

THE EFFECT OF VISUAL MEDIA DUE TO LEARNING & THINKING PATTERNS ON LEARNING SPIKE SHOOTING SKILL AND BALL POSSESSION IN VOLLEYBALL

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Abstract

The study aims to:

- 1- Determine the effect of visual media due to learning & thinking patterns (right, left, integrated) between groups of the study on pre and post tests in learning the skill of spike shooting and ball possession in volleyball.
- 2- Determine differences between groups of the study in the post test in learning the skill of spike shooting in volleyball.
- 3- Determine differences in arithmetic means of groups of the study in learning the skill of spike shooting and ball possession in volleyball. Population of the study was chosen through purposive method to be formed by third year students at the Physical Education School – Helabcha University for the academic year 2012 – 2013 (75 students). As for the sample of the study, it was chosen randomly and divided into four groups; control group and empirical group (right, left, integrated). The total number of the sample was 42 students as volleyball beginners. The educational curricula consisted of 12 units distributed on 6 weeks (two units weekly). The time duration of the single unit for visual media of the skill of spike shooting was 5 minutes, three times using normal speed (3 minutes) and once for slow motion (2 minutes) at the beginning of the applied activity of the main part.

The researcher concluded the following:

1. There is a positive effect of visual media on learning the skill of spike shooting for empirical groups.
2. The first empirical group excelled (right pattern) over the second, the third empirical groups (integrated and left patterns) and the control group in learning the skill of spike shooting.
3. The third empirical group (integrated pattern) excelled over the first, the second empirical groups (right and left patterns) and the control group in learning the skill of spike shooting.

Keyword: Visual Media, Learning, Thinking Patterns, Shooting Skill, Ball Possession, Volleyball

1. INTRODUCTION

Visual media are considered an important aspect in the educational process that raises the level of learning in the field of physical education as it helps convey information and influences included in the educational material and enhance the educational process by applying scientific and technical methods in implementing educational curricula aiming to reach the highest performance levels if utilized effectively.

Recent years have witnessed great concern in studies related to learning and thinking patterns according to the dominating thinking patterns for learners, whether right, left or integrated thinkers joining functions of both hemispheres. In addition, a lot of researchers resorted to study correlation between head hemispheres and building educational curricula and the necessity of relating the learning method to the dominant brain pattern among learners. Fouad & Emad refer that identifying learning patterns is extremely important for curricula developers and learners themselves. This contributes to rebuild and redesign educational curricula and courses, choose contents, experiences and means in a various way to be consistent with different learning patterns to cope with different learning patterns of learners. Therefore, multiple and variable learning and thinking patterns for learners requires following various educational frameworks to achieve goals of the educational process to cope with thinking patterns of each of them.

The skill of spike shooting in volleyball is a difficult skill as it requires high mental, physical and skillful abilities as well as accuracy skills in selected places in the opponent's playground, so teachers have to find suitable educational media for this skill to educate the beginners.

From this point, the current study seeks to learn the skill of spike shooting in volleyball and ball possession through visual media that may have a positive effect on learning due to right, left and integrated thinking patterns of the brain within learning and thinking patterns to invest and develop this skill which is considered a basic necessary factor in the educational process and make a comparison in about the effect of the approach among learning and thinking patterns (right, left and integrated) in order to determine the effect of differences in the skill of spike shooting in volleyball.

Problem of the Study:

Within current progress at present, the use of modern techniques in education and learning in physical education in general and in volleyball in particular and the importance of visual media that help in learning and education processes using the previously mentioned various patterns, the researcher thinks that if educational curricula are implemented effectively, they may play an important role in education, especially for students at physical education faculties and departments. The researcher also thinks that implementing any skill depends on a set of thinking processes and the application of the skill of spike shooting in volleyball requires right thinking to reach accuracy of performance.

Through the experience of the researcher as a teacher of volleyball, he noticed that the required efficient level of skilled performance level of the skill of spike shooting in volleyball has not been reached yet despite the available tools and efforts with those students in applying gradual educational skills. The researcher attributes the reason for that for the feeling of boredom and distraction for students as a result of the adopted method which depends on one resource of knowledge (illustration by teachers), followed by presentation of the model without any actual participation of learners in the educational situation. This led to negative situation of learners in learning with absence of learning patterns (right, left and integrated) which have a negative effect on the skill educational process and an adverse effect when performed randomly during learning. This wastes time and effort, so it requires from teachers to search for a teaching method that makes education more interesting and enable conveying information easily, attract their attention and motivation and establish educational experiences in order to achieve the hoped educational goals to reach the best results. This raises numerous questions including: is presenting visual media with any learning or thinking pattern more effective in learning the skill of spike shooting in volleyball? Is giving visual media to learners has a negative effect on any pattern of thinking and learning in learning the skill of spike shooting in volleyball? This motivated the researcher to try to find the effect of visual media due to learning and thinking patterns on learning the skill of spike shooting in volleyball and ball possession which may have a positive effect in the educational process.

Goals of the Study:

- 1- Determine the effect of visual media due to learning & thinking patterns (right, left, integrated) between groups of the study on pre and post tests in learning the skill of spike shooting and ball possession in volleyball.
- 2- Determine differences between groups of the study in the post test in learning the skill of spike shooting in volleyball.
- 3- Determine differences in arithmetic means of groups of the study in learning the skill of spike shooting and ball possession in volleyball.

Hypotheses of the Study:

- 1- There are statistically significant differences between pre and post tests of groups of the study in learning the skill of spike shooting in volleyball for the sake of post-test.
- 2- There are statistically significant differences in the post test of groups of the study in learning the skill of spike shooting in volleyball for the sake of post-test.
- 3- There are statistically significant differences in results of arithmetic means among groups of the study in learning the skill of spike shooting in volleyball for the sake of post-test.

2. METHODOLOGY:

The researcher used the empirical method as it is proper to the nature of the study.

Population & Sample of the Study:

Population of the study was chosen through purposive method to be formed by third year students at the Physical Education School – Helabcha University for the academic year 2012 – 2013 (75 students). As for the sample of the study, it was chosen randomly and divided into four groups; control group and empirical group (right, left, integrated). The total number of the sample was 42 students as volleyball beginners. This number forms (56%) of the population. Table (1) highlights number of samples in groups:

Table (1): the four groups of the study, pattern types and sample numbers

Serial	Groups	Pattern type	Sample number
1	First empirical group	Right pattern	11
2	Second empirical group	Left pattern	11

3	Third empirical group	Integrated pattern	10
4	Control group	-	10

Helping Media, the used Appliances and Tools in the Study:

Measurement and testing, data recording form, Torrance et al scale to extract learning & thinking patterns (annex. 1), a computer (DELL), data show appliance (SONY), one metal measuring tape and 15 legal volleyball (MICASA).

The Used Test in the Study:

Test of the skill of spike shooting:

- Purpose of the test: measuring accuracy of spike shooting in diagonal direction.
- Tools: legal volleyball playground planned as in figure (1), balls box and two sponge mattresses.
- Performance: the teacher prepares the ball for the student standing at position (4) and the student has to perform the skill of spike shooting in diagonal direction towards the target (the mattress).
- Conditions: each student has 30 attempts (15 for each target: the two mattresses).
- Correct spike shot on target (4 points)
- Correct spike shot in which a ball falls inside the limited area (3 points)
- Correct spike shot in which a ball falls inside A or B areas (2 points)
- Correct spike shot in which a ball falls inside the C area (1 point)

NOTE: The highest test mark is 120.

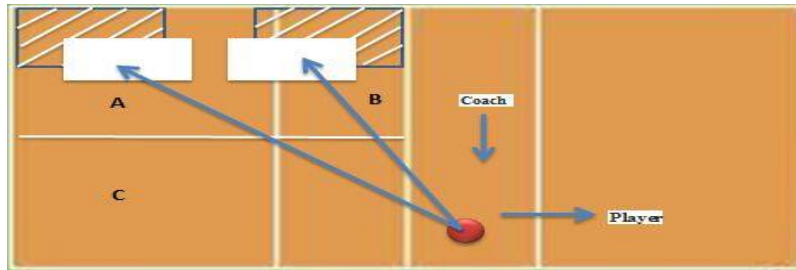


Figure (1): Testing spike shots in diagonal direction

Scale of Learning & Thinking Patterns:

The scale prepared by Torrance et al. was chosen and translated by Salah Ahmed to be prepared to suit the Arab environment. The scale’s validity and reliability were approved on a sample of secondary and university stage students in Egypt. The researcher used this scale for the purpose of dividing the sample into right, left and integrated brain thinking patterns. Answers on scale sections will be by checking (✓) in front of applying phrases and (x) in front of non-applying phrases. Instructions related to the scale showed that answering both phrases in the section can be by checking (✓) in front of each one of them if they are applying. This scale consists of 28 pairs of phrases; one phrase about function of the right hemisphere and the other about functions of the left hemisphere. The student has to choose which phrase that applies on his case. If both phrases apply, this means that they refer to the integrated function depending on both left and right hemispheres. For each phrase, one mark is given and this means that the maximum degree of the test is 28 marks and total marks gained by a student is 14 marks and above which represent brain domination of both left and right hemispheres. As for the integrated pattern, it gives a half mark for each section.

Exploratory Trial:

Before beginning the exploratory trial, the researcher presented two introductory units for students of population of the study on Thursday and Sunday (28 & 31/03/2013) in order to make the sample of the study identify the skill of spike shooting. These units were not included in the educational curriculum’s units. Two exploratory trials were conducted. One of them was about extraction of learning and thinking patterns and the other was about skill test for the skill of spike shooting on a sample of 6 students from inside and outside the sample of the study on Monday 01/04/2013. Results of the two exploratory trials were as follows:

- Sections of scales are appropriate to the sample.
- The time duration taken in answering the form was determined to be 20 minutes.
- The test of accuracy of the skill of spike shooting in diagonal direction with the sample of the study and possibility of conducting this test in one day.

How to Extract Learning & Thinking Patterns for the Sample of the Study:

To determine the sample of the study within empirical groups, the researcher applied Torrance scale to determine hemispheric brain dominance in one of the halls on Tuesday 02/04/2013. Forms of the scale were distributed on students showing instructions related to the answer in 20 minutes as duration to answer sections of the scale. After students finish answering, forms were collected and integrated into a special form to determine the sample according to brain dominance. After that, groups were tested using the poll method to represent groups of the study.

Procedures of the Study:

Pre-test:

The pre-test of the skill of spike shooting for the sample of the study on Thursday 04/04/2013 in the indoor hall at the School of Physical Education – Helabcha University.

Main Trial (Educational Curriculum):

The educational curriculum was conducted using visual media (video tapes with normal and slow motion) of the skill of spike shooting on the three empirical groups (representing normal and slow forms) and the control group using the followed method without using visual media or patterns of learning and thinking on the sample of the study on Sunday 07/04/2013. The curriculum was completed on Tuesday 14/05/2013 consisting of 12 units distributed on 6 weeks (two units in a week on Sunday and Tuesday). Time of the single unit for visual media of the skill of spike shooting was 5 minutes: Three times with normal speed (3 minutes) and once for slow motion (2 minutes) at the beginning of applied activity of the main section. Time duration of each single educational unit was 90 minutes due to the course of the school distributed on sections as follows:

First: preparatory section (15 minutes)

Second: the main section (65 minutes) including: educational activity (10 minutes), applied activity (55 minutes) and presenting visual media (5 minutes) and applied exercises (50 minutes).

Third: final section (10 minutes)

Post-test:

The post-test of the skill of spike shooting of the sample of the study was conducted on Thursday 16/05/2013 with the same method by which pre-test was conducted.

Ball Possession Test:

This test was conducted after 7 days of starting post-test of the skill of spike shooting on Thursday 23/05/2013 with the same conditions in the post-test to determine the real level of learning noting that students do not practice skill performance in this period.

3. ANALYSIS & DISCUSSION OF RESULTS:

Analysis and discussion of results of differences in values of the skill of spike shooting with the volleyball between pre and post tests for empirical and control groups:

Table (2) results of arithmetic means, means differences, error level, counted and potential T values in pre and post tests in the skill of spike shooting for empirical and control groups:

Statistics Groups	Arithmetic Mean		Mean Difference	S.D	T counted value	Potential	Significance
	Pre-test	Post-test					
First empirical group (right pattern)	39.454	79.636	40.182	1.994	20.145	0.000	Significant
Second empirical group (left pattern)	39.090	67.181	28.091	1.970	14.259	0.001	Significant
Third empirical group (integrated pattern)	40.200	73.400	33.200	1.474	22.947	0.000	Significant
Control group	39.900	61.100	21.200	1.323	16.021	0.003	Significant

* Potential value is significant at $\leq (0.05)$

In the four groups of the study, results showed that arithmetic means in pre-test of the skill of spike shooting are (39.900, 40.200, 39.090 and 39.454) consecutively, while in post-test they were (61.100, 73.400, 67.181 and 79.636) consecutively, mean differences between both tests were (16.021, 55.947, 14.259 and 20.145) consecutively, standard error was (1.323, 1.474, 1.970 and 1.994), the T counted values were: (16.021, 22.947, 14.259 and 20.145), potential values were: (0.000, 0.001, 0.000, and 0.003) which is less than significance level (0.05) and this shows a significant difference for the sake of the post test.

Due to table (2), there are significant differences which refers that learning occurred in both groups and that there is a positive effect of visual media used by the researcher to learn the skill of spike shooting for groups of the study. The researcher thinks that this is because learners were attracted by visual media including tapes of high speed and slow learning methods which they never experienced before with guidance of teachers which gave them learning experience. In addition, watching the skill of spike shooting and educational steps made presentation of this skill is almost real which underpins learning the skill. Moreover, the researcher also found that this development in empirical groups was due to the use of visual media that helped grab attention of students and motivated them to exert more effort and not feeling bored. These results are consistent with results of the study of (Jambor & Weeks) which found that motion visualization helps develop kinetic performance skills. The use of video tapes helps increase interaction between teachers and learners in performance appraisal to reach optimum performance. It also helps direct learners through presentation of educational situations.

The researcher found that the reason for significant differences between pre and post tests for the sake of post-test on the control group was that educational units dedicated to learn this skill were divided and contained a lot of frequencies in the applied activity for each unit with an easy understandable way as well as the increase of actual practice through performance repetition. This is asserted by Ahmed as he found that: “repetition helps players to master qualitative movements that represent groups of skills needed to be learnt and achieves consistency among these movements which makes their performance in correct time and frequency”. In addition, Wajih mentioned that the more variables in training forms, the most accurate changes in the type of learning occur.

Results of Contrast Analysis (F) among groups of the study in post-tests of the skill of spike shooting

Table (3) Results of Contrast Analysis (F) among groups of the study in post-tests of the skill of spike shooting:

Statistics	Contrast source	Squares total	Freedom degree	Squares average	F counted value	Potential	Significance
Spike shooting	Inter-groups	2006.994	3	668.998	24.694	0.000	Significant
	Intra-group	1029.482	38	27.092			
	Total	3036.476	41				

* Potential value is significant at $\leq (0.05)$

Table (3) shows the following:

There are significant differences between the four groups in the post-test in the skill of spike shooting as F counted values of this skill were (24.694) and potential value was (0.000) which is lower than significance level (0.05). The contrast analysis test did not refer to differences for the sake of any group in the test of spike shooting, so the researcher resorted to use the L.S.D test among means in the test of spike shooting.

Discussing results of arithmetic means’ differences with the value of the least significant difference (L.S.D) in post-test among the four groups of the study in the skill of spike shooting in volleyball:

Table (4): arithmetic means’ differences with the value of the least significant difference (L.S.D) in post-test among the four groups of the study in the skill of spike shooting in volleyball

Groups	Arithmetic mean	Means difference	Potential	Significance
1-2	79.636-67.181	12.455	0.000	Significant for the sake of 1 st group
1-3	79.636-73.400	6.236	0.009	Significant for the sake of 1 st group

1-4	79.636-61.100	18.536	0.000	Significant for the sake of 1 st group
2-3	67.181 – 73.400	-6.219	0.009	Significant for the sake of 3 rd group
2-4	76.181-61.100	6.081	0.011	Significant for the sake of 2 nd group
3-4	73.400-61.100	12.300	0.000	Significant for the sake of 2 nd group

* Potential value is significant at $\leq (0.05)$

Table (4) shows that the first empirical group excelled as it applied visual media due to right pattern on other groups in the skill of spike shooting followed by the third empirical group (integrated brain thinking) and then the second empirical group (left brain thinking) and the control group. The researcher found that the reason for that excel of the first group that students in this group use the right pattern and this means that they tend to know formal information, so they were in harmony with types of formal guidelines and instructions used with this group and these individuals are characterized by their response to visual and kinetic instructions. Mohamed Magdy refers that the right hemisphere performs an essential role in initial stages of learning when materials are new and not familiar. As for left pattern, it expresses learning coded or represented in fixed neural expressed by mental familiar concepts.

The researcher found that the educational curriculum using visual media gave an opportunity to the first empirical group (right pattern) to move freely among concepts of the topic shown in a regular way through video tapes with normal and slow speed. These images attract attention as Hanaa says that the right side of the brain is concerned with treatment of visual issues, especially visual spatial relations and it is responsible for forming images, shapes, patterns and controlling thinking processes. Moreover, Torrance thinks that mentality of right side thinkers makes them deal with drawings, plans and make mental images. Furthermore, absence of visual media in the control group contributed to weaken the ability to link information to practical application as they draw an image in learner’s mind to understand it accurately and quickly as this process result in prompting muscles involved in this skill given sufficient neural stimulation to make sense feedbacks that can be used in correcting the skill.

Discussing results if ball possession test for the skill of spike shooting:

Table (5) results of arithmetic means differences, amount of losing performance memory for pre and post-tests, possession, spike shooting for empirical and control groups:

Statistics Groups	Post-Arithmetic mean	Arithmetic mean of possession	Mean Difference	Performance memory loss amount
First empirical group (right pattern)	79.636	74.806	79.636-74.806	4.830
Second empirical group (left pattern)	67.181	61.725	67.181-61.725	5.456
Third empirical group (integrated pattern)	73.400	70.019	73.400-70.019	3.381
Control group	61.100	54.091	61.100-54.091	7.009

Table (5) shows that the best group in learning ball possession is the third empirical group (integrated pattern) followed by: the first group (right pattern), second group (left pattern) and finally the control group consecutively as follows: (7.009, 5.456, 4.830 and 3.381). the researcher found that the reason for that was that the integrated brain dominance pattern holds combination of characteristics from right and left dominated people which helped better possession and involvement of more than one sense in learning which also increased possession. Moreover, right brain dominance thinkers deal with visual spatial tasks as they store information through repetition in acquiring and learning kinetic skills, while left thinkers are more organized to information and analytical to learned skills. They are also used in learning new skills, error correction and developing competition strategy, while the control group did not consider patterns of

learning and thinking and did not work on developing the skill of spike shooting well which led to low level of keeping this learning unlike empirical groups on which visual media were applied.

4. CONCLUSIONS:

- 1- There is a positive effect of visual media in learning the skill of spike shooting in volleyball for empirical groups.
- 2- The first empirical group (right pattern) excelled over the rest of groups in learning the skill of spike shooting in volleyball.
- 3- The third group excelled over the rest of groups in keeping the skill of spike shooting in volleyball.

5. RECOMMENDATIONS & PROPOSALS:

- 1- It is necessary to use visual media for their direct effect in learning the skill of spike shooting in volleyball.
- 2- It is necessary to use visual media with learners who enjoy right thinking pattern in learning the skill of spike shooting in volleyball.
- 3- Performing a test of keeping knowledge to determine the real amount of learning the skill of spike shooting as a result of using visual media.
- 4- Conducting similar studies and researches about other volleyball skills and different sport events related to learning and thinking patterns and for males and females.

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Annex (1)

Sections of Torrance Scale for Partial dominant brain Hemisphere Control

Serial		Phrases	check
1	A	I like reading a detailed explanation of things that I should do	
	B	I like to be taught things through practical presentation	
2	A	I am clever in explaining signals and body gestures	
	B	I prefer to say what I am thinking of and depend on what people say	
3	A	I enjoy courses or lessons in which I listen to the teacher	
	B	I enjoy courses or lessons in which I move and try to use things	
4	A	I tend to solve problems in a non-serious way (follow-up)	
	B	I tend to solve problems seriously such as businessmen	
5	A	I only use suitable information to perform the task asked from me	
	B	I use my available information to perform the task asked from me	
6	A	I like specific lessons or works in which I completely know what is asked from me	
	B	I like non-specific lessons or works which gives a chance for change as long as I advance in performance	
7	A	I like guessing	
	B	I don't like guessing	
8	A	I like expressing my emotions in a clear direct language	
	B	I like expressing my emotions with singing, poetry or drawing	
9	A	I like learning things that are known for sure (absolutely right without any argument)	
	B	I like learning mysteries	
10	A	I like partitioning ideas in order to think of them separately	
	B	I like to merge a lot of ideas together	
11	A	I am clever in using logic in problem solving	
	B	I am clever in using exploration in problem solving	
12	A	I like to visualize and imagine things in problem solving	
	B	I like analyzing problems through reading and listening to teachers	
13	A	I easily learn from teachers who use words in explanation	
	B	I easily learn from teachers who use movements and acting in explanation	
14	A	I succeeded in using words when remembering or thinking of something	
	B	I succeeded in using images and imagination when remembering or thinking of something	
15	A	I like to see full or complete things	
	B	I like organizing and completing incomplete work	
16	A	I am intelligent	
	B	I am an explorer (innovator)	

17	A	I succeeded in learning details and facts	
	B	I succeeded in learning from the general idea or total image	
18	A	I learn and remember things which I studied	
	B	I learn and remember details and facts through which I reach what is happening around me	
19	A	I like reading reality stories	
	B	I like reading fictional stories	
20	A	I enjoy planning what I am going to do	
	B	I enjoy dreaming or imagining what I am going to do	
21	A	I like to listen to music during reading or studying	
	B	I like to finish reading or studying quickly	
22	A	I enjoy copying and complimenting details	
	B	I enjoy drawing my ideas and imaginations	
23	A	I feel happy to invent something	
	B	I feel happy when I develop something	
24	A	I learn well through exploration	
	B	I learn well through examination or trial	
25	A	I like presenting ideas in an organized way	
	B	I like presenting ideas through their relations to each other	
26	A	I succeeded in remembering linguistic aspects	
	B	I succeeded in remembering sounds and rhythms	
27	A	Mostly, my brain is distracted when thinking in something	
	B	Mostly, my brain is not distracted	
28	A	I enjoy summarizing	
	B	I enjoy making a plan (draft)	