

# The knowledge, continuing education and use of teaching styles in Physical Education teachers

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## ABSTRACT

Different teaching styles are essential when giving physical education classes based on the objective of the exercises. Therefore, the goal of this research was to analyse the knowledge, continuing education and used of physical education teachers about these existing styles with reference to school ownership, working experience and age. The research used a sample of 455 physical education teachers, in primary and secondary school. The most relevant results show significant differences between the knowledge of the teaching styles when the teacher begins his or her professional career with ownership ( $p=.035$ ); regarding teaching experience, it appears relationship between the continuous use of the command style and longer professional experience ( $p=.000$ ); finally, regarding age ( $p=.002$ ), indicating that younger and less experienced teachers are those who use traditional style like command style less often. **Keywords:** Physical education, Teaching styles, Age, Teaching experience, Ownership.

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## INTRODUCTION

The methodology used by teachers in their class is very important for student learning. Thus, teaching styles in Physical Education are essential for carrying out the activities, which aim to achieve teaching goals, and to increase the motivation in the students, trying to get them more interest in the subject.

In this way, teaching styles are variously defined by different authors. On the one hand, Mosston (1978) defines them as what allows showing the interaction between the teacher and the student in the decision-making of the teaching-learning process and permits teacher and student to have their corresponding role within the process. On the other hand, Delgado (1991) defines them as the way in which elements of the teaching and learning process connect and how the teacher presents and teaches the subject.

Firstly, Mosston (1978), during a period of controversy, which covers from 1966 to 1986, proposed a classification of teaching styles based on decisions made by the students, known as the spectrum of teaching styles, the final goal of which is their autonomy. This classification is divided into reproductive teaching styles (teaching based on command, teaching based on the task, reciprocal teaching, establishment of small groups and individual programs) and productive ones (guided discovery, problem solving and creativity).

Mosston and Ashworth (1986) introduce teaching styles depend on the stated objective, with decisions made at different times by the teacher (pre-impact, impact and post-impact). Thus decisions will be referred to different teaching styles depending on the moment at which they are made. In this case, the teaching styles were also divided into reproductive (style A or command style, B or teaching based on the task, C or reciprocal teaching, D or self-check style, and E or inclusion styles) and productive (F or guided discovery style, G or divergent discovery style, H or individual program, I or learner- designed individual program style, J or learner-initiated style, and K or self- teaching) (Mosston and Ashworth, 1986).

Later, Delgado (1991) proposed a teaching reform based on the proposals of Mosston, which were becoming known in Spain. Thus, he proposed a new classification from the existing one and grouped the teaching styles together in six families according to the capacities that they encourage in the students, reformulating some of Mosston's styles and adding some new ones. So, he also differentiates between reproductive teaching styles, which are based on model reproduce, and productive teaching styles based on guided discovery.

Thus, it is important to speak about teaching styles and their effects in the students. He says that productive teaching styles favour self-determination in student, and consequently their motivation and their adhesion to physical activities and sports. Other authors such as Sánchez-Oliva et al. (2010) and Grastén, Jaakkola, Liukkonen, Watt, and Yli-Piipari, (2012) claim that intrinsic motivation is mayor when the strategies methodological focus on assignment and not on individual.

For instance, Morgan, Kingston and Sproule (2005) carried out research which showed that guided discovery and reciprocal teaching are less demanding and more creative provoking increased motivation in the students. In addition, the teaching style, which allows more freedom for students, also it helps to reinforce the relationship among them also increase their motivation, which can create a physical activity adherence (Ednie and Stibor, 2017; Patmanoglou, Mantis, Digelidis, Tsigilis and Papapetrou, 2008). Depend on content teaching and on students, they prefer productive teaching styles which allow them to make decisions, or reproductive teaching styles if they prefer to repeat a model (Sánchez Byra and Wallhead, 2012).

Table 1. Comparison of the proposals of teaching styles by Mosston and Ashworth (1986) and Delgado (1991) (Sicilia, 2001)

Family of teaching styles (Delgado, 1991)	Delgado (1991)	Mosston y Ashworth (1986)
Traditional styles	Command style Modification of command style Task assignment.	Command style (A) Practice (B)
Styles which enable participation	Reciprocal teaching Small groups Microteaching.	Reciprocal teaching (C).
Styles which promote individualization	Individualization by groups Modular teaching Programmed teaching Individualized programs	Inclusion (E) Self-evaluation (D) Individualized program (H) Learner-Initiated (J) Self-teaching (K)
Styles which involved the students cognitively	Guided discovery Problem solving	Guided discovery (F) Problem solving (G). (Divergent discovery)
Styles which favour socialization	Social style	None
Styles which favour creativity	Free exploration	None

### ***International research about teaching styles***

There are a lot of research about teaching styles.

On the one hand, the esteemed research with reference to use of teaching style are of Curtner-Smith et al. (2001) and Jaakkola and Watt (2011), in England and Finland, respectively, show that the teaching style more used was the command style and practice style. Also, Hewitt and Kenneth (2013), who applied teaching style in tennis, claim that the practice style is the most used. In spite of these facts, Cothran et al. observed in their research, which carried out in several countries, that all teachers used several teaching styles in a physical education class.

On the other hand, regarding teaching style more influence in motivation, Morgan et al. (2005), in United Kingdom, carried out a research where it is possible to see that teaching styles that more influence in motivation and class environment are guided discovery and reciprocal teaching. Although, Jaakkola and Watt (2011) said that practice and inclusion styles are the most motivating for students. In the same way, Salvara, Jess, Abbott and Bognár (2007, Greece) said that there is positive motivation through guided discovery, the divergent style, individualised programmes, reciprocal teaching and self-evaluation.

### **OBJECTIVES**

The general aim in this research is analyse the knowledge and use of teaching styles by the physical education teacher, and know if physical education teachers have followed courses on teaching style like continuous education. Thus, regarding different variables, the specific aim is:

- To find out the level of knowledge of the physical education teachers about teaching styles depending on age, experience in the school and ownership.
- To discover if physical education teachers have followed courses on teaching styles in the last year and if there exists a relation with age, experience in the school and ownership.

- To analyse the use of the teaching styles of command, task assignment, reciprocal teaching, guided discovery, problem solving and free exploration, by the physical education teachers depending on age, experience in the school and ownership.

## METHOD

A quantitative, descriptive and non-experimental methodology was used for this research, as it required an objective process through statistical analysis (Anguera, 1992; González Tirados, 2009).

### **Participants**

This research used a sample of 455 teachers (70.8% men and 29.2% women), covering all age ranges, from less than 30 (18.2%), between 31 and 40 (55.4%), 41 and 50 (17.9%) and more than 51 (8.6%) years. Of these, 280 teachers (61.5%) worked in primary and 175 (38.5%) in secondary education, with the following distribution: 51.4% working in state schools, 38.7% in semi-private and 9.9% in private schools. Their teaching experience was also different, including teacher with from 1 to 5 (40%), from 6 to 10 (30.3%), from 11 to 15 (16%), from 16 to 20 (6.8%) and more than 21 (6.8%) years of experience.

To calculate the sample universe, the number of schools in the Region of Madrid (Spain) was determined from the different lists in this region, as it is impossible to know the exact number of teachers who work in these centres. The lists, which have been used, are the lists of primary and secondary schools in the Region detailed in the regional schools' guide (Region of Madrid, 2014) and the list of municipalities and population in the same region for the year 2013 (Institute of statistics from the Region of Madrid, 2013), in total 1659 schools.

The size of the sample was determined through the formula of finite populations (Cea D'Ancona, 2004; Sierra Bravo, 2001), where the worst case is assumed regarding the population variance, with "P" and "Q" being equal, with a value of 50% each. The value of confidence was 95.5% with - 2 sigmas and + 2 sigmas for a normal distribution, and a margin of error of  $\pm 4.75\%$  for the established sample, obtaining a sample of 455 units in the population.

The sampling design was probabilistic, random cluster and stratified to achieve a more objective selection. The stratification consisted, in the first place, in dividing the population into municipalities, in the second place, into schools, randomly selecting the participating schools, and finally, choosing the teachers to be interviewed also randomly (a maximum of two teachers per school). This was done using the table of random numbers, proposed by Rodríguez Osuna (2002).

Thus the collection of data was always proportional in the established criterions, to municipal population size and geographic area, making the distribution according to the defined territorial areas of the total universe, taking into account the inhabitants per municipality, so more surveys were carried out in strata with more inhabitants (Cea D'Ancona, 2001).

### **Measure**

The instrument used is referred to by some authors as a standardised interview using a questionnaire (Heinemann, 2003) or a structured interview (Lussier and Kimball, 2008; Sierra Bravo, 2001). In this case a questionnaire was used which was designed and validated by Guedea (2010) with a Cronbach alpha coefficient = .702.

### **Procedure**

The first phase involved place location and contact with the schools and teachers selected for the study, following the guidelines established in the sampling design, having participated schools and teachers anonymously. Then, the standardized interviews were carried out with the questionnaire and the information obtained was collected and recorded.

It was a cross-sectional study, because it occurred at a particular moment in time (Sierra Bravo, 2001), in this case it took place during the 2014-2015 academic year during school hours, since it was aimed at physical education teachers in formal education.

The interviews were carried out by a single interviewer, obviating the need for a training phase, and making this procedure more effective and more rigorous although it involved more work (Cea D'Ancona, 2001).

### **Statistical Analysis**

The statistical analysis involved an inferential analysis through correlation coefficients. Firstly Levene test, after ANOVA and Welch depending on if it exists significant difference or not, and finally, based on resulting of ANOVA and Welch (whenever it exists significant differences), Tukey's post-hoc test or the Games - Howell post - hoc test. All using the statistical program SPSS®, Version 20.

## **RESULTS**

First, a difference of means ( $M$ )= 8 and a typical deviation ( $DT$ )= 1.649 was observed which corresponded to the item about the knowledge of teaching styles when teachers began their teaching work, revealing the highest average of all the items.

Regarding ownership, the Levene test variable shows significant differences in item 1 about if teachers knew about the different teaching styles when they began their teaching work ( $p = .009$ ), item 2 about if they had had courses on teaching styles in the last year ( $p = .000$ ), item 6 about if they constantly used the guided discovery style ( $p = .035$ ) and item 7 about if they constantly used the problem-solving style ( $p = .000$ ). Thus the Welch test was applied, where there were only significant differences in items 2 and 7 ( $p < .05$ ). The Games-Howell post-hoc test was used to discover where these differences were (Table 2), and they existed in the question about if they had had courses on teaching styles in the last year, with more teachers having attended one from those who work in semi- private ( $p = .001$ ) and private schools ( $p = .002$ ) compared with teachers who work in state schools. In addition, teachers who work in semi- private ( $p = .027$ ) and private schools ( $p = .03$ ) use the problem-solving style more than teachers who work in state schools.

For the rest of the items where significant differences were not found, i.e. the third, fourth, fifth, sixth and eighth items (constant use of the command style, reciprocal teaching, task assignment, guided discovery and free exploration) the coefficient of correlation was calculated with an ANOVA, only observing a significant difference in the item about the constant use of the command style (item 3). So Tukey's post hoc test was used showing differences between semi-private and state schools (Table 3), with the teachers who work in semi-private schools constantly using the command style compared with teachers who work in state schools ( $p = .02$ ).

Table 2. The Games - Howell post - hoc test regarding ownership

Items	(I) Ownership	(J) Ownership	Mean difference (I-J)	Typical error	Sig.
2. Did you have courses last year?	State	Semi-private	-1.011*	0.278	0.001
		Private	-1.826*	0.507	0.002
	Semi-private	State	1.011*	0.278	0.001
		Private	-0.815	0.535	0.287
	Private	State	1.826*	0.507	0.002
		Semi-private	0.815	0.535	0.287
7. Do you constantly use the problem solving style?	State	Semi-private	-.467*	0.18	0.027
		Private	-.619*	0.24	0.03
	Semi-private	State	.467*	0.18	0.027
		Private	-0.152	0.231	0.789
	Private	State	.619*	0.24	0.03
		Semi-private	0.152	0.231	0.789

\* The difference of means is significant at .05.

Table 3. Tukey's post - hoc test in relation to ownership

Item	(I) Ownership	(J) Ownership	Difference of means (I-J)	Typical error	Sig.
3. Do you constantly use the command style?	State	Semi-private	-.572*	0.212	0.02
		Private	-0.411	0.346	0.462
	Semi-private	State	.572*	0.212	0.02
		Private	0.161	0.356	0.893
	Private	State	0.411	0.346	0.462
		Semi-private	-0.161	0.356	0.893

\* The difference of means is significant at .05.

The same process of analysis was carried out regarding the variable teaching experience at the school. In the first place, the Levene test showed significant differences in item 1 about the knowledge of the teaching styles when beginning teaching work ( $p = .000$ ), item 2 about if teachers had followed courses on these styles during the last year ( $p = .000$ ), item 6 about if teachers constantly used the guided discovery style ( $p = .000$ ) and item 8 about if teachers constantly used the free exploration style ( $p = .047$ ). In these cases, the Welch coefficient was analysed showing significant differences in item 8 about the constantly use of the free exploration ( $p = .037$ ).

So, the Games-Howell post-hoc test was used where significant differences were not shown between different groups regarding teachers' experience in school.

Table 4. Tukey's post-hoc test in relation to length of experience teaching

	(I) Experience teacher	(J) Experience teacher	Mean difference (I-J)	Typical error	Sig.
3. Do you constantly use the command style?	1 to 5	6 to 10	-.706*	0.235	0.024
		11 to 15	-1.009*	0.289	0.005
		16 to 20	-0.491	0.405	0.744
		More than 21	-1.814*	0.405	0
	6 to 10	1 to 5	.706*	0.235	0.024
		11 to 15	-0.303	0.302	0.854
		16 to 20	0.214	0.415	0.986
		More than 21	-1.108	0.415	0.06
	11 to 15	1 to 5	1.009*	0.289	0.005
		6 to 10	0.303	0.302	0.854
		16 to 20	0.517	0.447	0.776
		More than 21	-0.806	0.447	0.374
	16 to 20	1 to 5	0.491	0.405	0.744
		6 to 10	-0.214	0.415	0.986
		11 to 15	-0.517	0.447	0.776
		More than 21	-1.323	0.53	0.093
More than 21	1 to 5	1.814*	0.405	0	
	6 to 10	1.108	0.415	0.06	
	11 to 15	0.806	0.447	0.374	
	16 to 20	1.323	0.53	0.093	
7. Do you constantly use the problem solving style?	1 to 5	6 to 10	-0.015	0.205	1
		11 to 15	-0.444	0.252	0.396
		16 to 20	-0.249	0.353	0.955
		More than 21	1.041*	0.353	0.028
	6 to 10	1 to 5	0.015	0.205	1
		11 to 15	-0.429	0.263	0.479
		16 to 20	-0.234	0.361	0.967
		More than 21	1.057*	0.361	0.03
	11 to 15	1 to 5	0.444	0.252	0.396
		6 to 10	0.429	0.263	0.479
		16 to 20	0.195	0.39	0.987
		More than 21	1.485*	0.39	0.001
	16 to 20	1 to 5	0.249	0.353	0.955
		6 to 10	0.234	0.361	0.967
		11 to 15	-0.195	0.39	0.987
		More than 21	1.290*	0.462	0.043
More than 21	1 to 5	-1.041*	0.353	0.028	
	6 to 10	-1.057*	0.361	0.03	
	11 to 15	-1.485*	0.39	0.001	
	16 to 20	-1.290*	0.462	0.043	

\* The difference of means is significant at .05.

In the items where significant differences were not observed in the Levene test, the ANOVA coefficient of correlation was calculated, which showed significant differences in the item on the consistent use of the command style (item 3,  $p = .000$ ) and the problem-solving style (item 7,  $p = .005$ ). For this reason and to know more precisely where these differences were, the Tukey post-hoc test was applied showing differences in item 3 (Table 4). It appears that teachers who had been working between 6 and 10, 11 and 15 and more than 21 years use the command style more than teachers who had been working less years, in particular teachers who had been working between 1 and 5 years. In addition, the test shows significant differences in item 7, with teachers who had been working between 1 and 20 years (1-5 years,  $p = .028$ ; 6-10 years,  $p = .03$ ; 11-15 years,  $p = .001$ ; 16-20 years,  $p = .043$ ) using problem solving more than teachers with more than 21 years of experience in school.

Finally, the data were analysed in relation to the age of the teachers, and the Levene test showed that there were significant differences between this variable and the item about the knowledge of the teaching styles at the time teachers began their teaching work ( $p = .001$ ). The Welch coefficient was calculated but did not show a relationship between the variables (Table 5).

Table 5. The Welch score regarding the age of teachers

Items	Statistic	gl1	gl2	Sig.
Did you know about the teaching styles when you started giving lessons?	2.677	3	72.483	0.053

The coefficient of correlation was calculated (ANOVA) for the items where no significant difference ( $p > .05$ ) was observed, from two to eight, and a relationship was revealed between age and consistent use of the command style (item 3,  $p = .002$ ) and problem solving (item 7,  $p = .011$ ). Thus, Tukey's post-hoc test was applied to see if there were significant differences between the categories (Table 6), showing differences between teachers aged 30 years or less and teachers of 31 years or older (31-40,  $p = .013$ ; 41-50,  $p = .007$ ; >51,  $p = .014$ ), with the former claiming that teachers aged 30 years or less used the command style more than teachers who were more than 30. In addition, the test showed that the teachers aged under 30 years use the problem-solving style more than teachers who were more than 51 years ( $p = .01$ ).

## DISCUSSION

On the one hand, regarding the ownership variable, physical education teachers in private and semi-private schools had attended courses about teaching style the previous year compared with teachers in state schools. In addition, teachers in private and semi-private schools use problem solving more than teachers in state schools. Teachers who work in semi-private schools use more often teaching styles such as command style than teachers who work in state schools. So, Gonzalez-Peitado and Pino-Juste (2016) speak about the importance of initial education which favour active teaching style where students can take a decision.

Research shows that teachers have knowledge about the different styles of teaching but have preferences for some of them. For example, the investigations of Delgado (1998) and Delgado, Medina and Viciano (1996) show that among all the teaching styles proposed by Delgado (1991), the most accepted styles are the ones which favour the relationship among students, the more creative ones and those that allow the students to make decisions (participation, socialization, individual, creative and cognitive), with the traditional styles being the least accepted.



Table 6. Tukey's post - hoc test in relation to teachers' ages.

	(I) Teaching experience	(J) Teaching experience	Mean difference (I-J)	Typical error	Sig.
3. Do you constantly use the command style?	30 or less	31-40	-1.081*	0.352	0.013
		41-50	-1.405*	0.434	0.007
		51 or more	-1.640*	0.54	0.014
	31-40	30 or less	1.081*	0.352	0.013
		41-50	-0.324	0.355	0.798
		51 or more	-0.559	0.478	0.647
	41-50	30 or less	1.405*	0.434	0.007
		31-40	0.324	0.355	0.798
		51 or more	-0.235	0.542	0.973
	51 or more	30 or less	1.640*	0.54	0.014
		31-40	0.559	0.478	0.647
		41-50	0.235	0.542	0.973
7. Do you constantly use the problem solving style?	30 or less	31-40	0.431	0.237	0.267
		41-50	0.672	0.281	0.08
		51 or more	1.020*	0.326	0.01
	31-40	30 or less	-0.431	0.237	0.267
		41-50	0.241	0.226	0.71
		51 or more	0.59	0.279	0.151
	41-50	30 or less	-0.672	0.281	0.08
		31-40	-0.241	0.226	0.71
		51 or more	0.349	0.318	0.691
	51 or more	30 or less	-1.020*	0.326	0.01
		31-40	-0.59	0.279	0.151
		41-50	-0.349	0.318	0.691

\* The difference of means is significant at .05.

Despite this, the research by Cothran et al. (2005) claims that when tasks have to be carried out several teaching styles are used because it is more effective for learning, depending on the moment students could need a creative teaching style and another time a reproductive teaching style. The same way, Amado, Sanchez-Miguel, Gonzalez-Ponce, Pulido-Gonzalez and del Villar (2016) said that different learning techniques should be used, such as direct instruction (reproductive styles) and creative inquiry techniques (productive styles).

On the other hand, regarding the teaching experience of physical education teachers, there are differences when using the traditional styles such as the command style, as it is less used by teachers with less experience (from 1 to 5 years of experience) than by teachers who have been working between 6 and 15 years and more than 21 years. The problem-solving style is used by younger teachers who have been working between 1 and 20 years in comparison with teachers who have been working more than 21 years.

This is also evident with respect to age, because older teachers (over 31 years) use the command style more in comparison with younger teachers (less than 30 years). Problem solving is used by younger teachers (less than 30 years) more than by older teachers (over 51 years). These results go against Gonzalez-Peitado and Pino-Juste (2016) claim, now that they said that teachers older use more active teaching styles, that is, teaching style get involve to students in learning.

However, these results coincide with various studies which say that the traditional styles, such as the command style, are the most used (Delgado, 1998; Delgado et al., 1996; Jaakkola and Watt, 2011) but in this study they were less so by younger teachers with not as much experience. Also, other research claims that the style of practice or task assignment are the most commonly used styles (Curtner - Smith et al., 2001; Jaakkola and Watt, 2011), although in some cases the command style is also one of the most used (Cothran et al., 2005; Curtner - Smith et al., 2001; Hewitt and Kenneth, 2013; Jaakkola and Watt, 2011), both of them are less motivational teaching styles than others; which is what was revealed in this study with teachers who had more experience and were older, because this style allows better learning, although that does not mean better retention of learning (Boyce, 1992; Derri and Pacht, 2007) nor a better attitude towards the activity (Isaza and Henao, 2012; Curtner - Smith et al., 2001; Jaakkola and Watt, 2011; Sanchez et al., 2012; Zeng, Leung, Liu and Bian, 2009). Motivation is important in physical education due to the fact that if student increase the motivation in physical education class they want to make a physical activity in their leisure-time (Wallhead, Garn and Vidoni, 2014). In this way, the traditional styles are less motivating than the creative or productive styles, which is one of the reasons why the command style is one of the least used by younger teachers with less experience (Morgan et al., 2005; Salvara et al., 2006).

Therefore, it is important to know what teaching style is the best to use, it tries mostly to pay attention to individual differences and to look for an active methodology which gets involved students in their own leaning (Martínez, 2008).

## CONCLUSIONS

Thus, firstly, this research show that more teachers who work in private and semi-private schools had attended courses on teaching styles in the previous year in comparison with teachers who work in state schools. In addition, the more traditional style, like the command style, are used by teachers in semi-private and private schools more than teachers who work in state schools. However, teachers who work in semi-private schools are who use more often the problem-solving style than teachers who work in state schools.

Secondly, the use of the teaching styles is different according to teaching experience; so teachers with more experience (more than 6 years) use more traditional styles, such as the command style, than teachers with less experience (from 1 to 5 years). On the contrary, teachers who have between 1 and 5 years of teaching experience, use more often cognitive style like problem solving than teacher who have more than 21 years. Finally, the use of teaching styles varies depending on the age range, because older teachers (more than 31) also use more traditional teaching styles, like command styles, more than younger teachers (less than 30). And cognitive teaching styles, like solving problem, are used by teachers who were less than 30 years compared with teachers who were over 51 years old.

Regarding the level of knowledge of the physical education teachers about teaching styles it has not observed significant differences depending on age, experience in the school and ownership.

In summary, this research shows the preferences for differences teaching styles as well as the knowledge and continuous education about them according to ownership, teaching experience and age. It is important because teaching styles influence in students in a different way, favouring the channel development (social, cognitive, physical and affective).

## LIMITS OF THE RESEARCH

A limit of this research is that some addresses and telephones of schools, which appeared in lists of primary and secondary schools in the Region detailed in the regional schools' guide (Region of Madrid, 2014) were wrong or had changed. Another limitation was that some teachers, with who set an appointment, were too much busy or were not in the schools because they were time of sick, and it had to look for another teacher for the interview.

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