

Effects of using the Distinct Learning Strategy According to Learning Styles on the Technical Performance Level of Some Basic Basketball Skills

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Abstract:

The current research aims to identify the effects of distinct learning according to learners' learning styles (audio – visual – motor) on the technical performance level of some basic basketball skills (chest pass – dribbling – ladder shot) for female students of the second stage of basic education. The research used the experimental approach (two-group design) with pre- and post-measurements. Research community (n=230) included all second-grade students of Al-Zahra Prep school for girls – Tanta during the academic year (2015-2016). Participants (n=50) were purposefully chosen (21.7% of research community) and divided into two equivalent groups (experimental = control = 25). All students who are injured or with previous experience of basketball were excluded. Another (52) students were chosen as a pilot sample. Results indicated that:

1. The traditional approach (instruction and model) had positive effects on the technical performance level of basketball skills under investigation for the control group.
2. The recommended educational program using distinct learning in the light of learning styles had positive effects on the technical performance level of basketball skills under investigation for the experimental group.
3. The recommended educational program using distinct learning in the light of learning styles was more effective on the technical performance level of basketball skills under investigation compared to the traditional approach (instruction and model).

Key Words: Distinct Learning – Learning Styles – Basketball

Introduction and Research Problem:

Learning in the 21st century is a major field with fast changes and impressive scientific and technical revolution. This led many countries to take various paths to improve and develop their educational systems and practices. These countries are eager to use modern

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educational strategies to nurture a new generation useful to his society.

Education in Egypt is now related to moving towards the future. It is related to moving from negative to positive education and from the teacher as an instructor to the teacher as an active facilitator. The government is playing a vital role in educating all classes of the society as they are the beneficiaries of educational outputs and this is reflected in all components of education (teachers– learners– curricula– methods of teaching ...). This leads educational institutes to become centers for expertise, abilities, talents and skills. Therefore, it is time for all workers in the educational field to become on hand to return modern Egypt back to its credibility. This means that they should leave behind memorization, instruction and old-fashioned methods of teaching that are not compatible with this age and concentrate on modern educational methods and strategies to prepare good citizens for productive work according to modern trends of innovative and creative thinking (Abu Harga, Makarem

H. & Zaghoul, Mohamed S. 1994,p.12, 13)

Nowadays, as a result of knowledge explosion and major scientific developments, the educational process change greatly as psychological and educational sciences encourage the inclusive development of individuals that include physical, mental, emotional and social aspects. Accordingly, teachers should develop as well. They are no longer mere transferrers of knowledge. Instead, they should be prepared scientifically, professionally and culturally (Anwar, A.; Abd El-Mageed, A. & Maher, I.2007. 5; Zaghoul, M. & Al-Saieh, M.2004) indicated that knowledge expansion and modern teaching techniques assert that faculties of physical education should be well acquainted with such things to help teachers achieve the objectives of educational process (Zaghoul, M. & Al-Saieh, M. 2004,p.103).

Due to increased awareness about changes and developments of the modern world, curricula and methods of teaching in most countries undergo modifications and improvements that assure the

importance of modern teaching approaches and techniques and consider individual learning styles to make individuals more effective and efficient (Soliman, Laila A. 1999,p.1).

It is noteworthy that learners' positivity and active participation are major objectives of improving education in Egypt. This means that learners in the educational process are turned from passive receivers into active participants. This can be achieved through providing learners with the opportunity to seek, recall, classify and treat information themselves. Due to continuous developments in science and knowledge, new teaching and learning methods and styles appear that depend greatly on the learner's positivity and activity (Ibrahim, Wafaa Salah El-Din.1994,p.9).

Learners' abilities and individual differences are major weaknesses in traditional methods of teaching (instruction and model) and such methods are no longer accepted in the third millennium as we seek to use, develop and improve learners' potentials. Therefore, modern trends towards self-learning

and educational technology appeared and led the way towards changing the role of the teacher from knowledge transferred to facilitator and director of learning (Othman, M. 1994,p.226).

Individual differences affect learners' use of educational aids as it is considered as a function of the interaction between the individual and the educational situation, or what we can call an interaction between aptitude and treatment as consistency between learner's characteristics and educational aids lead to efficient learning (Abdullah, I. .2009,p.2).

Distinct learning aims to improve the levels of all learners through introducing a learning environment suitable for them all using teaching methods that support various tasks and educational results. This can be done through preparing and planning lessons according to the principles of distinct learning (Mabrouk, M.2011,p.3)

Distinct learning is a teaching and learning strategy consistent with learners' characteristics, the nature of motor skills and the available capabilities through variation

of teaching and learning styles to achieve a group of specific educational objectives (Mabrouk, Mohamed A.2001,p.6).

The importance of distinct learning stems from several aspects. It is based on the principle of learning for all. It considers all types of learners and supports the notions that learning is a right for all and a single measure does not fit for all. At the same time, it considers different learning styles (audio – visual – motor). It works on fulfilling and improving the various desires and attitudes of students and supports their motivation. It improves their level of challenge. Distinct learning helps students to improve their creativity and discover their creative abilities (Al-Deeb, B.2015,p.5).

Distinct learning is a strategy that assures learning as a right for all regardless their skills or abilities levels. In this strategy, it is assumed that the classroom includes students who are different in their attitudes, desires, learning styles, knowledge background, experiences and learning motivation. In this strategy, various teaching styles are used

to teach one skill for all students (Al-Sayeh, M.2006,p.109).

Learning styles come in various forms according to three famous models: (Dunn & Dunn Model .1993; McCarthy &Mat Model .1996) and Gregor Mediation Model (2002). These models were developed separately without knowing the works of others. Dunn's Model is the most famous model of all as it is developed over 25 years by Rita and Kenneth Dunn. This model provides a therapeutic and diagnostic educational framework. It depends on a theory asserting that each learner learns better through his/her own learning style. Therefore, the learner's learning style should be diagnosed and used in designing educational procedures suitable for this particular style (Gaber, L. & Karaan, M.2004,p.142).

Basketball is a very popular team sport in most countries and is considered as the first games in some countries. This is due to excitement as it is characterized by speed and physical, technical and tactical demands. Basketball depends

on performance as one team as all team members are one unit. Therefore, each member should master attack and defense technical skills. To reach mastery level, a basketball player should undergo several learning stages designed correctly according to scientific principles (Mohamed, Yasser, Abd El-Fattah .2000,p.2).

To achieve its objectives, basketball requires modern scientific methods to be applied as these methods make the skill easy to understand, recognizable, analyzable and evaluable. Basic skills in basketball are the main pillar of the educational process as learners receive main headlines for the simplest learning processes of correct technical performance along the neural path that continues with them all lifelong.

As a supervisor over student teachers field training at schools of the second stage of basic education, the researcher noticed that teaching is still provided through tradition method of instruction and model as teachers play the main role in the educational process. The

researcher thinks that this method does not provide students with the opportunity for effective participation in the educational situation to gain more experience. This leads them to become passive, decreases their levels and discards the educational aspect of the educational process although it is very important. In addition, it does not consider students' individual differences which may decrease their level on basic basketball skills.

Instruction and model do not provide learners with the opportunity to realize themselves or positive mutual participation as indicated in modern educational trends. It also requires an enormous effort from teachers to transfer knowledge and information required for correct performance (Mustafa, A.2000,p.74-75).

Modern methods are now used in some school subjects. Therefore, physical education should have its share, especially in learning basketball skills. This turns the educational process from a teacher-centered to a student-centered process where the role of teacher is limited to guidance and counseling. It also facilitates the educational process and decreases students'

learning time and this increases learning efficiency. Modern methods in the educational process call for positive learners who can gain experience from the educational situation so as to achieve its desired objectives. This led the researcher to use distinct learning as a modern educational strategy according to learning styles that depend on the positive participation of learners in the educational process. In addition, it helps improving learning and achieving teacher/learner interaction. It is very suitable for learning motor skills. According to the researcher's knowledge, no previous studies investigated the effects of this strategy on learning some basic basketball skills. This indicates research novelty. This research asserts the importance of modern methods in learning basketball skills and identifying its effects in the light of learning styles.

Aim:

The current research aims to identify the effects of distinct learning according to learners' learning styles (audio – visual – motor) on the technical performance level of some basic basketball skills (chest pass – dribbling – ladder shot) for female students of the second stage of basic education.

Hypotheses:

1. There are statistically significant differences between the pre- and post-measurements of the control group on the performance level of some basic basketball skills in favor of the post-measurements.
2. There are statistically significant differences between the pre- and post-measurements of the experimental group on the performance level of some basic basketball skills in favor of the post-measurements.
3. There are statistically significant differences between the post-measurements of the control and experimental groups on the performance level of some basic basketball skills in favor of the experimental group.

Methods:**Approach:**

The research used the experimental approach (two-group design) with pre- and post-measurements.

Participants:

Research community (n=230) included all second-grade students of Al-Zahra Prep school for girls – Tanta during the academic year (2015-2016). Participants (n=50) were purposefully chosen (21.7% of research

community) and divided into two equivalent groups (experimental = control = 25). All students who are injured or with previous experience of basketball were excluded. Another (52) students were chosen as a pilot sample.

Participants' Data Normality:

The researcher performed pre-measurements on all research variables to assure data normality as seen in the table (1).

Table (1)
Statistical significance describing participants of both groups for data normality (n=50)

	Variables	Measurement	Mean	Median	SD	Kurtosis	Squewness
Growth Factors:							
-	Age	Year	13.30	13.00	0.71	-0.85	-0.51
-	Height	Cm	157.76	158.00	1.79	-1.30	-0.20
-	Weight	Kg	48.76	49.00	1.91	-0.83	-0.50
-	IQ	Point	54.98	55.00	1.72	-0.99	-0.22
Physical Variables:							
-	Arms ability	M	1.95	2.00	0.61	0.14	0.50
-	Legs ability	Cm	14.25	14.25	1.29	-0.90	0.60
-	Speed	Sec	15.29	15.39	1.94	24.41	4.16
-	Agility	Sec	24.04	24.39	1.30	-0.43	-0.60
-	Accuracy	Point	17.44	17.00	1.70	-1.18	0.04
Technical variables:							
-	Chest pass	Number	4.06	4.00	1.10	-1.06	0.56
-	Dribbling	Se	44.22	44.39	2.07	-0.93	-0.04
-	Ladder shot	Point	4.82	5.00	1.22	-1.23	-0.62

Table (1) indicated that skewness levels were between (± 3). This means that data is free of radical distributions and assures data normality.

Homogeneity and equivalence of both groups on all research variables are shown in the table (2).

Table (2)
Homogeneity and difference significance between the experimental and control groups for equivalence (n1=n2=25)

Variables	Measurement	Experimental		Control		Means difference	F	(t)	P
		Mean	SD±	Mean	SD±				
Growth Factors:									
- Age	Year	13.24	0.72	13.36	0.70	0.12	1.07	0.60	0.55
- Height	Cm	157.60	1.73	157.92	1.87	0.32	1.16	0.63	0.53
- Weight	Kg	48.56	2.12	48.96	1.70	0.40	1.57	0.74	0.47
- IQ	Point	54.96	1.65	55.00	1.83	0.04	1.23	0.08	0.94
Physical Variables:									
- Arms ability	M	2.03	0.54	1.86	0.66	0.17	1.50	0.99	0.33
- Legs ability	Cm	14.28	1.40	14.22	1.19	0.07	1.38	0.19	0.85
- Speed	Sec	15.47	2.53	15.11	2.11	0.36	1.43	0.53	0.52
- Agility	Sec	24.13	1.09	23.95	1.50	0.19	1.89	0.50	0.62
- Accuracy	Point	17.36	1.73	17.52	1.71	0.16	1.02	0.33	0.74
Technical variables:									
- Chest pass	Number	4.00	1.04	4.12	1.17	0.12	1.26	0.38	0.70
- Dribbling	Se	44.40	2.28	44.04	1.86	0.35	1.50	0.60	0.55
- Ladder shot	Point	4.64	1.32	5.00	1.12	0.36	1.39	1.04	0.30

F table value on $P \leq 0.05$ and freedom degrees of (24, 24) = 2.01

(t) table value on $P \leq 0.05$ = 1.98

Table (2) indicated that the highest variance by the lowest variance on all variables was less than F table value. This indicates homogeneity. There were no statistically significant differences between the pre-

measurements of the control and experimental groups on all research variables. This indicates equivalence of both groups.

Data collection tools:

First: Growth factors tests (age – height – weight)

- Age: date of birth
- Height: using a rest meter
- Weight: using a medical balance

Sixth: the educational program using distinct learning in the light of learning styles

1- General Objective:

The program aims to provide female students of the second stage of basic education with the correct technical performance of some basic basketball skills (chest pass – dribbling – ladder shot).

The general framework of the program:

The researcher prepared the educational units of the program and divided them into (6) lessons (one lesson per week). Lesson duration is (90) minutes. The program took (6) weeks and timeframe of each lesson were divided as follows:

- **Administrative** 5

- work:** min
- **Warm-up:** 5 min
- **Physical Preparation:** 15 min
- **Educational activity and practice:** 60 min
- **Conclusion:** 5 min

Program Evaluation:

For effective evaluation, the researcher chose:

- Technical tests for measuring the performance level of basketball skills under investigation
- Oral and written questions presented at the end of each unit

Pilot study:

The researcher performed a pilot study on a pilot sample (n=15) from the same research community and outside the main sample to assure the suitability of the program for students and how well they understand the skills.

Results:

Table (3)

Difference significance and improvement percentages among pre- and post-measurements of the control group on technical tests (n=25)

Variables	Pre-		Post-		Means difference	Standard error	(t)	P	Improvement (%)
	Mean	SD±	Mean	SD±					
Chest pass	4.12	1.17	11.76	1.25	7.64	0.39	19.59	0.00	185.44
Dribbling	44.04	1.86	33.56	2.02	10.48	0.69	15.19	0.00	23.79
Ladder shot	5.00	1.12	16.88	1.09	11.88	0.51	23.29	0.00	237.60

(t) table value on $P \leq 0.05 = 1.71$

Table (3) indicated statistically significant differences between pre- and post-measurements of the control group on technical performance tests in favor of post-measurement as (t)

calculated values were higher than its table value and ranged from 23.29 to 15.19. improvement percentages ranged from 23.79% to 237.60%.

Table (4)

Difference significance and improvement percentages among pre- and post-measurements of the experimental group on technical tests (n=25)

Variables	Pre-		Post-		Means difference	Standard error	(t)	P	Improvement (%)
	Mean	SD±	Mean	SD±					
Chest pass	4.00	1.04	15.80	1.68	11.80	0.47	25.06	0.00	295.00
Dribbling	44.40	2.28	25.83	1.73	18.56	0.73	25.42	0.00	41.81
Ladder shot	4.64	1.32	20.76	1.33	16.12	0.59	27.31	0.00	347.41

(t) table value on $P \leq 0.05 = 1.71$

Table (4) indicated statistically significant differences between pre- and post-measurements of the experimental group on technical performance tests in favor of post-measurement as

(t) calculated values were higher than its table value and ranged from 27.31 to 25.06. improvement percentages ranged from 41.81% to 237.41%.

Table (5)

Difference significance and improvement percentages among post-measurements of the experimental and control groups on technical tests (n=25)

Variables	Experimental		Control		Means difference	Standard error	(t)	P
	Mean	SD±	Mean	SD±				
Chest pass	15.80	1.68	11.76	1.25	4.04	9.39	0.00	109.56
Dribbling	25.83	1.73	33.56	2.02	7.73	14.31	0.00	18.02
Ladder shot	20.76	1.33	16.88	1.09	3.88	11.09	0.00	109.81

(t) table value on $P \leq 0.05 = 1.68$

Table (5) indicated statistically significant differences between post-measurements of the experimental and control groups on technical performance tests in favor of experimental group as (t) calculated values were higher than its table value and ranged from 14.31 to 9.39. improvement percentages ranged from 18.02% to 109.81%.

Discussion:

Table (3) indicated statistically significant differences between pre- and post-measurements of the control group on technical performance tests (chest pass – dribbling – ladder shot) in favor of post-measurement. The researcher thinks that this is due to using the traditional approach (instruction and model) in teaching basketball skills. This approach depends solely on the teacher as the educational process is teacher-centered. The teacher provides verbal instruction with an accurate description of the skill presents a model of the skill and provides feedback and continuous evaluation. This leads learners to correctly learn the skill according to technical

performance. In addition, learners are used to this approach in their learning and this led to the observed improvements in the control group.

This is consistent with (Abdullah, I., 2009; Mabrouk, M., 2011; Mohamed, S., 2014) who indicated that the traditional approach (instruction and model) provides positive results on skill acquisition.

Table (4) indicated statistically significant differences between pre- and post-measurements of the experimental group on technical performance tests (chest pass – dribbling – ladder shot) in favor of post-measurement. This researcher thinks that this is due to using distinct learning in the light of learning styles as it stimulates learners to exert more effort without feeling bored. This approach helps the learner to learn the skill according to her own path and makes her feel self-worth and role in self-awareness without help from the teacher. This makes her understand the skill better. This approach is considered as a practical and mental preparation for beginners.

Distinct learning in the light of learning styles (motor – visual – audio) encouraged students to think scientifically and use self-directions in learning trials. This stimulates the student's thinking and makes her more excited and more positive. It creates an atmosphere of interest and focuses on students. This is consistent with Al-Deeb, B. (2015) who indicated that distinct learning in the light of learning styles (motor – visual – audio) stimulates learners' motivation to learn and increases their abilities and potentials through a suitable educational environment that considers individual differences through multiple learning aids and teaching methods consistent with each learning style. This means that each learner gets learning consistent with his/her characteristics as audio, visual and motor styles vary in learning one skill. Each student chooses the style suitable for his/her abilities, attitudes, desires, learning style and information treatment and recall. This provides each student with unique learning opportunities (Al-Deeb, B. ,2015,p.118).

This is consistent with Hammouda, M. (2007) who indicated that learners who were provided with knowledge content through teaching strategies consistent with their learning styles scored 75% higher on deviation standard compared to their peers whose learning styles were not considered.

This is also consistent with Harvey, F. Silver et al (2004) who indicated that learners who know their learning styles are more able to understand the nature of their learning and more able to set realistic goals to decrease their weaknesses and increase their strengths in addition to increasing this self-awareness and this improves the educational situation (Harvey, F. Silver et al ,2004,p.36).

Accordingly, the researcher thinks that using distinct learning in the light of learning styles with the experimental group had positive effects on the technical variable under investigation.

Table (5) indicated statistically significant differences between post-measurements of the experimental and control groups on technical

performance tests (chest pass – dribbling – ladder shot) in favor of the experimental group. The researcher thinks that this is due to the fact that distinct learning in the light of learning styles (motor – visual – audio) was more positive and effective in improving basketball skills under investigation compared to traditional (instruction and model) approach. The researcher also thinks that distinct learning in the light of learning styles was more suitable for the experimental group's abilities, attitudes, individual differences and learning motivation.

This is consistent with (Atia, M. ,2011) who indicated that distinct learning increases learners' motivation and attracts their attention to involve effectively in the physical education lesson. Distinct learning depends on individual differences and considers these differences through using various learning styles in teaching the same event of track and field and each student chooses her own style that is suitable for her abilities and desires (Atia, M. ,2011,p.26).

Mabrouk, M. (2011) ; Al-Deeb, B. (2015) indicated that traditional (instruction and model) approach is not sufficient for teaching motor skills.

Also, Al-Deeb, B. (2015) indicated that distinct learning provides the teaching process with continuous support as it motivates both teacher and learner and this improves performance. In addition, it improves teaching material through suitable planning and continuous modification and this makes the educational process more inclusive, progressive, flexible and punctual.

This is consistent with Kumaty, Y. & Kumaty, N. (2000) who indicated that elements of learning styles differ according to social and environmental stimuli learners are exposed to. It also differs according to the degree of learners' motivation. This means that we should use various styles to cover various learners (Kumaty, Y. & Kumaty, N. ,2000,p.347).

This is also consistent with the results of Al-Deeb, B. (2015); Mohamed, M. (2013), Alkhathai, Mubarak (2011); Teng Vachl (2009); Pallapu

Prasan (2008); Chalupa (2004) ; Burns (2004) who indicated that distinct learning is very effective in teaching technical aspects and knowledge for learners as it increases learners' acquisition and has positive effects on learning attitudes. This indicates its importance in improving the educational process.

Conclusions:

– The traditional approach (instruction and model) had positive effects on the technical performance level of basketball skills under investigation for the control group.

– The recommended educational program using distinct learning in the light of learning styles had positive effects on the technical performance level of basketball skills under investigation for the experimental group.

– The recommended educational program using distinct learning in the light of learning styles was more effective on the technical performance level of basketball skills under investigation compared to the traditional approach (instruction and model).

Recommendations:

– Distinct learning in the light of learning styles should be used in teaching basic basketball skills and basic skills of other games too.

– Distinct learning in the light of learning styles should be used in physical education lessons at all level in pre-tertiary education.

– Learning approaches and styles in basketball curricula should be improved due to its positive effects on performance.

– Modern methods of teaching should be used to teach basic basketball skills

– Faculty members should be encouraged to use revolutionary strategies in teaching basketball skills.

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