RESEARCH ARTICLE

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Teaching Efficiency or Inefficiency in Elementary Physical Education

Panos Constantinides

ABSTRACT

The school curriculum clearly defines that the main purpose of elementary physical education is to help students develop positive attitudes towards physical education, engage in lifetime physical activity through the development of knowledge and skills, develop an integrated personality and cultivate moral and social values. How close are elementary children to the above purpose? Is this achieved through elementary physical education class? The purpose of the study was to examine the teaching efficiency or inefficiency of classroom teachers when teaching physical education, from the perspective of time. For that purpose, 30 elementary school teachers (18 female and 12 male) from public schools all over Cyprus were randomly selected to participate in this study. Participating teachers were assigned to teach physical education in their schools. Teachers were asked to give 2 dates on which school visits to schools were scheduled to attend their courses and collect data related to their teaching, such as time management, presentation of activities, organization of children and equipment, feedback provided and others. For data collection purposes a previously validated recording instrument designed by Silverman, Subramaniam, & Woods (1998) was used. The teacher behavior instrument required the coder to collect data on both instructional behaviors (e.g., explanation, demonstration, and monitoring) and organizational behaviors (e.g., children organization and equipment organization). In addition, informal semi-structured interviews with the teachers were also conducted, in order to learn about their beliefs about teachers' behaviors in class and the value they give to them, such as organizational behaviors and others. The descriptive statistical analysis revealed data that show in principle the diversity, from class to class, in the variables that have been studied. The most important factor, however, is the ineffective use of the available class time, which negatively affected the components of a physical education course, such as the consumption of a large part of the time in organizational or other processes while deducting time that could be offered to the children for more physical activity, more efforts, and probably better learning. Data analysis revealed four important themes that should be of concern to those involved with physical education: 1) The need for better time management, 2) The need to improve the teaching and organizational factors of the class, 3) The need for feedback to students during practice time, and 4) The need for final assessment when at the end of the class.

Keywords: Effective teaching, Elementary school, Physical Education, Time management

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I. INTRODUCTION

The development and maintenance of positive attitudes toward physical education, the maintenance of an active lifestyle, and the promotion of health-related physical education, are among the most important goals of the elementary physical education curriculum in Cyprus (Ministry of Education, Culture and Sports, 2022: Elementary school curriculum). Physical education as part of the school curriculum, and furthermore physical activity have been given high value, since they may have numerous positive effects on children. The health benefits of regular physical activity, including disease prevention and the enhancement of quality of life (Sallis, McKenzie, Beets, Beighle, Erwin, & Lee, 2012; Lohaphaiboonkun, 2011) are highlighted to children, in an effort to energize kids and play a major role against children inactivity and furthermore childhood obesity, promoting daily physical activity in children.

Elementary schools are expected to offer quality physical education programs that will help children develop positive attitudes toward physical education, will promote lifelong involvement in regular physical activity, and will contribute to eliminating childhood obesity (Constantinides & Silverman, 2018; Ministry

of Education, Culture & Sports, 2010). Teachers are expected to come well prepared with organized activities to teach fundamental skills and concepts, in a warm and positive environment, where all children will have ample opportunities to practice and learn (Constantinides, Montalvo & Silverman, 2013). All learning outcomes described in the school curriculum referred to as "…children should be able to…" should be reached by the students, however, when the class is assigned to classroom teachers, the efficiency of teaching this class becomes questionable, bringing up the need to investigate the topic in elementary physical education, in an effort to prepare preservice teachers and support current teachers with components of effective teaching, if needed. The everlasting debate in Cyprus as to whom physical education classes should be assigned to – classroom teachers or physical education teachers – still goes on. On one hand, classroom teachers support that they can teach this class as any other class, however, physical education specialists disagree, presenting a number of reasons for that. Older (Faucette & Hillidge, 1989; Faucette, McKenzie, & Patterson, 1990; Faucette, Nugent, Sallis, & McKenzie, 2002; Faucette & Patterson, 1989, 1990) and more recent studies (Constantinides, Montalvo & Silverman, 2013; Constantinides & Silverman, 2018) support physical education teachers' opinion. These studies have shown that major components of teaching such as time management, presentation of tasks, organization of students and material during practice, teacher-student interaction during practice (e.g., for feedback, encouragement, motivation, a reward for their effort, and other) are missing from classroom teachers' classes. Although one may find some elementary school teachers teaching the class efficiently (mostly teachers who used to be athletes or followed sports) this is not the rule in all classes. Considering that existing reseach clearly demonstrated what's missing from elementary physical education classes to help students reach the goals set, a need for a new study arises. Therefore, the purpose of the present study was to examine the efficiency of elementary physical education classes taught by classroom teachers and come up with specific suggestions, as far as the improvement in their teaching wherever needed, to better help children adopt an active lifestyle and prevent childhood obesity, a major health problem for children in Cyprus (Savva *et al*., 2014).

II. METHODS

To examine teaching effectiveness in physical education classes of elementary teachers (also called common branch teachers), 30 elementary teachers (18 female and 12 male) from public schools all over Cyprus, were randomly selected to participate in this study. All teachers were assigned to teach physical education in their schools. School settings had indoor and outdoor facilities for physical education and closets with a variety of equipment available to teachers. Upon receiving permission from the Ministry of Education, Culture and Sports and school principals to enter public schools, consent letters were sent to teachers and students' parents. The purpose of the study was clearly explained, and questions were answered to school principals, teachers and students' parents, to make sure they were all aware of what the investigator was doing. Teachers were asked to provide two dates at their own convenience, during which the investigator would visit their school and observe their physical education class for data collection purposes. A schedule was prepared and forwarded to teachers and reminders were followed afterward. Two lessons of each participant were observed in their school settings during the academic year 2021-22, focusing on teachers' instructional behaviors, such as activity presentations, teacher-student interaction during practice (e.g feedback offered, motivation, student encouragement, reward and other) and organizational behaviors (e.g., children organization and equipment organization). To create a picture of how teachers spend time in elementary physical education and what kind of teaching behaviors they demonstrate in class, a previously validated recording instrument designed by Silverman, Subramaniam, & Woods (1998) was used. The duration and event recording instrument helped create a picture of the teachers' behaviors during the lesson and time management for each teacher. The teacher behavior instrument required the coder to collect data on both instructional and organizational behaviors. The coder observed and recorded the type of behavior the teacher engaged in as well as the start and stop time of each behavior. In addition, unofficial semi-structured interviews were conducted with all participants, to see their views on teaching physical education and the components of teaching they valued the most.

III. RESULTS

Descriptive analysis of the data revealed a clear picture of elementary teachers' behaviors during school physical education (Table I). According to the table below, there is a variation in the use of the available class time among the participants, in each of the observed categories and the total amount of time used for the lesson. Much of the available class time was spent on equipment organization (i.e., T1, T22) and kids' organization (i.e., T1, T5, T6) during the lesson. Student practice time, the most important variable for student learning, also showed a variation: For example, T7, T16 & T20 allowed approximately half of the class time for practice. In addition, T11, T15 and T21 allowed approximately 25% of the available class

time for practice. A number of teachers allowed less time than others, such as T8, T13, T27 and T29 (T12 was an exception). Let's examine the data deriving from the above table.

TABLE I: MEAN TIME ON ELEMENTARY TEACHERS' INSTRUCTIONAL & ORGANIZATIONAL BEHAVIORS IN BOTH CLASSES

#	Gender	Introduction	Wait Time	Kids Org	Feedback	Equip. Organ	Presentation	Practice	Assessment	Closure	TOTAL
1	W	01:02	07:15	02:08	04:54	02:34	02:55	12:41	01:09	04:43	39:21:00
2	W	04:12	00:00	05:09	03:07	05:06	04:17	08:14	02:03	03:19	35:27:00
3	M	05:03	00:00	03:31	02:07	03:04	06:07	19:21	00:00	01:04	40:17:00
4	W	02:03	07:32	10:01	02:14	00:00	01:23	03:24	01:17	02:04	29:18:00
5	W	00:00	04:11	06:32	00:00	04:10	07:10	14:02	00:00	01:11	37:16:00
6	M	04:21	06:02	10:09	02:14	02:21	02:34	13:01	00:23	03:05	43:30:00
7	W	02:12	01:45	09:27	00:31	07:01	03:23	06:20	00:36	01:32	32:07:00
8	M	02:37	02:22	02:57	02:52	03:23	05:28	10:21	01:01	02:32	32:13:00
9	M	03:21	01:42	08:10	02:32	03:40	07:44	13:17	01:21	02:05	42:32:00
10	M	02:34	04:12	04:53	01:19	09:11	03:43	11:03	02:06	01:23	39:04:00
11	W	02:22	02:00	06:43	02:21	04:15	06:23	11:12	00:41	03:02	38:19:00
12	W	04:05	03:09	06:23	02:02	04:03	06:30	10:06	02:12	03:27	41:17:00
13	W	02:41	02:00	03:08	02:23	04:54	05:40	09:56	00:48	02:58	32:27:00
14	M	03:16	03:34	03:54	02:18	01:49	08:23	11:41	02:19	05:47	41:01:00
15	W	02:02	05:12	09:11	06:21	03:01	10:12	03:22	01:51	00:00	40:32:00
16	W	00:00	04:33	06:57	03:43	02:48	01:50	08:02	01:08	03:57	31:38:00
17	W	02:52	04:53	03:40	00:00	00:00	03:19	06:19	00:00	02:55	22:38:00
18	M	04:11	03:09	05:35	03:42	05:25	08:23	05:46	01:56	05:02	41:49:00
19	M	00:00	02:32	07:42	03:57	03:28	04:51	16:04	00:28	02:12	40:54:00
20	W	02:41	04:24	05:31	01:16	04:23	03:57	10:02	01:17	03:40	35:51:00
21	W	01:58	00:00	04:15	02:09	03:06	10:12	12:04	01:56	02:12	37:12:00
22	W	05:12	02:00	03:11	02:27	03:04	06:19	12:41	00:00	03:04	37:18:00
23	M	02:53	04:32	06:01	02:14	04:00	04:23	06:24	02:19	03:04	35:10:00
24	M	02:34	07:11	06:21	02:01	04:10	07:10	10:02	00:40	02:14	41:43:00
25	W	03:11	05:02	08:09	03:14	04:21	05:34	08:01	01:23	03:05	41:20:00
26	W	04:18	02:00	05:20	04:24	01:43	10:23	08:34	01:02	03:10	40:14:00
27	W	02:02	02:00	03:01	02:10	04:50	04:27	10:23:00	00:17	02:03	30:33:00
28	W	03:12	04:45	05:47	02:31	07:01	03:23	06:20	00:36	01:32	33:47:00
29	M	04:32	01:54	04:21	04:10	02:03	06:41	11:31	01:24	02:43	37:59:00
30	M	02:23	02:00	07:32	05:23	02:32	11:36	08:39	01:21	02:21	42:27:00

Column 1 – Introduction to the lesson shows how much time participating teachers spent on that teaching behavior. Some teachers paid more attention to introducing the lesson well, whereas others just announced the topic of the day and moved quickly to the next task. For some teachers, it seemed important to provide students with all necessary information regarding the day's class. For instance, T3 had a quick discussion with the children, asking them to remind him what they had done during the previous class. Based on that, he explained what would follow during the class and asked the children to get up for warm up.

Wait time in the classes of the participating teachers can be seen in column 4. Wait time is the time spent in non-purposeful and management related activity, which actually pictures time lost in practice (Beaucamp, 1990; Luke, 1989; Metzler, 1989). Some teachers demonstrated high numbers in wait time (e.g. T1, T4, T6, T15, T24), where others, were more efficient on that component (e.g. T7, T8, T9, T11, T13, T22, T26, T27, T30). It is worth noting that teachers 2, 3 and 21 demonstrated no wait time in their classes, due to the way their classes and their activities were organized.

Column 5- kids oganization shows how much time teachers needed to organize their students in their classes. For example, teachers 4 and 6, took around 10 minutes to organize the students in their classes. Considering that 10 minutes is 25% of the available class time, that is a lot of time wasted on organizational behaviors and not on children practicing. If teachers managed to spend less time in the student organization, then, more time could be saved for children's practice. On the contrary, teachers 1, 8, 13, 22 and 27 showed more efficient student organization skills, saving time for student practice.

In column 6 – feedback the data offer a picture of the time spent for feedback from the participating teachers. Some teachers allowed more time for feedback (T1, T15, T30) and some of them allowed less time for that (T3, T6, T10, T12, T13, T21, T22, T23, T24, T27, T28). In addition, there were teachers in this study (T5, T17) that gave no feedback to their students, and they were silently monitoring student practice.

The time teachers needed to organize the equipment to be used during the lesson can be seen in column 7 – equipment organization. Teachers 10 and 28 took more than 9 and 7 minutes respectively to organize the necessary equipment for the class, whereas teachers 1, 14, 16 and 26 took less than 3 minutes of the available class time for the same reason.

Column 8 – Presentation of tasks reveals important information regarding the presentation of tasks time. Looking at teachers 15, 21, 26 and 30 an observer may easily say that these teachers took longer time than other teachers (around 10 minutes) to present tasks to their students. The same time, teachers 1, 4, 6 and 16

took less than 3 minutes of the available class time to present tasks to the students and then have them practice.

The last column shows the total amount of time students had for physical education class. Obviously, there was a variation in the amount of time offered to the students of different teachers and different schools. Some teachers allowed more than the normal school period (40 minutes) for the class (T6, T9, T12, T18, T24 and T30), others allowed around 32 minutes (T7, T8 and T13), where others allowed 30 minutes (T4 and T27).

IV. DISCUSSION

The idea of successful, adequate and appropriate practice time is an issue discussed throughout numerous older (Ashy *et al*., 1988; Graham & Heimerer, 1981; Graham *et al*., 1983; McKenzie *et al*., 1984; Metzler, 1989; Philips & Carlisle, 1983; Placek *et al*., 1982; Rink & Werner, 1987; Silverman, 1988; Silverman *et al*., 1988; Werner & Rink, 1989) and newer (Constantinides, Montalvo & Silverman, 2013; Montalvo & Silverman, 2008) studies concerning teacher effectiveness. Increasing student engaged time is a big step toward improving the opportunity for students to increase their learning (Metzler, 1989) In addition, research has indicated that time has been shown to be the single most valuable component in teaching and learning (Silverman, Tyson, & Morford, 1988).

Experience in teaching physical education helps teachers learn how to break down tasks to promote greater student learning, how to demonstrate and explain the task, how students respond to the presented tasks in class, how to observe students during practice and what to look for, how to provide specific feedback and how to provide developmentally appropriate tasks according to the students' grade level (Rovegno, 1992, 1998). With experience, teachers know the content in more detail, can better link content to broader objectives, and can better sequence content across units (Pissanos & Allison, 1996; Rovegno, 1992, 1993, 1998; Sebran, 1995).

In this study, some teachers demonstrated efficiency in teaching behaviors such as task presentation, some others in teacher-student interaction during practice (e.g., feedback offered, motivation, student encouragement, reward and other) and organizational behaviors (e.g., children organization and equipment organization). In the beginning of the class, students should be given a clear picture of what is going to follow. Some teachers allowed time for that in their classes, believing (as they stated in their non-informal interviews) that it's important for children not only to know the class structure but also to get involved in the teaching and learning process (as T3 did). Student-centered physical education is an approach that allows students to learn about themselves, each other, and how they function in groups during class. It empowers students by giving them choices rather than just telling them what they are supposed to do. That seemed to be a common believe for teachers 3, 4, 18, 22, 26 and 29. All these teachers demonstrated a preference for student-centered physical education, allowing time for their students to get engaged in the teaching-learning process. According to their statements, they wanted to make their students feel important. For example, teacher 4 said: "It's their class, their time…if students feel that what we do here belongs to them, that is for their own benefit, then they will regularly participate in this class."

Presentation of tasks was one of the variables observed in this study. Some teachers took longer than others to present the tasks, whereas others, were more efficient in that. Clear and concise explanations and demonstrations are critical to student understanding and appropriate practice (Rink, 1994). Demonstrations are necessary for physical education so accurate interpretations of what is being taught can occur (Rink, 1996). According to Rink (1994), the use of full demonstrations, cues and student rehearsals is one of the most effective methods used to promote learning. Demonstrations, however, should not take long. In the cases of teahers 15, 21, 26 and 30, a great percentage of the available class time was spent for presentation purposes, eliminating in their classes, the amount of time that could be offered for student practice.

Lack of teacher planning that may occur in elementary school physical education programs can affect lesson presentation and subsequent presentation of tasks. Phillips and Carlisle (1983) reported that teachers were rated to be more effective when they were able to provide students with an accurate picture of learning outcomes. (Rink, 2003) provides physical educators with a model that involves the presentation and practice sequence of the task. Teachers describe the skill in step-by-step progressions. The teacher then provides students with brief explanations and full demonstrations. Students then practice the task. Presenting lessons and tasks in this manner requires proper teacher planning. This will increase the opportunity for student learning.

Kids and equipment organization are among the organizational behaviors teachers usually demonstrate in physical education. Organization of kids and equipment are among the variables that create higher levels of activity for students (Constantinides, Montalvo & Silverman, 2013; Faucette & Patterson, 1990). These behaviors are necessary for the class to flow smoothly, however, teachers are expected to use techniques that will allow them to complete these tasks without spending much of the class time. In this study, some

teachers (e.g., T4 and T6) were not efficient in kids organization and some others were not efficient in equipment organization (e.g. T10, T28). Effective teachers tend to minimize time spent on nonacademic tasks like kids and equipment organization, in order to increase the time available for student practice and learning (Behets, 1997; Harrison, 1987; McKenzie *et al*., 1995). During practice, they emphasize skill acquisition and fitness activities (Faucette *et al*., 1990; Faucette & Patterson, 1989, 1990; Faucette & Hillidge, 1989; Graham, 1991; McKenzie *et al*., 1995; Placek & Randall, 1986), in order to accommodate student learning.

Feedback, one of the necessary tasks of the teacher during student practice, was found to be limited or was not offered at all to students, in this study. Students need to get a picture of how well or not they are doing during practice as far as current knowledge and skill development. If there is no teacher-student interaction for feedback, then a student may assume that the way of practicing is the appropriate one, even if that might not be the case. Although no direct relationship has been found between feedback and learning in real-life physical education settings (Lee *et al*., 1992; Rikard, 1991; Silverman *et al*., 1992), significant relationships with achievement were found when feedback was corrective, positive, descriptive, and prescriptive when the practice was appropriate (Silverman *et al*., 1992).

Wait time is another variable that teachers who are assigned to teach physical education may need to think about. As mentioned earlier, wait time is the time spent in non-purposeful and management related activities, which actually deducts time from practice (Beaucamp *et al*., 1990; Luke, 1989; Metzler, 1989). Effective teachers plan for organizational procedures of time, space, equipment, activities and students (Goc-Karp & Zakrajsek, 1987; Hastie, 1994; Housner & Griffey, 1985). Before entering the gymnasium, they have already thought about the students' future location, position, grouping, or role (Anderson, 1989; Housner & Griffey, 1985), which makes the class flow smoothly, without any wait time.

This study examined teaching efficiency in elementary physical education classes taught by classroom teachers. Data analysis provided valuable information for everyone who's assigned to teach physical education. Although some teachers demonstrated more efficient teaching and organizational behaviors than others, there is room for improvement in almost all participants. Each one might need to focus on a different component of teaching, for better time management and for allowing most of the available class time for student practice. Students improve their skills when they are given ample opportunities to practice for a reasonable amount of time, practicing at their skill level (Constantinides Montalvo & Silverman, 2013; Constantinides & Silverman, 2018). Effective teachers employ a variety of appropriate behaviors, at appropriate times and in appropriate situations (Brophy, 1982; Graham & Heimerer, 1981). Since the World Health Association (2020), the US Department of Health and Human Services (2018) and Shape America (2013) recommend that elementary students get a minimum of sixty minutes of moderate-to-vigorous activity every day, but physical education is offered only twice a week from grades 1-4 and three times a week on grades 5-6 in most elementary schools in Cyprus, then, the occurrence of these behaviors in most, if not all, physical education classes may help increase the time students are involved with physical education in schools and hopefully physical activity involvement in the afternoon.

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