

The effect of educational theater game in volleyball skills and knowledge performance and learning of elementary PE students

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Abstract

The aim of this study was to examine whether the technique of education theater game will have a positive effect on the learning of volleyball setting skills and the development of knowledge of the volleyball rules, in children of the third grade of primary school. The participants were 89 students (boys and girls), aged 8-9 years ($M=8.07$, $SD=.83$). The participants had not been taught volleyball at all. The students were randomly divided into two groups, the Educational Theater Game Group (ETGG, $N=43$) and the Control Group (CG, $N=46$). The research was carried out in the school premises during the Physical Education lessons, lasted four weeks with two teaching units per week. During the implementation of the intervention program, the experimental group (ETGG) was taught sports skills and subjects using the method of educational theater game, while the control group (CG) was taught the same skills and subjects with the typical way of teaching the Physical Education lesson and according to the syllabus. Bartlett, Smith, Davis and Peel's (1991) set/pass test and the AAHPERD (1965) pass and serve tests, modified for the children's age, were used to assess skills. Three measurements were taken (before-after the end of the intervention and one week after without practicing these skills (retention test). The test process was videotaped to assess the quality/technique of the skills, after examining the intra-rater and inter-rater reliability. The assessment of knowledge in the skills was done by filling in knowledge questionnaires from the students at the end of the intervention program. The analysis of variance with repeated measures showed that all students learned the skills, but students of the educational theater game were better in final and retention tests than students of control group. Also, they answered the knowledge questionnaire correctly. In conclusion the use of the educational theater game is a useful tool in the Physical Education course, to achieve its goals.

Keywords: Physical education; Educational theater game; Skill learning; Knowledge development.

1 Introduction

Contemporary conceptions of learning present different ways in which people learn (visual, auditory, kinesthetic type). More and more programs include theater for learning and teaching other subjects. The implementation of the multidimensional possibilities of the theatrical act in the learning function, such as the educational theater game, dramatization, creative drama, games and theatrical expression exercises, can be exploited in specific areas of education (Galantis, 2008). Dramatic techniques can be applied to most teaching subjects (Zoniou, 2008) and Physical Education is one of those areas that can benefit from the implementation of the above capabilities and achieve its goals. Through the Physical Education course, the teacher has the opportunity to create a favorable environment and with special procedures, using movement as a tool, to

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cultivate the child's creativity together and in parallel with sports and social skills, but also to improve the attitudes of physical education (Bournelli, 2002). With theater techniques such as dramatization and educational theater game, students have additional learning opportunities. With the dramatization and presentation of the action, communication becomes more direct and the educational event becomes experiential. With the theater game, the students become familiar with the environment, know their body, socialize and their mood for self-expression is strengthened. Both with the dramatization and with the theater game, the child takes on different roles and with the vehicle the role acts, turns into an acting person and comes into direct contact with the teaching goal. Physical expression and movement contribute to psychomotor development and make it possible to cultivate the relationships of the members and the feeling of security and trust in the group. Unlike other forms of games, the theater game, through action, harmonizes physical movement and placement in space with a sense of rhythm and time (Grammatas, 1998). "The theater game is not based on the text. However, it is not excluded that it starts from a text or from an action plan that the animator teacher may have drawn up alone or together with the children. This plan of action can be based on subjects of the curriculum" (Kouretzis, 1993, p. 17). The theater with its many versions and types, such as the dramatization of a story, the educational theater game, the theatrical performance and representation, the theatrical lecture, the interactive drama, etc. it is used more and more as a tool for learning and in the service of the education of various knowledge subjects.

Belliveau's research, (2007), involving sixth grade students and teachers, following the implementation of a three-week drama-centered project, the findings highlighted an alternative practice model for teaching and learning. Theater techniques have been used as a learning tool for many subjects. Starakis (2008) in an overview article examined the possibility of educational theater game to contribute to the teaching of Natural Sciences, while Zoniou (2008, p. 139) examined dramatic art as a tool for intercultural education noting: "In dramatic play, within from the adoption of a different kinesiology code than the one is used to, feelings are born and emotional and ideological worlds unknown until that moment are revealed." With a theater game, Vgages (2006) approached mathematical concepts with the children of the first grade of a primary school in the context of an experiential workshop. In another experiential workshop, Svoronou and Vassilopoulou (2006) used storytelling, educational theater game and dramatization of stories for the benefit of Environmental Education. In his study (Tsiaras, 2006) carried out in two elementary schools with 68 students in the experimental groups and 73 in the control group with the implementation of a program of theater games for one hour a week and for eighteen weeks. The findings showed that students' self-concept was enhanced. The confirmation of the main prediction of the research was attributed to the positive influence of the theater play activities on each student individually, but also on the school group, as a whole, which affected the students' view of themselves. Tsiaras (2016) again in another study examined dramatic play as a means of developing relationships between peers of elementary school students. In this research, involving 120 classrooms with 2428 students aged 8-11, all activities were found to have a positive effect and a course of study based on dramatic play was suggested. Goldstein and Lerner (2017) in a study involving 97 4-year-old children investigated how dramatic pretend play improves emotional control. A pilot program (Macarena-Paz & Zenasni, 2017) focused on dramatic play, with 209 10-year-old primary school students, succeeded in both of its goals, namely the development of cooperative spirit and positive emotions among children, while Shahbazi and Yazdani (2017) investigated the effect of drama-theater play on education and creativity.

As research progresses and the more theater play and theater techniques are involved in education, the more topics for further investigation are created, thus Costa,

Faccio, Belloni and Iudici (2014), examine the difficulty of evaluating theater techniques and while recognizing the value in education, however, they suggest finding appropriate combined methods for scientific evaluation of findings, while Goldstein (2018) initially admits that role play and drama play, based on research, are related to the development of social and emotional skills in children, however questions whether such play is directly related to positive outcomes and seeks to train educators and facilitators to create programs with guided play activities. In Physical Education there is, of course, the presence of theatrical techniques, such as those examined by Mavroudis (2021) for their implementation in education and physical education, however there is no framework for a systematic dialogue, such as the interdisciplinary dialogue between theater and physical education, suggested by Nascimento and Krug (2015) in their literature review, so as to contribute to the formation of physical education teachers.

Review of the literature found that there is not enough research in Greece in elementary Physical Education lessons examining the implementation education theatre game in learning skills and developing the knowledge of students. Therefore, the purpose of this study was to examine whether the technique of education theater game will have a positive effect on the learning of volleyball setting, passing and serving skills and the development of knowledge of the volleyball rules, in children of the third grade of primary school. The hypothesis was posed was that students of Education theater game will be better than students of control group in acquisition and learning the volleyball skills and also, they will learn the rules of the volleyball game. The results of the study will add useful conclusions in the learning process of the field of physical education lessons.

2 Method

2.1 Participants

The participants were 89 students (boys and girls), aged 8-9 years ($M=8.07$, $SD=.83$). The participants had not been taught volleyball at all. The students were randomly divided into two groups, the Educational Theater Game Group (ETGG, $N=43$) and the Control Group (CG, $N=46$).

2.2 Procedure

The research was carried out in the school premises during the Physical Education lessons, lasted four weeks with two teaching units per week and was carried out in the month of November. During the implementation of the intervention program, the students of experimental group (ETGG) was taught sports skills and subjects (rules) using the method of educational theater game, while the control group (CG) was taught the same skills and subjects with the typical way of teaching the Physical Education lesson and according to the syllabus.

2.3. Instrument

Bartlett, Smith, Davis and Peel's (1991) set test and the AAHPERD (1965) pass and service tests, modified for the children's age, were used to assess skills. Three measurements were taken (before-after the end of the intervention and one week after without practicing these skills. The test process was videotaped to assess the quality/technique of the skills, after examining the internal and external reliability of the two

observers. The assessment of knowledge in the skills was done by filling in knowledge questionnaire from the students at the end of the intervention program.

2.4 Statistics

3 Results

3.1 The performance of the groups' students in the skill technique

From the results of the analysis of variance in the initial measurements, no differences were found between the groups ($p > .01$) for the three skills (set, pass and service) (Table 1).

Table 1. The students' evaluation in the initial measurements, in three skills

Groups	Educational Theater Game N=43		Control N=46		p>.05
	M	SD	M	SD	
Set skill	2.56	2.46	2.00	2.35	.277
Pass skill	3.28	1.69	3.50	2.99	.672
Service skill	6.56	2.37	6.80	2.70	.650

Set skill technique

The analysis of variance with repeated measurements with the repetition factor the measurement (initial, final, retention) and the independent factor the group (theater game and control) showed that there was a statistically significant interaction of the measurement and group factors ($F_{2,174}=16.370$, $p < .001$, $\eta^2 = .608$). Also found a statistically significant main effect of the measurement factor ($F_{2,174}=134.76$, $p < .01$, $\eta^2 = .158$), but also of the group factor ($F_{1,87}=12.637$, $p < .001$, $\eta^2 = .127$) for the set (Table 2).

Table 2. The evaluation of students of the groups in the overall performance at the set skill, in the three measurements

Groups	N	1 st measurement (pre)		2 nd measurement (post)		3 rd measurement (retention)	
		M	SD	M	SD	M	SD
Theater Game	43	2.56	2.46	8.00	4.19	9.91	3.93
Control	46	2.00	2.35	6.54	4.19	5.37	3.45
Total	89	2.27	2.40	3.37	4.23	7.56	4.32

Paired t-test analysis showed that there were differences between the three measurements ($p < 0.05$). Both groups showed improvement, with the theater game group outperforming the control group on both the final and retention measure of setting technique (Figure 1).

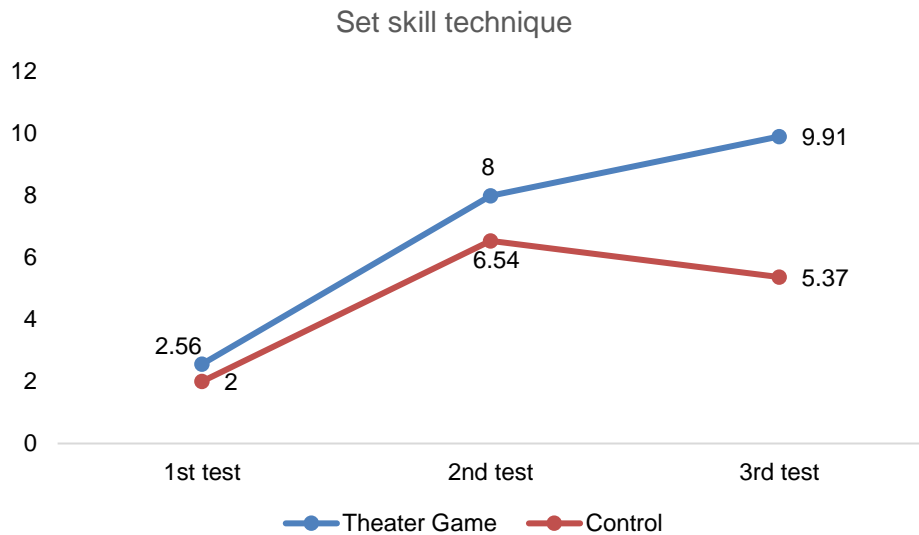


Figure 1. The performance of the groups' students in setting, in the three measurements.

Pass skill technique

The analysis of variance with repeated measurements with the repetition factor the measurement factor (initial, final, maintenance) and the independent factor the group (theater game and control) showed that there was a statistically significant interaction between the measurement and group factors ($F_{2,174}=15.523$, $p < .001$, $\eta^2 = .151$). Also found a statistically significant main effect of the measurement factor ($F_{2,174}=125.417$, $p < .01$, $\eta^2 = .590$), but also of the group factor ($F_{1,87}=10.037$, $p < .001$, $\eta^2 = .103$) for the pass (Table 3).

Table 3. The evaluation of students of the groups in the overall performance at the pass skill, in the three measurements

Pass skill	Groups	N	1st measurement (pre)		2nd measurement (post)		3rd measurement (retention)	
			M	SD	M	SD	M	SD
	Theater Game	43	3.28	1.69	9.84	3.59	10.00	3.07
	Control	46	3.50	2.99	6.13	4.33	7.39	4.95
	Total	89	3.39	2.44	7.92	4.38	8.65	4.33

Paired t-test analysis showed that there were differences between the three measurements ($p < 0.05$). Both groups showed improvement, with the theater game group outperforming the control group on both the final and retention measure of passing technique (Figure 2).

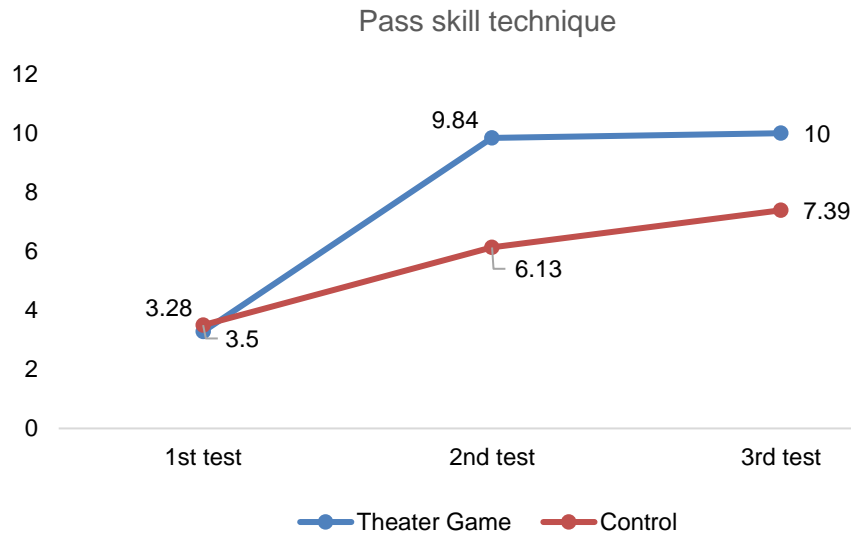


Figure 2. The performance of the groups' students in passing, in the three measurements.

Service skill technique

The analysis of variance with repeated measurements with the repetition factor the measurement factor (initial, final, maintenance) and the independent factor the group (theater game and control) showed that there was a statistically significant interaction between the factor's measurement and group ($F_{2,174}=14.163$, $p < .001$, $\eta^2 = .140$). Also found a statistically significant main effect of the measurement factor ($F_{2,174}=274.94$, $p < .01$, $\eta^2 = .760$), but also of the group factor ($F_{1,87}=10.485$, $p < .001$, $\eta^2 = .108$) for the service (Table 4).

Table 4. The evaluation of participants of the groups in the overall performance at the service skill, in the three measurements

Service skill	N	1st measurement (pre)		2nd measurement (post)		3rd measurement (retention)	
		M	SD	M	SD	M	SD
Theater Game	43	6.56	2.37	12.93	2.61	13.67	2.69
Control	46	6.80	2.69	10.89	2.32	11.24	2.46
Total	89	6.69	2.53	11.88	2.66	12.42	2.84

Paired t-test analysis showed that there were differences between the three measurements ($p < 0.05$). Both groups showed improvement, with the theater game group being better than the control group in both the final and retention measure of serving technique (Figure 3).

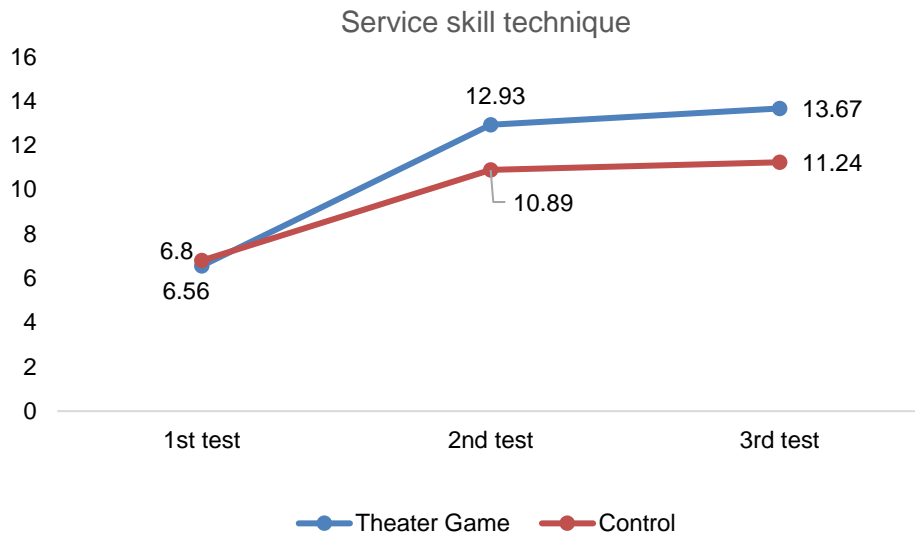


Figure 3. The performance of the groups' students in serving, in the three measurements.

3.2 The performance of the groups' students in the knowledge of volleyball rules

Analysis of variance (ANOVA) between questionnaire factors showed significant differences between the groups' practitioners on the knowledge of rules questionnaire ($F_{1,87} = 40.126$, $p = .000$), with the theater game group outperforming the control group (Table 5, Figure 4).

Table 5. The evaluation of students of the groups in the knowledge of rules, in pre and post measurements

Knowledge of rules		1st measurement (pre)		2nd measurement (post)	
Groups	N	M	SD	M	SD
Theater Game	43	1.56	.204	1.80	.118
Control	46	1.49	.238	1.52	.273
Total	89	1.52	.224	1.65	.256

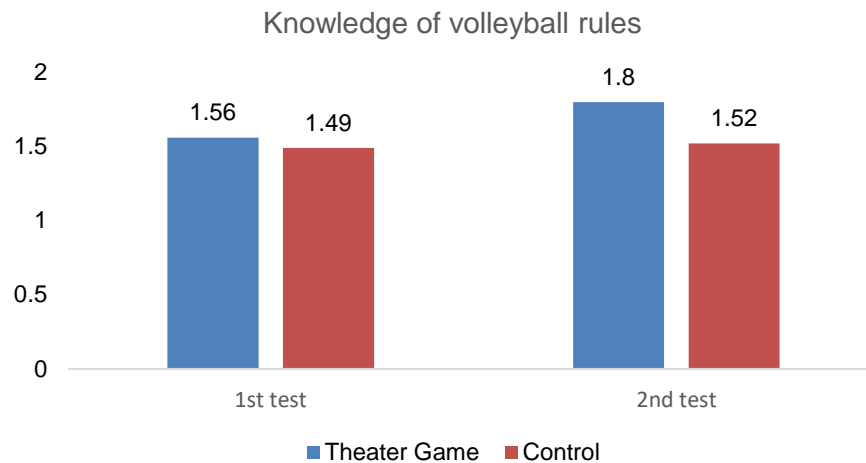


Figure 4. The performance of the groups' students on the knowledge questionnaire

4 Discussion

The purpose of this research was to examine whether the technique of the educational theater game will have a positive effect on the learning of volleyball skills (set, pass, serve) and their cognitive elements, in children of the 3rd grade of the Primary school. The results showed that all students learned the skills but the educational theater game students were better on both measures (final and retention) than the students of control group on all three volleyball skills. Also, the educational theater game students performed better on the knowledge questionnaire than the students of control group.

The researcher assumes that the theater game was something new in the physical education class and it caught the children's interest. Also, the game is always preferred by children as it is fun and has the element of competition. Likewise, Fitzgerald (2007) who explored a number of issues, found that drama could be a useful technique. Another research where theatre and theatrical game were used as teaching methods for Greek traditional dances very successfully (Lykesas et al., 2018). Theater game seems to increase motivation, something especially important for children, who are looking for ways to explore the world and have fun.

The findings of the research agree with the research of other subjects such as enhancing children's creativity and self-concept, emotional control, positive emotions, teaching and learning (Bournelli, 2002; Grammatas, 1998; Belliveau, 2007; Tsiaras, 2006; Goldstein & Lerner, 2017; Macarena-Paz & Zenasni, 2017).

However, research should focus on methods of evaluating the findings (Costa et al., 2014) and motivating teachers to include theater game in their curricula (Goldstein, 2018). Undoubtedly, drama techniques should be utilized by Physical Education teachers, so that they can find more ways to approach children and lead them to more creative learning paths, introducing more elements into their teaching.

In conclusion, the educational theater game could be a useful tool in the Physical Education course, to achieve its goals.

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