education Faculty he noticed the decrease of skill and knowledge level of the female students through applying the knowledge test prepared by/ Ibrahim Ali Elwarafy (7) on the 4th year female students in the beginning of the scholar term. The rate of their knowledge acquisition which is low from the researcher point of view, the researcher attributed ???? that it is a rate. Also, not achieving the educational aims set for the curriculum through the traditional program of teaching basketball skills. The researcher noticed that many female students cannot perform defense basic skills in the right way during learning operation; the researcher sees that the inability to learn results from the lack of diverse teaching methods and continuous use of the followed method in which the teacher explains the skill verbally then performs a pattern without any participation in the educational situation from the female students, in this way, the teacher does not take into consideration the individual differences among them. Also some of them may not follow the explanation or face difficulty in understanding the correct performance technique of the skill which may affect their ability to perform the movements. Also some of them may not be able to see the pattern correctly, consequently, their motivation to learn the skill decrease which in turn affects their ability to perform the movements. Considering that basketball is one of the movement activities that contains many basic skills which differ in its difficulty degree, so it needs a period of education and application in order to reach the correct performance and then improving the performance level. Therefore, the researcher adopted teaching basketball curriculum by using concept

maps of some defensive basic skills considering them a new method in teaching in the field of physical education. As concept maps help to display all the concepts related to skills studied in the research hoping that this method will achieve the desired aims from the educational process in a better way. This urged the researcher to make the current study in order to recognize "the effect of using concept maps programmed to teach some defensive basic skills in basket ball".

Research aims:

1- To design an educational program by using concept maps programmed to teach some defensive basic skills in basket ball" (studied in the research) for 4th year female students of Physical education faculty – Al- Sadat City University.

2- To recognize the effect of using concept maps programmed to teach some defensive basic skills in basket ball" (studied in the research) for 4th year female students of Physical education faculty - Al Sadat City University.

Research Procedure:

Research Method: the researcher used the experimental method by using two groups one of them experimental and the other the control group as it suits the nature of the researcher.

Research Sample:

The research sample was chosen deliberately from the 4th year female students in the Physical Education Faculty, Al-Sadat University. Its number reached (78), and were divided into a basic research sample of (56), (28) of them for the experimental group on which the (programmed concept maps) methods was applied, and the control group of (28) female students on which (the traditional method) is applied. (15) Female student for the pilot study, and (7) were excluded for the repetition. The researcher performed the conformity procedure on the total research sample (basic & pilot).

Equivalence of basic sample individuals:

The researcher found the equivalence between the two groups of the research in all the variables studied

in the research: variables of growth rates, skilled performance and knowledge acquisition.

Table (1)

Differences significance between the after measurements of the variables studied in the research of the control & experimental groups

N1= N2= 28

No.	variables	Measure unit	Control group		Experimental group		Difference significance	"T" value
			mean	*deviation*	*mean*	*deviation*		
1	Age	year	19.57	0.5	19.53	0.57	0.03	0.33
2	Height	Cm	168.93	2.18	169.27	1.64	-0.33	0.93
3	Weight	Kg	67.67	3.49	67.8	2.86	-0.13	0.23
4	Intelligence	degree	69.97	6.39	69.8	7.72	0.17	0.13
5	Testing defense skill against the passer	degree	6.17	0.47	6.28	0.38	-0.12	-1.17
6	Testing defense block & follow-up skill	No.	3.74	0.29	3.86	0.34	-0.12	-1.33
7	Testing defense skill against the aimer	No.	2.89	0.16	2.81	0.21	0.08	1.71
8	Defense against tackler	Second	18.12	0.8	17.93	0.73	0.19	1.04
9	Defensive steps	Second	19.47	1.19	18.98	0.89	0.49	1.76
10	Knowledge test	Degree	28.54	5.63	27.61	4.85	-0.93	0.7

"T" table value at level 0.05= 2.045

Table (1) shows the lack of statistically shown differences between the after measurements of the variables studied in the research of the control & experimental groups, which indicates the equivalence between the two groups in research variables.

Data Gathering Means:

-Reference Analysis

- personal Interview

-Objective remarks –t test

Intelligence Test: Enclose (1)

The researcher applied the verbal intelligence test prepared by "Gaber Abdel Hameed, Mohammed AHMED Omar" (2007) (8), which proved its honesty and persistence to measure the characteristic it was prepared for, and the statistical treatment was made.

Skill Tests: Enclose (2)

After reviewing the scientific references and the previous studies, the researcher chose skill tests to measure some defense basic skills in Basketball which is part of the curriculum of the 4th year for girls in the scholar year 2014/2015. These tests were as follows:

1- Test of defense skill against the passer.
2- Test of defense block and follow-up.
3- Test of defense skill against the aimer.
4- Defense against the tackler.
5- Defensive steps. (reference 9)

The suggested educational program using programmed concept maps: enclose (4)

Content of concept maps program:

The program of programmed concept maps contains the curriculum for the 4th year female students represented in some defense basic skills in Basketball which are:

(Defensive steps – defense skill against the passer - the defensive block & follow-up – defense skill against the aimer – defense against the tackler)

Organization of program content:

The researcher coordinated with the technical specialized in designing programs used by computers in displaying and coordinating the content of the educational program on the CD before starting the designing. The content of the educational program of the 4th year was organized to include 5 programmed educational maps of the curriculum skills for 4th year female students in a way that each programmed map contained the following:

- Display of the theoretical concepts related to the skill & its usages.
- A pattern of the skill performance (educational film).
- Exercises to develop the skill.
- True or false questions about each skill.

The researcher used the computer in presenting the educational program but using the non-linear method which allows the female student to move freely inside the educational unit in the way that suits her capabilities and her self-speed in understanding and learning. Thus, the female

student controls the speed, the path, the information and its order according her self-capabilities.

Time plan of the program:

The researcher prepared the educational program to include (10) weeks as one educational unit per week, which means that the program contains (10) educational units; the time of each unit is (90) minutes divided to:

- (10) min. warming up.
- (35) min. the part related to the programmed concept maps (watching the concept map related to the skill and also its educational film on the computer, them applying what they watched and to return to the computer screen each time the student need that, as computer is available in the place where the practical application of the skills is performed under the supervision of the teacher).
- (40) min. teaching the rest of the basic curriculum by the followed method which is explanation and performing the pattern.
- (5) min. calming exercises to make the body return to its normal status.

Equipments & tools of the research:

- A restameter to measure height (cm).
- A medical scale to measure weight (kg).
- Computer.
- A stop- watch to calculate time (second).
- A tape to measure longitude (cm).
- Cones.

The executive steps of research experiment:

The Before Measurement:

The before measurement was performed on the two groups of the research (experimental & control) in the skill performance & knowledge acquisition level (studied in the research) on 18/10/2014.

Basic experiment:

The research applied the educational program using (concept maps) on the experimental group and the (traditional method) on the control group in the period from 25/10/2014 to 27/12/2014 for 9 weeks.

The after measurement:

After finishing the application of the basic experiment, the researcher performed the after measurement on 28/12/2014 on the two groups of the research (experimental & control) in the skill performance & knowledge acquisition level.

Statistical Treatments:

In the light of research aims and hypotheses, and research sample volume, and also in the light of what many previous studies indicated, the appropriate statistical techniques were determined to treat data as follows:

-The arithmetic means, the standard deviation, medium, coefficient of torsion and "T" test.

Display & Discussion of Results:

Table (2)

Differences significance between the after & before measurements of the experimental group's female students in the level of skill & knowledge acquisition performance (studied in the research)

N= 28

Variables	Before measurement		After measurement		Differences average	T	Improvement rate %
	mean	±deviation	mean	±deviation			
defense skill against the passer	6.28	0.38	12.11	0.47	5.82	53.24	92.62
defense block & follow-up skill	3.86	0.34	6.56	0.23	2.70	38.96	70.04
defense skill against the aimer	2.81	0.21	6.55	0.27	3.74	54.06	133.14
against tackler	17.93	0.73	10.72	0.49	7.22	46.84	40.24
Defensive steps	18.98	0.89	10.04	0.50	8.95	46.85	47.13
Knowledge test	27.61	4.85	37.29	2.68	9.68	– 11.18	35.058

- (T) table value at level 0.05 = 1.70

Fig. (1)

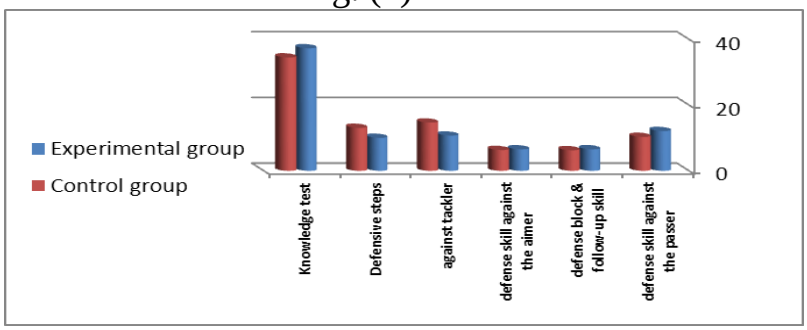

Table (2) & figure (1) show that there are statistically shown differences between the before & after measurements' average of the experimental group's female students in the skill performance level (studied in the research) and the knowledge acquisition in favor of the after measurement average.

Table (3)

Differences significance between the before & after measurements of control group's female students in the skill performance & knowledge acquisition level (studied in the research)

N= 28

Variables	Before measurement		After measurement		Differences average	T	Improvement rate %
	mean	±deviation	mean	±deviation			
Testing defense skill against the passer	6.17	0.47	10.32	0.40	4.15	*32.04	67.31
Testing defense block & follow-up skill	3.74	0.29	6.26	0.34	2.52	*28.82	67.34
Testing defense skill against the aimer	2.89	0.16	6.33	0.22	3.44	*59.75	118.89
Defense against tackler	18.12	0.80	14.68	18.71	3.44	0.97	18.98
Defensive steps	19.47	1.19	13.07	0.39	6.40	*25.55	32.89
Knowledge test	28.54	5.63	34.50	3.05	5.96	*4.95	20.901

- (T) table value at level 0.05= 1.70

Figure (2)

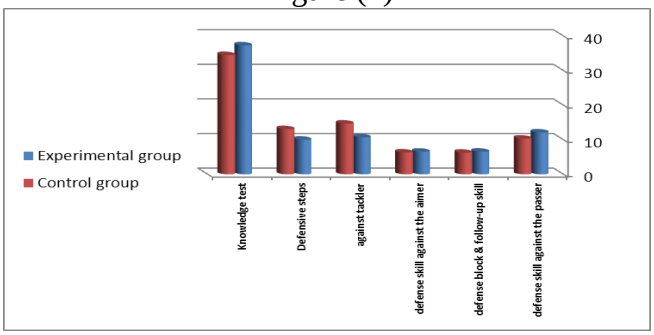

Table (3) & figure (2) show that there are statistically shown differences between the after & before measurements of the control group's female students in the skill performance level and the knowledge acquisition (studied in the research) in favor of the after measurement average.

Table (4)

Differences significance between the two after measurements averages of the experimental & control group in the skill performance level and the knowledge acquisition (studied in the research)

N1=N2=28

Variables	Experimental group		Control group		Averages Differences	T
	mean	±deviation	mean	±deviation		
Testing defense skill against the passer	12.11	0.47	10.32	0.40	1.79	– 18.08
Testing defense block & follow-up skill	6.56	0.23	6.26	0.34	0.3	−3.79
Testing defense skill against the aimer	6.55	0.27	6.33	0.22	0.22	−2.86
Defense against tackler	10.72	0.49	14.68	18.71	3.97	1.12
Defensive steps	10.04	0.50	13.07	0.39	3.03	25.74
Knowledge test	37.29	2.68	34.50	3.05	2.79	-3.87

"T" table value at level 0.05 = 2.05

Figure (3)

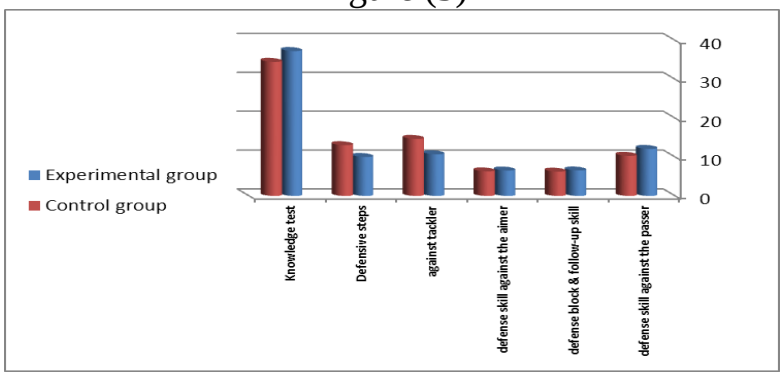

Table (4) Results show that there are statistically shown differences between the two averages of the before & after measurements of the experimental group female students in the skill performance & knowledge acquisition (studied in the research) in favor of the after measurement average. The researcher attributes this result to using concept maps programmed to display the designated skills in the scholar curriculum on the female students as these skills is known for its difficulty and consequently, concept maps removed these difficulties in learning which the female students used to face when learning these skills. Thus, concept maps proved its huge success in overcoming these difficulties in learning. In addition, its ability to attract the attention of the female students through its way of displaying the skill, its comfortable backgrounds for the eye and the movements and animations which included in these programmed maps. Moreover, the computer continues to display the video related to the skill continuously until it is ordered to stop, all of this helped to follow the path of the movement and helped the female students to understand the correct technical performance of the skills which they study. Consequently, the female students started to perform a defensive skill phrases that contain more than one defense skill in a better technical & high performance level remarked with a great body control which had the greatest effect in increasing the students self-confidence and raised their

understanding of all the concepts related to the skill.

The researcher sees that the existence of statistically shown differences between the before & after measurements' averages of the experimental group students is due to the learning method which uses programmed concept maps that was applied on the experimental group students. These maps see the students as reactors and its aim is their education and growth through getting the information without feeling bored by being playing an active positive role in the educational process which increases their motivation to learning. Also when the students use the computer to get the information themselves this makes it difficult for them to forget the information they got and it becomes easier to remind it in time of need. Also, programmed concept maps made the student challenge herself and her colleagues and even the computer itself concerning her ability to absorb the information given to her. All of this led to a progress in the knowledge acquisition level of the experimental group students and made a difference between the before & after measurement in favor of the after measurement.

This agrees with the study of Eman Tharwat (2013) (10), Adel Ramadan (2008) (11), and Mohammed Maslob (2011) (12), also Josef Nagy (2003) (13) quoting from Hussein Altobgy (1978) that there is one important factor that has to exist in the educational process which is the student positive reaction to each education situation he faces. As the student must have a positive role in getting the knowledge differs from the negative role that he usually plays in the traditional learning method.

Through what is previously mentioned it is clear that the 1st hypothesis has been completely achieved which states that:

"there are statistically shown differences between the before & after measurements of the experimental group (using the programmed concept maps) in the learning level of some defense basic skills in Basketball (studied in the research) and the knowledge acquisition level in the aspects of (basic skills – play rules – common injuries) in favor of the after measurement".

The results of table (3) Show that there are statistically shown differences between the averages of the before & after measurements of the control group student in the skill performance & knowledge acquisition level (studied in the research) in favor of the after measurement. The researcher attributes these differences to the practical practice from the control group female students of each basketball skill (studied in the research) and their knowledge of performance content which helped to form a clear image in order to understand how to perform which in the end led to the effective performance that made the differences between the before & after measurements in favor of the after measurement. In this regard, Afaf Abdel Karim (1990) refers that the basis of the traditional method is the direct relation between the teacher's alarms and the learner's respond, as the order sign from the teacher precede each movement from the learner, and the movement is performed according to the pattern which the teacher presents, thus, the teacher takes all the decisions about the place, the movement positions, the start, the timing, and the end time of the period designated to learning and rest (14: 90). Also Hoda Darwish (1994) sees that the learner's performance degree of the skill depends on the teacher's ability of good explanation of the skill performance regarding the correct positions of each part of the body during the educational process (15: 83).

The researcher attributes the existence of statistically shown differences between the averages of the before & after measurements of the control group female students in the knowledge acquisition level to that the teacher in the traditional method (the verbal explanation & the practical performance pattern) presents more information about the technical skill in basketball, and also he presents information about the common mistakes that may occur during the performance, and information about the basic skills studied in the research and their educational steps. Consequently, any information presented to the female students will increase their knowledge acquisition and results in a progress in the level

of knowledge acquisition level between the before & after measurements in favor of the after measurement.

Through what is previously mentioned it is clear that the 2nd hypothesis has been completely achieved which states that:

"There are statistically shown differences between the averages of before & after measurements of the control group (the traditional method) in the learning level of some basic skills in Basketball (studied in the research) and the knowledge acquisition level in the aspects of (basic skills – play rules – common injuries) in favor of the after measurement".

Table (4) also shows that there are statistically shown differences between the two after measurements of the two groups: the experimental & control in the level of skill performance & knowledge acquisition (studied in the research), where the differences came in favor of the experimental group. The researcher attributes the superiority of the experimental group over the control group in the level of skill performance & knowledge acquisition (studied in the research) to using programmed concept maps in learning, which are displayed on computer as the researcher found a small room near the playground where the skills are learned to make the female student return to the computer whenever she needs to see the correct performance. The computer afforded this through the continuous display of the skill performance without being tired or bored which offered the female students a great opportunity to understand the consecutive phases of skill performance through the clear vision and the sufficient time during skill display. Also, the computer enabled the female students to control, positive participation and reaction to the map content which resulted in the progress of the performance level of the experimental group students in the skills of the scholar curriculum.

The researcher also sees that the reason behind the experimental group superiority over the control group in the level of skill performance & knowledge acquisition (studied in the research) that much to that the programmed concept maps method using the

computer which was applied on the experimental group allows the female student to see the movement skill pattern through the computer which enjoys the performance stability no matter how many times the pattern is displayed, thus, using computer in learning plays a positive role in forming the right image of the movement skill in the student's mind. Also, the space that programmed concept maps allows the student to freely roam inside the map, and connecting the technical and the educational aspects; all of this led to the absorption, understanding and the easy remembering of the correct skill performance and to avoid the confusion that may occur in the female students' performance in front of the judging committee.

The researcher also attributes the superiority of the experimental group over the control group in the level knowledge acquisition to what the programmed map afford of massive quantity of the required information and concepts about the skill. In addition to, the female student control of the information display according to her absorption speed, consequently, the female student gets the sufficient time to understand and absorb this information in an interesting way away from boredom and tiredness. Moreover, the female students answer the questions which the programmed map include which introduces an immediate enhancement for the female student once she answers these questions correctly and also correcting her answer if it was wrong which makes these correct concepts and information memorable in her mind, consequently, increases their rate of knowledge acquisition. On the contrary, the traditional method using the verbal explanation and the practical performance pattern which was applied on the control group see the students as main receivers of the information; hence, they have a negative role in the educational process which lessens their motivation to learning.

The previous opinions are confirmed by what Kamal Abdel Hameed Zeiton (2002) mentioned that the old view of learning (the traditional method) sees the learner as a mind in which the information

are put and he is only a receiver of these information. The modern view of learning sees the learner as a reactive human being; so its aim is his growth and maturity and not the aim is to memorize the information but to make the learner build knowledge according to his own treatment pattern; it considers him a builder of his knowledge not only a negative receiver of it. (16: 229)

Through the previous display, it is clear that the 3rd hypothesis is completely achieved; which states that:

"there are statistically shown differences between the averages of the two after measurements of the two groups; the experimental group (using programmed concept maps) and the control group (using the traditional method) in the level of learning some basic skills (studied in the research) & the level of knowledge acquisition in the aspects of (the basic skills – play rules – common injuries) in favor of the experimental group."

Conclusions & recommendations:

First: conclusions:

In the light of research aims and hypotheses, and in the limit of research sample and based on the statistical treatments and what the results indicated, we conclude the following:

1- Programmed concept maps have a positive effect on learning some basic skills in Basketball (studied in the research), and on the knowledge acquisition level of experimental group's students.

2- The traditional method (verbal explanation & practical performance level) has a positive effect on learning some basic skills in Basketball (studied in the research), and on the knowledge acquisition level of control group's students.

3- Programmed concept maps had more positive effect than the traditional method on learning some basic skills in Basketball (studied in the research), and on the knowledge acquisition level which indicates its effectiveness.

4- Knowledge test prepared by the researcher has high honesty and stability interactions and is qualified to measure the knowledge acquisition of 4th year female students in the skill of (defensive movements – stop – defense against aiming –

defense against dribbling – defense against swift attack).

Recommendations:

1- To use programmed concept maps in teaching Basketball skills in the Physical Education faculties.

2- To use knowledge acquisition test in Basketball prepared by the researcher to measure the knowledge acquisition level of 4th year female students in Physical Education faculties.

3- To include concept maps strategies in the curriculums of team games teaching methods in Physical Education faculties.

4- To pay attention to using new techniques in teaching physical education curriculum in general, and Basketball curriculum in particular.

5- To pay attention to training teaching staff members and the assisting board in Physical Education faculty on how to use concept maps in teaching the different scholar curriculum.

6- To hold scientific courses for teachers in order to know the latest in he field of education technology.

7- To perform similar studies using new creative techniques on the female students of Physical Education faculty.

References

First: Arabic References:

1- **Ahmed Elnagdy & Mona Abdel Hady:** "Modern educational methods, techniques & strategies", 1st edition, Dar Elfekr Elaraby, Cairo (2003).

2- **Ahmed Amin Fawzy & Mohammed Abdel Aziz Salama:** Basketball for Juniors, Alfania for press & publishing, Alexandria (1986).

3- **Ibrahim Ali Mohammed Elwarafy:** A Program to develop the skill performance and its effect on the knowledge acquisition in Basket ball, an unpublished master thesis, Physical Education Faculty, Helwan University, 2007.

4- **Gaber Abdel Hameed & Mohammed Ahmed Omar (2007):** Testing Verbal Intelligence for High School & University stages, Dar Elnahda, Cairo (2007).

5- **Dalia Mohammed Abu El Nasr Oraby:** "designing the test of defense performance skills in Baket ball", Ph. D thesis, Helwan University, Physical Education Faculty for girls, 2004.

6- **Eman Thrwat Ragheb Ibrahim (2013):** the effect of using some forms of the concept maps on the knowledge & skill level in Volley ball for the female students of the second level of

the basic education, Mansoura University, Physical Education Faculty, curriculum & teaching methods.

7- **Adel Ramadan Bekhet (2008):** the effect of using concept maps on learning some attack skills in Basket ball, the 4th regional international conference for health, physical education, relaxation, sport and movement expression for the Middle East, 2nd part.

8- **Mohammed Ramadan Ahmed Masloub:** the effect of using concept maps on the knowledge level of teaching techniques for the field training students – optional teaching methods, unpublished research, the magazine of research consultant services center, Faculty of Arts, Menoufia University, 2011.

9- **Josef Nagy Adib (2003):** the effect of en educational program using the ultimate media technique on learning some basic skills of table tennis for juniors, unpublished ph. D thesis, Physical Education Faculty in Al-Sadat city, Menoufia University.

10- **Afaf Abdel Karim (1990):** teaching for learning in physical and sport education – techniques, strategies and correction, Alma'aref establishment, Alexandria.

11- **Hoda Mustafa Darwish (1994):** the effect of some micro teaching techniques on improving the level of movement performance & correct aiming in Basket ball, a published research in the magazine of physical education faculty for males in Alexandria.

12- **Kamal Abdel Hameed Zeitoun (2002):** education technology in the age of information & communication, Alam Alkotob, Cairo.

Second: Foreign References:

1- Faye young and wayhecoffey : winning basketball for girls library of congress cataloging in publishing data, USA , 1084.

2- Dick Barnett, inside basket ball, contemarary books, Inc, Chicago,

3- Glenn wilkers : basketball, sixth edition w. c. brown communications

4- n.whidden and howard Reynolds : teaching basketball burgess.