

The Use Of Different Teaching Method In Learning Basketball Skills

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Abstract:

Background: In 1983 Gardner, with his book "Frames of Mind", introduces the theory of many intelligences, which came to overturn the existing ones about learning. He supports that a student-centered way of teaching, with a variety of teaching methods, will lead to the development of different intelligences and the achievement of the goals set by the teacher.

Objective: The aim of the research was to compare the effectiveness of three different learning approaches – teacher-centered on its own right, combination of teacher-centered and student-centered and finally student-centered on its own right based– in learning basketball skills during physical education lessons in the primary education environment.

Methods: The research involved 387 male (210) and female students (177) of the fifth (179) and sixth (208) grades of primary school. The research sample was divided into three groups and students were taught with different teaching methods basketball skills. The intervention program lasted 2 months. Were held 8 lessons (8 weeks X 1 lesson per week lasting 45 minutes) of basketball skills and these were evaluated for each student separately. Two independent judges evaluated each student individually in basic positions, chest pass and bounce pass, shot and layup.

Result: From the results it is found that there is unanimity in the views of the 2 judges regarding the assessment of the skills for all three groups.

Conclusion: From the results it seems that in all three groups most students satisfactorily performed the motor skills.

Key Word: learning methods, cooperative learning, multiple intelligence, basketball.

Date of Submission: 05-02-2024

Date of Acceptance: 15-02-2024

I. Introduction

In recent years, an effort has been made within the educational community to find new teaching methods, to implement innovative actions and to create new curricula so that education at all its levels becomes more attractive and qualitative ^{1,2}. Several researchers were engaged and tried to give answers to the phenomenon of learning by developing theories, which were applied in the educational process. Behavioral, cognitive, sociocultural and information processing theories are the most important ^{3,4,5}.

In 1983 Gardner, with his book "Frames of Mind", introduces the theory of many intelligences, which came to overturn the existing ones about learning, even though the founder of this theory differentiates the many intelligences from the way of learning and the social fields of action. Intelligence is defined as one's ability to adapt successfully to different circumstances ^{6,7,8}. Through his theory, argues that there are eight different and independent intelligences. According to Gardner the intelligences are: Verbal – Linguistic, Logic – Mathematical, Music – Rhythmic, Visual-spatial, Bodily – Kinesthetic, Intrapersonal, Interpersonal and Mental/ existential ^{8,9}. Goleman comes to complement the previous theory and add the emotional intelligence ^{10,11}. Both Gardner and Goleman consider that today's school develops linguistic and logical-mathematical intelligence, underrating in this way the rest ^{8,9,10,12}. They suggest reforms so that the educational community will be able to achieve the targets ^{13,14}.

Mosston and Ashworth presented, ranked, and called these methods "teaching style" ¹⁵; these strategies are different from each as to whether their application is left to the teacher or the student or both with a corresponding percentage of their participation in their formation and development ¹⁶. Teacher-centered styles or styles of knowledge reproduction are the styles in which the Physical Education teacher is at the center of learning and makes decisions about what, when and how to learn. The, according to Mosston and Ashworth, teaching styles are: a) The style of ordering, b) The practical style of teaching, c) The reciprocal style of teaching, d) The style of teaching – control, e) The style of inclusion ^{15,16}. On the other hand, student-centered styles, or styles of production of knowledge or indirect -as they are called-are the styles where the student is at the center of learning, and not as a passive receiver who participates in the discovery of new movements, compares, solves problems

and ranks. Such are: a) The style of guided ingenuity, b) The style of convergent and divergent ingenuity, and c) The styles that encourage the student's initiative.

In recent years, other effective approaches have been developed, in terms of teaching styles, such as role play and simulation, game teaching, the interdisciplinary approach to teaching and collaborative learning^{17,18}. Interdisciplinary teaching is defined as the interaction of two or more disciplines to approach learning, enrich and conquer it^{19, 20, 21}.

Another approach is collaborative learning. This is characterized by the division of the classroom into small sets, which through collaboration, maximize the results of learning for each member of the group separately^{22, 23}. Dyson states that collaborative learning is a form of learning, based on the group's effort to achieve a specific goal²⁴.

Both Gardner and Goleman support that a student-centered way of teaching, with a variety of teaching methods, will lead to the development of different intelligences and the achievement of the goals set by the teacher^{8,9,10,12}. The main goal, which has prevailed in recent years, has to do with "lifelong exercise for health". The big bet of Physical Education teachers is how students will use their energy in activities that they feel capable of, how to gain knowledge and experiences from successes and how they will be motivated to exercise and achieve the goal of lifelong activity^{25,26,27}.

Mukhalalati and Taylor argued, based on Gardner's theory, that appropriate student-centered teaching strategies should be created to achieve the predicted teaching outcomes and lead students to integrated development^{8,12,28}. The importance of Physical Education in the development of "many intelligences" is also highlighted by Elizabeth et al.²⁹. In their research they argue that learning is better and more efficient when individuals understand the importance and value of what they learn, making them more motivated to participate actively. Roesdiyanto concludes that using the appropriate student-centered teaching methods, in combination with the theory of "many intelligences", not only positively affects the learning outcomes but also the social development and creativity of students³⁰. It is also very important to use an interactive whiteboard in physical education lessons for the development of students' "many intelligences", according to Alsayed³¹. From the above, the importance of the Physical Education course in learning outcomes through the development and improvement of "many intelligences" is understood.

Gardner points out that different kinds of intelligence can be used as means of transmission as well as learning. Intelligences can function as learning objects and as means of assimilating various learning objects. Everyone is born with multiple intelligences and the school's role is to develop and maximize them by applying various teaching methods⁸.

Basketball improves critical thinking and cooperation³². It also develops students' character and reduce bullying behavior³³. In addition, it enhances physical fitness, such as flexibility, acceleration, dynamic and static balance, and brings about significant changes in students' motor abilities. In order for the students to acquire the skills mentioned above they may engage themselves into school and out of school activities³⁴. And even for the less adept learners participation in basketball proves advantageous³⁵. Daharis & Rahmadani support that alternative learning methods also develop basketball skills³⁶. One of them, cooperative learning, enhances competence in basketball and raises students' enthusiasm³⁷. Knowledge of dribbling, passing and shooting are, among others, important for commitment and success in the game³⁸. As result, students must acquire basic motor skills of team sports. A main purpose of Physical Education teachers in primary education is to familiarize students with the motor skills of team sports, such as basketball^{13, 39}. From the research that have been mentioned, it becomes obvious that research papers are insufficient regarding the comparison of different teaching methods within the subject of Physical Education; Basketball techniques in primary school is a case in point. In the context of the Physical Education course, research was carried out with the central question "whether in the course of Physical Education the use of the many intelligences contributes to the learning process"^{5, 29, 30, 31,40,41, 42}.

II. Material And Methods

The aim of the research was to compare the effectiveness of three different learning methods in learning basketball skills during physical education lessons in the primary education environment. The methods were as follows: a) teacher-centered (command method), b) teacher-centered and student-centered (guided discovery combined with reciprocal teaching or command method) and finally c) student-centered (teamwork teaching).

The research involved 387 male (210) and female students (177) of the fifth (179) and sixth (208) grades of primary schools based in mountainous, rural, urban, and semi-urban areas. The research sample was divided into three groups, selected at random. The lesson in the first group (134 students) was conducted with methods usually chosen by physical education teachers (command method). The second group (136 students) implemented the combination of student-centered and teacher-centered teaching methods (guided discovery combined with reciprocal teaching or command method). Finally, in the third group (117 students) the course was conducted in groups formed based on the dominant intelligence of the students, with the collaborative teaching method. To

evaluate the "many intelligences" the questionnaire the Greek version of the "Multiple Intelligences Profiling Questionnaire VII (MIPQ VII)" was used ⁴³.

Table 1. Classification of the sample by gender and dominant intelligence

Sex	Intelligences	Group			Total
		Teacher-centered	Combination of Students & Teachers centered	Dominant intelligence	
Boy	Linguistic	18	13	8	39
	Mathematical	15	26	17	58
	Spatial	16	10	9	35
	Music	10	9	3	22
	Kinetics	19	26	11	56
Girl	Linguistic	11	17	29	57
	Mathematical	17	7	7	31
	Spatial	13	19	18	50
	Music	4	5	11	20
	Kinetics	11	4	4	19
Total		134	136	117	387

As shown in table 1, language intelligence gathers the largest number (96) with the female students making up the majority, followed by mathematical intelligence (89) with boys making up the majority while in the third is spatial intelligence (85) with the girls again constituting most of the sample.

Measurements

For the evaluation of the "many intelligences", the Greek version of the "Multiple Intelligences Profiling Questionnaire VII (MIPQ VII)" Tirri & Nokelainen was used, which is a complete and improved version of the 2002 questionnaire ^{43,44,45}.

The intervention program lasted 2 months. 8 lessons were held (8 weeks X 1 lesson per week lasting 45 minutes) of basketball skills (basic positions, chest passes and bounce pass, shot and layup). In the first group the teacher-centered (command method) was implemented. The teacher's role was to give students orders for the latter to perform. In the second group, the student-centered teaching style of guided discovery was used combined with teacher-centered teaching styles (reciprocal teaching). The teacher leads the students to the correct answer by asking them relevant questions and organizes the reciprocal teaching method. In the third experimental group, the same courses were conducted for the same period, with the teamwork teaching method depending on the dominant intelligence of each student. The teacher's duty was to classify the students based on multiple intelligence, provide them with the right equipment in the right place and finally be supportive and intervene only when completely necessary.

Permission was sought from both the Ethics Committee of the Democritus University of Thrace and the Ministry of Education for the entry of researchers into schools. Before implementing the program, the teachers were briefed on the planning and its objectives and were encouraged by the organizers to raise any questions they might have.

Subsequently, students' parents were asked for written permission to allow their children to participate in the program after having been explained the objectives of the research. They were also given the assurance that the results of the research will be used exclusively for educational / scientific purposes.

Two independent judges evaluated each student individually in basic positions, chest pass and bounce pass, shot and layup.

It was evaluated for each student individually:

1. Ready position: a) he had the legs open in the shoulder opening, b) he had the legs parallel and touched the entire sole, c) he had the knees bent at 100o -120o, d) weight on both legs, e) he had the torso slightly forward, f) he had the arms along the torso with elbows bent 90o -120o.
2. A defense stance: a) he had the legs open at the shoulder opening and more bent legs, b) he had one foot ahead of the other at a distance of one foot, c) he had the heel of the hind leg facing inwards and the corresponding hand spread out at the height of the pelvis, d) he had the corresponding hand with the leg that preceded it high above the height of the head.
3. Chest pass: a) he had a ball-ready posture between the waist and chest, b) he performed a circular hand movement, c) he stretched the arms, d) pushed the ball e) turned the palms outwards f) he projected the foot forward with a transfer of his center of gravity. For the reception, the W of the fingers was checked, the damping of the force of the ball with the movement of the hands and foot backwards.
4. The bounce pass a) he had a ball-ready posture between the waist and chest, b) he performed a circular hand movement, c) he stretched the arms, d) pushed the ball e) turned the palms outwards f) he projected the foot forward with a transfer of his center of gravity. For the reception, the W of the fingers was checked, the

damping of the force of the ball with the movement of the hands and foot backwards g) ball bounce at 2/3 of the distance to the player to whom the pass is made.

5. Shot: It was checked whether the right-handed student: a) had the legs in the shoulder opening with the right a little further forward, b) the weight on both legs, c) the knees bent with the ball at the height of the stomach with both hands in the shape of w) he had a harmonious movement of raising hands- stretching legs, e) he brought to a stand the legs with the ball in the right hand (left simply supports) to stretch, e) had the forearm of the ball hand perpendicular to the floor, f) Follow through g) released the ball at 35o - 40o. Opposite symmetrically for the left-handed student.
6. Lay up: a) he had in the last dribble with the right hand the left foot in front, b) he took two steps holding the ball with two hands (right – left), d) he jumped to the basket with a right knee-high e) he made a shot on the basket f) he had a safe landing. On the contrary, symmetrically, the base shot with the left hand was controlled

46,47

III. Result

Table 2. Assessment of skill (ready position)

Basketball Skill	Assessment points	Teacher-centered		Student-centered		Lots of Intelligences	
		Judge 1	Judge 2	Judge 1	Judge 2	Judge 1	Judge 2
Ready position	Leg opening	110	112	131	132	113	115
	Laying soles on the ground	110	111	131	132	113	115
	Corners in the knees	100	103	120	117	108	109
	Weight on both legs	122	125	131	132	117	117
	Trunk position	115	117	120	118	109	107
	Hand position	115	117	131	132	113	115

From table 2 it is found that there is unanimity in the views of the 2 judges regarding the assessment of the skill for all three groups. In the group that was taught the skill (ready position) by the method of ordering (teacher-centered) the majority of students (from 74.6% to 93.28%) performed it satisfactorily. The equivalent percentage for the team which was taught the skill with the combination of student centered and teacher centered method was 86% to 97%. Finally, for the group that was taught the skill with the teamwork method in combination with the dominant intelligence, the percentages were from 91.45% to 100%.

Table 3. Assessment of skill (defensive stance)

Basketball Skills	Assessment points	Teacher-centered		Student-centered		Lots of Intelligences	
		Judge 1	Judge 2	Judge 1	Judge 2	Judge 1	Judge 2
Defensive stance	Leg opening	111	113	130	128	112	113
	Laying soles on the ground	111	113	130	129	112	114
	Corners in the knees	102	105	120	122	110	109
	Weight on both legs	120	124	130	129	114	113
	Trunk position	111	113	127	122	108	109
	Hand position	128	126	130	128	112	113

Table 3 shows that there is unanimity in the views of the 2 judges regarding the assessment of the skill for all three groups. In the group that was taught the skill (defensive stance) by the method of ordering (teacher-centered) most students (from 76.1% to 95.5%) performed it satisfactorily. The equivalent percentage for the team which was taught the skill with the combination of student centered and teacher centered method was 89.6% to 95.5%. Finally, for the group that was taught the skill with the teamwork method in combination with the dominant intelligence, the percentages were from 94.7% to 100%.

Table 4. Assessment of skill (chest pass)

Basketball Skills	Assessment points	Teacher-centered		Student-centered		Lots of Intelligences	
		Judge 1	Judge 2	Judge 1	Judge 2	Judge 1	Judge 2
Chest pass	Ready position	110	112	131	133	113	115
	W-ball holding at waist height	120	123	130	130	113	113

	Circular hand movement	100	103	122	121	109	110
	Stretch elbows	104	106	122	121	113	114
	Turning palms outwards	98	100	119	117	109	108
	Foot view & weight transfer	116	116	130	130	113	113
	Socket- ball damping step back	111	111	130	131	109	110

From table 4 it can be seen that there is unanimity in the views of the 2 judges regarding the assessment of the skill for all three groups. In the group that was taught the skill (chest pass) by the method of ordering (teacher-centered) most students (from 73.13% to 91.79%) performed it satisfactorily. The equivalent percentage for the team which was taught the skill with the combination of student centered and teacher centered method was 86.02% to 97.79% 79%. Finally, for the group that was taught the skill by the teamwork method in combination with the dominant intelligence, the percentages were 92.32% to 98.29%.

Table 5. Assessment of skill (Bounce pass)

Basketball Skills	Assessment points	Teacher-centered		Student-centered		Lots of Intelligences	
		Judge 1	Judge 2	Judge 1	Judge 2	Judge 1	Judge 2
Bounce pass	Ready position	100	104	131	132	113	114
	W-ball holding at waist height	120	121	130	132	113	114
	Circular hand movement	95	97	111	110	105	107
	Stretch elbows	110	115	129	130	110	111
	Turning palms outwards	95	97	104	105	105	106
	Foot view & weight transfer	112	112	130	130	113	113
	Ball burst at 2/3	110	115	130	128	113	114
	Socket- ball damping step back	112	112	128	128	110	110

From table 5 it can be seen that there is unanimity in the views of the 2 judges regarding the assessment of the skill for all three groups. In the group that was taught the skill (Bounce pass) by the method of ordering (teacher-centered) most students (from 70.89% to 90.30%) performed it satisfactorily. The equivalent percentage for the team which was taught the skill with the combination of student centered and teacher centered method was 76.47% to 97.79%. Finally, for the group that was taught the skill by the teamwork method in combination with the dominant intelligence, the percentages were from 92.32% to 99.29%.

Table 6. Assessment of skill (shot)

Basketball Skills	Assessment points	Teacher-centered		Student-centered		Lots of Intelligences	
		Judge 1	Judge 2	Judge 1	Judge 2	Judge 1	Judge 2
Shot	Placement of legs	118	119	132	132	114	114
	Weight on both legs	118	119	132	132	114	114
	Knees bent – ball holding	110	112	124	122	112	112
	Harmonious movement of legs - hands	84	82	98	96	85	83
	Right hand under ball- left supports	82	80	91	88	80	77
	Elbow inside	74	72	80	77	75	72
	released the ball at 35° - 40°	83	82	98	95	85	83
	follow through	83	82	98	94	85	82

From table 6 it is found that there is unanimity in the views of the 2 judges regarding the assessment of the skill for all three groups. In the group that was taught the skill (shot) by the method of ordering (teacher-

centered) the majority of students (from 53.73% to 88.81%) performed it satisfactorily. The equivalent percentage for the team which was taught the skill with the combination of student centered and teacher centered method was 73.52% to 97.05%. Finally, for the group that was taught the skill by the teamwork method in combination with the dominant intelligence, the percentages were from 61.53% to 97.44%.

Table 7. Assessment of the skill (layup)

Basketball Skills	Assessment points	Teacher-centered		Student-centered		Lots of Intelligences	
		Judge 1	Judge 2	Judge 1	Judge 1	Judge 2	Judge 1
Lay up	Left foot with right dribble	96	98	108	108	94	94
	Two ball hands	95	95	106	106	92	92
	Two steps (right – left)	96	96	107	107	94	94
	Jump to the basket	92	94	100	99	90	89
	Shots to the basket	90	93	99	98	88	87
	Safe landing	90	93	105	106	93	94

From table 7 it can be seen that there is unanimity in the views of the 2 judges regarding the assessment of the skill for all three groups. In the group that was taught the skill (Layup) by the method of ordering (teacher-centered) most students (from 67.16% to 73.13%) performed it satisfactorily. The equivalent percentage for the team which was taught the skill with the combination of student centered and teacher centered method was 72.06% to 79.41%. Finally, for the group that was taught the skill by the teamwork method in combination with the dominant intelligence, the percentages were from 67.90% to 80.34%.

IV. Discussion

The aim of the research was to compare the effectiveness of three different learning approaches –first, teacher-centered itself, followed by the combination of teacher-centered and student-centered and finally student-centered based – in learning basketball skills during physical education classes in the primary school environment.

The results showed that the programme was a remarkable success. This is due, on the one hand, to the perfect structure of the questionnaires and on the other hand to the modernity introduced by the program of multiple intelligences, which like the traditional ways of learning, it, in turn, has also contributed decisively to its wide acceptance and assimilation by the vast majority of students.

The students, based on the program, were divided into groups depending on the dominant intelligence of each one. Therefore, there were classes with different approaches but always with the same goal: more effective teaching. The atmosphere in each group was particularly pleasant because the children felt that they were in their element and therefore their degree of motivation was extremely high. Students with low participation were often trapped in a sense of helplessness but with the implementation of the multi-Intelligences program this changed drastically. During the lessons it was impressive that they showed interest in the new method that resulted in the rapid improvement of their performance.

It is also found that in all three groups most of the students performed satisfactorily the motor skills and more specifically, the readiness and defensive posture, chest and bounce pass, free throws and jump shots. Among the high learning rates of all three groups, the ones that stand out belong to the two groups with the combination of teacher-centered and student-centered styles as well as teamwork with the "many intelligences". The students seemed to understand the key points of each skill to a greater extent ^{46,47}.

Analyzing the above results, it was found that the two styles that give a degree of freedom to students had better results than the teacher-centered method. They show a dynamic of student-centered methods, but they do not invalidate the teacher-centered method that is equally important in the learning process. A system of education, based on a variety of innovative techniques and teaching methods for the acquisition of knowledge is a basic prerequisite for the all-round development of students. The correct choice through many feasible alternatives for the achievement of the goal, is part of the school curriculum. The individualization of the educational process based on Gardner's theory enables teachers to deepen students' intellectual abilities by teaching them learning strategies. Students are treated as individuals with their own personal intelligence rather than as an impersonal whole. By focusing on the actual inclinations of each student and the way learn, teachers try to achieve the best possible outcome. In such an educational environment no student falls behind, and everyone learns. The application of the method of teamwork with the "many intelligences" is a new element in the teaching of Physical Education. From the results it seems that the students learned to a satisfactory degree the motor skills taught in this style. However, there must be enough preparation in advance, in terms of group division based on the dominant intelligence of each student. In addition, it is important that teachers have the appropriate material at their disposal, relate it to groups and apply this material in classrooms. Overall, teachers are required to possess

for themselves the above intelligences if they are going to impart their knowledge to students. Finally, the combination of teacher-centered and student-centered methods seems to achieve the goal of learning, as the judges give a high score to motor skills. Students are led to the knowledge of skills through a style that enables them to take initiatives but at the same time to feel confident in the presence and help of the teacher.

Despite the inaccuracies that the theory may contain, it is very likely that it will creatively contribute to an innovative perspective that sees things from a different perspective in the learning process. Perhaps there are difficulties in teaching with this method all physical education lessons and as Derri and Emmanouilidou mention, it is necessary to alternate the methods to achieve the objectives of the lesson^{17,18}.

V. Conclusion

In conclusion, from the results it seems that in all three groups most students satisfactorily performed the motor skills. Furthermore, the apparent success of the intervention program might be appropriate to consider extending it to other subjects of Physical Education as well as to different age groups at all levels of Education.

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