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Impact of in-service training to physical educators to improve class time management

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Abstract

The purpose of the present study was to examine the effect of a short-term training program on physical education time management, in elementary school. Thirty-two physical educators were randomly divided into experimental and control group. Each teacher taught six lessons (two for pre-test, two for post-test and two for retention test). After the pre-test, the experimental group attended a training program which included a two-hour lecture with emphasis on how to effectively manage the allotted class time, and a two hour practicum, supervised by the researcher. Then, both groups were post- and retention tested. For the evaluation of class time management, the form Time Management (Graham, 2001) was used. Multivariate analysis of variance with repeated measures and analysis of covariance were used for data analysis. Results showed that physical educators in the experimental group learned to increase student activity time, and managed student waiting time significantly better than those in the control group which, on the other hand, managed significantly better the time allotted to provide instructions. It is concluded that a short but focused training can significantly influence class time management, an important criterion of teaching effectiveness.

Keywords: Teacher effectiveness, physical education, time management, elementary school

Introduction

The need for in-service training of physical education teachers cannot be underestimated. It is a necessity in enhancing work performance and motivation of teachers in their field. Absence of in-service training of physical education teachers will retard professional growth of teachers as well as missing gaps between demands and actual achievement levels. In-service training allows for such activities that may include seminars, workshops, conferences, classes, exhibitions etc. that are designed to develop and improve employees in an organization from the initial employment stage to retirement.

Class management includes a wide variety of operations by the physical education teacher, such as taking into account the safety of the students when planning the lesson, taking attendance, distributing and collecting equipment, regrouping students and gaining their attention. Teacher is also responsible to ensure that time is not lost in the transition from one activity to another, during students' entering and leaving the playground or gym, and during the demonstration of the skills or instruction provision (Olivia & Pawless, 2001) [24]. Time management is an important procedure in teaching physical education in a learning oriented environment (Duke, 1979) [9]. However, ineffective time management can lead students to minimize active participation with subsequent negative impact on their attitudes towards physical activity (Silverman & Scrabis, 2004) [32]. Physical education management is defined as the time spent to organization and transition actions, throughout the lesson, and it has been related to student achievement and learning, and to teacher effectiveness as well (Siedentop, Herkovitz & Rink, 1984).

Review of the Literature

As reported by Emmer and Evertson (1981) [13], the first studies on class management and student and teacher behavior appeared in the early '70s and quickly occupied a privileged position in research on teaching (Doyle, 1986) [10]. Reviewing similar research in physical education, Siedentop, Mand and Taggart (1986) [31], found that 6-22% of class time was spent

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for transition-management activities, 15-22% for instructions, 22.32 % for waiting, and finally only 21-30% of class time was allotted to motor engagement. On the other hand, the time students were active was less than 30% of total class time and the time they were engaged in motor appropriate activities was less than 15%. Therefore, research showed that academic learning time (time allotted in activities with high success rate) ranged between 10% (Metzler, 1989) ^[23], 14.6% (LaMaster & Lacy, 1993) ^[20] and 20% (Lacy, LaMaster & Tommaney, 1996) ^[19] of total class time. Overall, researchers' findings on active learning time were inconsistent with curriculum recommendations (LaMaster & Lacy, 1993) ^[20].

As reported earlier, class time management has been related to teaching effectiveness. Most effective physical educators spent 12.1% of class time for class management, while the less effective 43% (Phillips & Carlisle, 1983). The reason seems to be a lack of reflection on management issues during lesson planning (Twardy & Yerg, 1987) ^[34]. Less effective physical educators seem to make no effort to establish rules and routines, which are necessary for increasing student activity and for learning of appropriate behaviors (Doyle, 1986) ^[10]. Recent studies also show that effective physical educators minimize the time of organization, waiting and transition while they increase the time of student active participation (Barret, 2000; Momodu, 2000) ^[2]. Also, they continuously monitor student behavior and instantly correct inappropriate behavior (Olivia & Pawless, 2001) ^[24].

In Hellas, only recently has research started to be carried out on teachers' effectiveness on class time management and it was found below the acceptable level (Aliferi, Derri, Avgerinos, Antoniou & Kioumourtzoglou, 2005) ^[1]. Physical education teachers spent 40.6% of class time in managerial and organizational activities while student waiting time occupied 38% of the class time (Vasiliadou, Emmanouilidou & Derri, 2003) ^[36]. Similar studies showed that 28.7% of total class time was devoted to organizational activities (Coules & Tzetzis, 2005) ^[7], and 30.68% to teacher instructions (Tzetzis, Amoutzas & Kourtessis, 2003) ^[35]. The above findings are of crucial importance since class organization time is negatively related to student achievement (Emmanouilidou, Vasiliadou, Derri, Tzetzis & Kioumourtzoglou, 2003) ^[35].

The Effect of Training

It is generally acknowledged that assessment, effectiveness and training are the key words for the improvement of education (Siedentop & Tannehill, 2002). The review of studies in which a physical education teacher received feedback from a trained observer showed significant changes in teaching behaviors. Specifically, a significant improvement was observed in providing feedback; a reduction in instruction time and in student criticism. On the other hand, there was an increase in praise and acceptance of ideas (Mancini, Wuest & Van der Mars, 1985) ^[21], in student active participation time and in the number of their attempts during practice (Grant, Ballard & Glynn, 1990; Ratliffe, 1986) ^[16, 28].

Training on class management was mainly applied on teachers (Hickson & Fishburne, 2004), physical education students (Randall & Imwold, 1989) ^[27], or pre-service physical education teachers (Carlisle, Steffen & Phillips, 1986) ^[4]. Specifically, a 5h and 30min teacher training resulted in reducing waiting, instruction and organization time and in the remarkable increase of children's active participation time (Hickson & Fishburne, 2004). Similarly, in the study of Randall and Imwold (1989) ^[27], a two-hour training for physical education students increased

significantly student active learning time. Finally, a six-week intervention program for preservice physical education teachers helped class management so much that the time devoted to this purpose was reduced to 10.6% of total class time (Carlisle, Steffen & Phillips, 1986) ^[4].

While in general the effectiveness and training of teachers is in the limelight for many years, little has been done with in-service physical education teachers. Also, in Hellas there is not in effect a training program, sensitive to the teaching and practical needs of in-service physical education teachers, and in this case to class time management, as they are shown by research data. This lack in training occupies an important place on physical educators' concerns who wish to receive feedback and advice regularly to make their teaching more effective (Karabekou, Hassandra & Goudas, 2004) ^[18].

Therefore, the purpose of this study was to examine the effect of a brief, voluntary, face to face training in class time management of physical education. Based on the findings of international literature, the researchers assumed that teachers would improve their teaching ability after the training program in all categories of time management. Studying in parallel the effect of the program on student achievement or on teacher perceptions about student results, would be of great interest and it would lead in more complete conclusions. However, the goal of this research was to educate teachers to improve the management of classroom time.

Method and Material

Participants

Thirty-two elementary school physical educators (15 women and 17 men), 29-44 years old (M=39.03, SD=3.46), whose teaching experience ranged from 3 to 18 years (M=10.87, SD=4.25), participated in the study. Teachers were divided randomly into an experimental (n=15) and a control group (n=17). Seven hundred and seven students of first and second grades also participated. For the study to be conducted, written permission from the concerned institute was secured. Also, parents gave written consent for the participation of their children.

Measures

For the evaluation of class time management, the form Time Management (Graham, 2001) ^[15] was used. It is a systematic observation tool on the length of time students are involved in specific aspects of the teaching/learning process. It divides class time in four basic categories and analysis is based on what at least 51% of the students are doing. The categories concern (a) time allotted to managerial tasks (distribution and collection of equipment, selecting partners, teams and groups, transition between activities, reminding rules, etc.), (b) activity time, (c) instruction time (for teaching, demonstration of skill, etc.), and (d) waiting time (students waiting in a row to perform, or to get equipment, or to find the right song in a CD). For the collection of data, a digital video camera and a tape recorder with a tiny microphone were used.

Procedure

The participants were informed that their teaching performance would be evaluated. A total of 192 lessons were recorded: for each teacher a total of six 40-min lessons, two per week, according to the physical education curriculum for the first and second grades of elementary school. The mean value of the performance in each pair of lessons constituted the pre-test, post-test, and retention measurement. Two fundamental and interrelated motor skills were to be taught:

overhand throwing and catching. No instruction was provided on how to teach the subject at hand. Teachers could choose the type of activity, intensity, repetitions, and lesson content in general. The experimental group, after carrying out the first two lessons, which constituted the pre-test, attended a short training seminar which is described below. The mean performance of the next two lessons was the teachers' post-test score.

Fifteen days later, a retention test took place during two lessons, and the performance mean of the physical education teachers constituted their score in the retention measurement. Lessons were evaluated by two trained observers. Their training included learning the categories of the instrument, training in the use of the evaluation form and practical training in videotaped lessons (other than the present one). The practical training lasted until intraobserver reliability was greater than .90 and interobserver reliability of more than .85 in all categories of the instrument. Subsequently, one observer analyzed all the hundred and ninety-two lessons while the second observer assessed a random sample of twenty lessons, following the procedure proposed by Byra and Coulon (1994)^[3]. The agreement between observers ranged from .89 to .97.

For the evaluation of teaching, the observers watched the videotaped lessons, while listening to an audio tape (where necessary) and evaluated them in accordance with the protocol of the instrument. The timer started in the beginning of the class. Whenever there was a change in the learning environment there was a recording of the moment in time and congruent coding. At the end, all time intervals were added and the total class time was calculated. Also, the quota of each category was compared with total class time. If, for example, for providing instructions a total of 600" was spent and the total class time was 2400" then $600/2400=25\%$ of the time was devoted to instructions.

The Training Program

The training program consisted of a two-hour lecture followed by a two-hour practical application. During the lecture, topics were developed, which, in accordance with the review of the literature, are considered essential for effective time and class management in physical education. These were the use of a lesson plan, the application of rules and routines, the use of space, time and equipment, the ad hoc construction of equipment (e.g. paper balls), the maximization of activity time and the minimization of waiting time, the provision of

feedback and brief, specific and accurate instruction, as well as the evaluation of the students at the end of the lesson. During the lecture teachers were encouraged to ask and to respond to the questions of the trainer, to express their opinions about the topics developed, and to discuss about time management problems in a physical education class.

Teachers were given congruent printed material and a video and audiotape, containing one of the first two lessons. Then, there were the two lessons for practical application, in same grades and with the same or skills, in which teachers tried to modify or enhance organization elements, communication or task presentation elements, based on knowledge acquired during training. The lessons were observed by the researcher, who kept notes on research variables but also on occurrence, for better interpretation of the results. Upon lesson completion, a brief debate started with questions such as "Do you have better control of children when you form many more groups?", "Is it difficult to individualize instruction?" depending on the occurrence during the lesson. The goal of these questions was to enable teachers evaluate teaching parameters, reflect on the next lesson, and use more appropriate teaching practices. Also, it has to be mentioned that although the physical education area was adequate in each school, it differed among schools. Also, it was not possible to ensure that teachers did their best during the classes observed.

Results

Means and standard deviations of the two groups in all three measurements with reference to the variables of class time management are shown in Table 1.

Multivariate analysis of variance with repeated measures concerning activity time revealed a statistically significant interaction between group and measurement $F(2,60)=20.80$, $p<001$ (Figure 1). The post hoc Bonferroni test indicated that the two groups did not differ significantly in the pre test $p>.05$, while they differed in the post $p<001$ and retention test $p<001$.

Statistically significant were also the differences between pre and post test $p<001$, pre and retention test $p<001$ and post and retention test $p<05$ for the experimental group. Specifically, this group increased and retained activity time after the training program. In contrast, the control group showed no statistically significant difference either in post or in retention test.

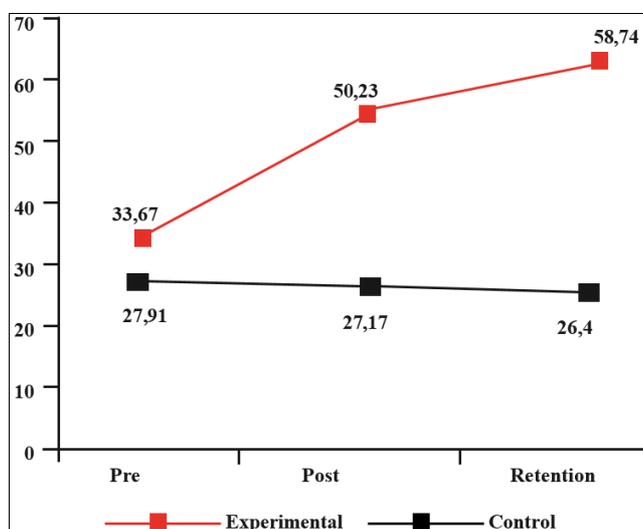


Fig 1: Interaction between group and measurement on activity time

Table 1: Means and Standard Deviations (in %) of Class Time Management of the Experimental and Control Group in All Measures

Time Variables	Experimental Group						Control Group					
	Pre		Post		Retention		Pre		Post		Retention	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Activity	33.67	13.8	50.23	9.63	58.74	7.32	27.91	9.95	27.17	11.97	26.4	10.13
Management	26.50	8.43	26.83	8.80	22.10	5.50	26.12	10.57	26.62	7.96	27.69	11.36
Waiting	21.25	13.91	2.17	1.98	2.84	3.61	35.93	14.11	36.23	17.02	35.79	15.61
Instructions	18.60	6.88	20.78	6.55	16.33	3.09	10.13	4.22	10.04	5.34	9.41	4.38

Regarding the time allotted for class organization, results showed no statistically significant interaction between group and measurement $F_{(2,60)}=2.01, p>.05$. Also, no statistically significant effect was found of either the measurement factor $F_{(2,60)}=.639, p>.05$, or the group factor $F_{(1,30)}=.433, p>.05$.

Because of pre-test differences in waiting $F_{(1,29)}=7.66, p>.05$ and in instruction time $F_{(1,29)}=1.95, p>.05$ between groups, analysis of covariance (Ancova) was used to test for possible differences between the two groups in the post-test and in the retention test, while controlling for the effects of the pre-test scores. Results showed statistically significant differences between the two groups in waiting time both in the post $F_{(1,29)}=37.98, p<001, \eta^2=.56$ and in retention test $F_{(1,29)}=43.61, p<001, \eta^2=.60$, in favor of the experimental group, as well as in instruction time in the post $F_{(1,29)}=10.51, p<01, \eta^2=.26$ and in the retention test $F_{(1,29)}=5.94, p<05, \eta^2=.17$, in favor of the control group.

Discussion

The primary function of schools is to focus on intended learning. In physical education, effective teaching is teaching that results in more intended learning (Rink, 1996) [29]. Three essential elements of effective teaching are lesson preparation and planning, class organization and management, and acquisition and maintaining discipline (Dunne & Wragg, 2003) [11]. The physical educators themselves held a similar view when asked about what they consider important for effective teaching, since class organization and management obtained the highest percentage (38%) of their responses (Collier & Hebert, 2004) [6]. In addition, teachers with high teaching effectiveness have had better results in overall class organization and management in the study of Chase, Lirgg, Miami and Sakelos (2003) [5].

The aim of the current study was to determine the effect of a short training on the ability of elementary physical educators to manage class time. Regarding the time of student activity, results confirmed the hypothesis on improvement after the training. The pre-test scores of the physical educators in activity time (approximately 30%) were consistent with those of other studies (Godbout, Brunelle, & Tousignant, 1987) [14]. However, the experimental group increased student activity time to 50.23% and further improved it to 58.74%, which shows that intended training can influence positively this time variable. These findings are consistent with the findings of Grant, Ballard and Glynn (1990) [16] and Ratliffe (1986) [28], since participants in their studies increased student activity time after training. It seems that, when teachers have clear objectives and receive feedback from trained supervisors, teaching parameters, such as time management, can be improved. The experimental group exhibited even greater improvements during retention measurement, which confirms the view of Metzler (1983) [22] that if teachers experience a positive change they do not return to previous teaching practices. The percentage of active participation of students in this study goes beyond the results of Lacy, Willison and Hicks (1998) in which the student activity time was 49% of

total class time for the “teacher of the year” physical educator. The above finding seems to be more in accordance with the findings of De Marco (1999) [8], who assessed the “teachers of the year” to answer the question what the characteristics of an effective teacher are, and found that students are actively involved in more than 50% of class time. Unlike the experimental, the control group did not improve its performance ratings in any of the measurements.

On the other hand, regarding class organization, the research hypothesis for improving student organization time after training was not confirmed by the findings since the two groups showed no significant differences. The experimental group showed only a tendency for improvement in the retention test. Performance of both groups in this time variable was approximately 27% and was slightly better than that of similar studies carried out using the Academic learning time-physical education (ALT- PE), as ascertained by Siedentop (1991) [30]. This finding is consistent with that of Lirette, Pare and Pieron (1986) regarding the time elementary physical educators spend on class organization, and slightly better than performance of physical educators in the study of Lacy, LaMaster and Tommaney (1996) [19]. In the present study, physical educators exhibited much better organization time, compared to an earlier study in Greece by Vasiliadou *et al.* (2003) [36] although in the latter a different evaluation instrument was used and no information about the teaching elements to be evaluated was provided.

It is true that the way physical educators organize the classroom is a well-established habit that is built over time. As such, it is expected to require a reasonable period of time to change. Although the two groups did not differ in the quantity, there were great differences in the quality of their teaching. The participants in the experimental group after the new insight they attained, started to apply routines and rules for better lesson running, and organized children’s practice in various ways (groups, line-up, distribution and collection of equipment, etc.) spending valuable time because the children did not know the specific procedures. Perhaps these changes are the reason for the slight improvement of the experimental group in the retention test. Possibly, with time and procedures being followed (routines, rules, regrouping, etc.) automatically by the students class organization time can be further reduced. Physical educators’ performance in the retention test is in agreement with the study by Lacy, Willison and Hicks (1998), but lags substantially behind the findings of Ratliffe (1986) [28], in which, though, the intervention took place over a much longer period of time. Based on the results on student waiting time, the research hypothesis that teachers would reduce it after training was confirmed. The two groups differed significantly in the post and retention test. Initially, the waiting time was long for both groups and this is in line with the findings of a review by Siedentop, Mand and Taggart (1986) [31]. However, after training, the experimental group achieved a huge reduction in student waiting time, minimizing it both in the post (2.17%) and retention test (2.84%). Thus, it seems that knowledge acquired on the use of

space and equipment was effectively applied. With regard to the control group, its performance did not change in any of the measurements and the results are consistent with those of a previous study by Vasiliadou *et al.* (2003)^[36].

However, results of the study did not confirm the research hypothesis for reducing instruction time after the intervention. The two groups differed significantly in the post and retention test, with the control group spending less time on instructions, which is desirable. The experimental group showed a slight increase in the post test and a slight decline in the retention test (18.60%, 20.78% and 16.33% respectively) although, during the intervention, the minimization of instruction time was emphasized and the qualitative aspects of motor skills were analyzed. The instruction time in the present study agrees with the findings of Siedentop, Mand and Taggart (1986)^[31], and is clearly lower than that observed by Tzetzis *et al.* (2003)^[35], in upper elementary grades. Although it is not the subject of this study, it should be noted that while instruction time has not declined significantly, the quality of instructions provided by the experimental group increased sharply. In contrast, the control group spent less time for instructions which were of very poor quality. Instruction provision is a fundamental element on teaching skills and requires knowledge as well as training. In this study, the experimental group, after training, acquired the necessary knowledge; but it appears that brief but concise and clear instructions need more time to be incorporated into daily practice. The above are supported by a study by Patton and Griffin (2008)^[25], in which the professional development program of two experienced physical educators was effective. Researchers strongly noted, however, that the changes were not made overnight but time, opportunities to implement and support were required.

Conclusion

From all the above, it is then found that the use of routines and rules and the utilization of space, time and equipment helps to improve the use of class time. These findings are similar to those by SimmonsMorton, Taylor, Snider, Huang and Fulton (1994)^[33]. Therefore, in-service teachers must be trained to acquire knowledge on effective teaching, because as Haberman (1995)^[17] states the surest way to effectively improve student achievement is updating and improving the quality of teaching. Only thus can maximization of student achievement be attained, as well as their most integrated development possible, in the little time allotted to physical education much of which is wasted on managerial tasks. More research is needed in order to establish the long-term effects of short and focused training on time management as well as on subsequent student achievement. Also, the evaluation of teaching with more than one systematic observation instrument at the same time, and in different grades seems necessary since effective teaching is multidimensional and with related characteristics.

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