

Importance of teaching styles in physical education classes: perceptions according to age, teachers' degree and school ownership

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Abstract:

Active methodologies are fundamental in physical education classes to achieve the objectives set; however, it is necessary to know if for teachers it is an important factor. For that, the objective of this research was to ascertain the importance of teaching styles for physical education teachers according to age, degree and ownership of the school. A survey was conducted with 455 teachers with a different age range, who belong to the primary and secondary stages in the Autonomous Region of Madrid (Spain). The size of the sample was determined using the formula for finite populations, 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 95.50% with - 2 sigmas and + 2 sigmas for a normal distribution, and a margin of error of $\pm 4.75\%$ for the established sample. Data were analyzed using a quantitative and descriptive methodology. Some results show statistically significant evidence, regarding age, with teachers of under 40 considering teaching styles necessary in physical education ($p=.02$; $p=.006$) while teachers of over 51 and older did not consider them as necessary. Regarding ownership, teachers who teach in private schools consider it adequate to use two or more teaching styles in contrast teacher who teach in state schools ($p=.034$). In conclusion, teaching styles are important in physical education classes to achieve objectives, although this depends on different factors. In this way, teaching styles should be used in physical education classes to improve the academic performance and motivation in students.

Key Words: methodology, teaching-learning process, motivation, physical activity.

Introduction

Physical activity and sport are important tools for students' comprehensive development because they foment the improvement of capabilities such as self-esteem, personal autonomy and social relations (Arraez, 2002). Teachers have to teach students to be reflexive and students should be able to make a decision at any moment, because that will make students be considered as professionals in education (Domingo-Roget, 2009).

In addition, multiculturalism is increasingly present in all fields of society, so it is important to implement forms of work that will allow integration. Despite this, the education and preparation of the professionals in education and sport is not following this line of reasoning (Arraez, 2002).

It is therefore important to know the different teaching styles and how they are used, considering that these influence social, physical, cognitive and emotional development channels. It should also be kept in mind that there is not a single most favorable teaching style but that it is necessary to implement them and value their validity according to the students' characteristics and the objectives set, modifying them as necessary (Hervás-Aviles, 2005). The first teaching styles model appeared because it was necessary to identify teacher behavior. In addition, this model allowed teaching progress, improving the individual teaching and cognitive process (Mosston, 1982). Thus, there are two periods in the work of this author. The first period is called the controversial period (1966-1986), which intended to establish what the teacher-student relationship should be like based on their decision making. According to these decisions, the students' physical, cognitive, social or emotional channels would be developed. Teaching styles which favor student autonomy are well-known as higher quality teaching styles. In addition, an increase in autonomy involves an increase in intrinsic motivation (Mosston, 1982; Ntoumanis and Standage, 2009).

The second teaching styles model was created by Mosston and Ashworth (1993). They presented a classification including the command style, practice style, reciprocal teaching style, self-evaluation style, inclusion style, guided discovery, divergent style, individualized program style, learner-initiated style and self-teaching style. This proposal of teaching styles is based on teachers and students' decision making, looking for different objectives, or the above-mentioned development channels (physical, cognitive, social and emotional).

Lastly, Delgado (1991) proposed another classification of teaching styles based on Mosston's model (1982), which modified some of them and grouped them by families depending on the objective to be reached:

the command style, modification of the command style, task assignment (family of traditional styles); reciprocal teaching, microteaching and small groups (family of styles which enable participation); individualization by groups, modular teaching, individual programs and program teaching (family of styles that promote individualization); guided discovery and problem solving (family of styles that involve the students cognitively); social style (family of styles that favor socialization); and free exploration style (family of styles that favor creativity). Delgado (1994) presents a description of the most important aspects to develop according to the teaching style used:

- Traditional teaching styles are based on model reproduction. This style is expected to get the best performance.
- Individualizing teaching styles are based on the individual development of abilities in each student.
- Participative teaching styles enhance participation by students. They see the teacher as a mediator of learning.
- Cognitive teaching styles allow development of critical thinking and lead to learning that is more significant because the students participate more in their learning.
- Creative teaching styles allow development of creative thinking on the part of the students.
- Social teaching styles result in a shared, socialized learning among peers.

The use of teaching styles has numerous advantages when it is carried out in the class. Cuellar (2006, pp. 120), presented a table summarizing the advantages of the teaching styles suggested by different authors (Boyce, 1992; Franks, 1992; Goldberger and Howarth, 1993; Pankratius, 1997; Pieron, 1996; Silverman, 1991; Slim, 1996; Viciania and Delgado, 1999):

- To determine the learning outcomes and the teaching.
- To offer possibilities of adaptation and combination depending on objectives, characteristics and needs of the factors affecting the teaching.
- To allow improving a greater variety of motor and other skills.
- To teach how to work on individual differences.
- To favor the effective teaching of different subjects.
- To provide structures to create sessions, facilitating better planning, technical learning and knowledge skills.
- To allow coordinating experiences for future teachers.
- To serve as updating, providing feedback to teachers.
- To make it possible to move from theory to practice, providing a theoretical basis for future research.
- To allow discovery of new areas of research.

Finally, it should be pointed out that some research shows the use of different teaching style according to the objective pursued. So, Morgan et al. (2005) carried out research to show the influence of teaching styles in the class environment and students' motivation. They claim that teaching styles like guided discovery and reciprocal teaching provoke more cognitive and creative answers than traditional styles.

Similarly, Salvara, Jess, Abbott, and Bognár (2006) researched the influence of teaching styles in students, observing that productive teaching styles, like cognitive, creative and social teaching, favor students' motivation. In addition, this motivation should encourage students to do physical activity in their leisure-time (Wallhead, Garn and Vidoni, 2014).

Jaakkola and Watt (2011) and Syrmpas et al. (2017), aimed to ascertain the use of teaching styles and their benefits to students. These authors show that the command style and task assignment are two of the most used teaching styles, while guided discovery is one of the least used. With reference to age, Gonzalez-Peitado and Pino-Juste (2016) claim that older teachers use more productive teaching styles i.e., styles which involve the students in their learning. Lastly, Amado, Sanchez-Miguel, Gonzalez-Ponce, Pulido-Gonzalez and del Villar (2016) speak about the importance of using reproductive and productive styles for a comprehensive education.

The goal of this research was to analyze the need for application of teaching styles for physical education. Thus, the specific goals were: (1) to discover if teaching styles are necessary in physical education and to know if there are differences depending on age, the ownership of the school and teachers' degree; (2) to analyze if physical education teachers think that teaching styles influence their classes according to age, the ownership of the school and teachers' degree; (3) to know how physical education teachers relate their classes and teaching styles depending on age, the ownership of the school and teachers' degree; (4) to find out if physical education teachers consider it appropriate to use two or more teaching styles according to age, the ownership of the school and teachers' degree.

Material & methods

This research is quantitative, because it aimed to discover the relationship between two or more variables (Stockemer, 2019; Swart, Kramer, Ratele and Seedat, 2019). In addition, it is non-experimental and descriptive, because it obtained data through a survey to ascertain the behavior and organization of a group or phenomenon, with a transversal design, because data were collected at only one point in time (Anguera, 1992; Chávez, 2010; González Tirados, 2009; Cockcroft, Goldschagg and Seabi, 2019). Thus, it is intended to describe

the importance of the teaching styles used by physical education teachers of state, concerted and private schools, in the stages of both primary and secondary education in the Autonomous Region of Madrid.

Participants

The universe of the sample was determined using different lists from the Autonomous Region of Madrid, without it being possible to know the exact calculation of teachers working in these centers.

The universe of the sample was 1,659 schools. The size of the sample was determined using the formula for finite populations (Cea D'Ancona, 2004; Bravo Sierra, 2001), taking into account that the population variance of "P" and "Q" are equal (50%), the value of confidence is between -2 sigmas and $+2$ sigmas, the probability set at 95.5% and the margin of error $+ 4.75\%$. Thus, the size of the sample was of 455 units of the population (70.8% of the sample were men and 29.2% were women). The age range of the teachers was from less than 30 to more than 51 years (from less than 30, 18.20%; between 31 and 40, 55.40%; 41 and 50, 17.90%; and more than 51 years, 8.60%). The sampling design was randomized by clusters and analyzed through probabilistic stratified sampling in three phases (Scheaffer and Mendenhall, 2007).

In the first phase, this stratification was carried out by municipalities. In the second, the schools were selected. And finally, the teachers were chosen to be interviewed using the questionnaire for data collection, with a maximum of 2 teachers from each school

Measure

A questionnaire on teaching styles called the Questionnaire for the analysis of teaching styles used in physical education that was prepared and validated by Guedea (2010) was chosen for this study. To ensure the reliability of this questionnaire, it was validated and reviewed by different PhDs from Spanish universities specialized in teaching styles, attaining a Cronbach alpha coefficient $=.702$.

This questionnaire consists of several parts with different dimensions. For this study we used the first part which provides sociodemographic data on the interviewees, containing information about age, sex, degrees and ownership of the schools; and the second part that encompasses the questions that have been used for this research about the importance of teaching styles in physical education classes. This dimension consists of four closed items, in the form of a scale from 1 to 5.

The items used for this research were: (1) Are teaching styles necessary in physical education? (2) How do you think that the teaching styles influence your classes? (3) How do you relate physical education classes and teaching styles? (4) Does it seem appropriate to use two or more teaching styles?

Procedure

In this study, data collection took place during the 2014-2015 academic year. The collection of information was through anonymous interviews with the standardized questionnaire. This was done individually, as two or more interviews could not be administered at the same time. All of these were carried out by the same person who clarified any doubts to the interviewees, trying to motivate them to answer all the questions.

Data analysis

The statistical analysis was performed with the software program SPSS v.20.0 (SPSS Inc., U.S.A.). Descriptive and inferential statistical tests were used. The descriptive statistics were produced with a bivariable analysis using frequency tables, providing data like the mean and standard deviation. Student's t-test, ANOVA and Welch's t test were used on the inferential analysis through correlation coefficients using the criterion for significance of $p < .05$.

Results

Four items were analyzed: if teachers believed that teaching styles are needed to carry out physical education classes (item 1); how teachers believed that teaching styles influenced the development of physical education classes (item 2), how teachers related physical education classes and teaching styles (item 3) and if it seemed appropriate to use two or more teaching styles in a physical education class (item 4).

Firstly, regarding mean difference, the highest one was found in the first item about whether teaching styles were necessary to carry out a physical education class, with a mean difference of $DM= 8.02$ and standard deviation $SD= 1.25$.

Secondly, the inferential analysis was conducted through the different tests depending on age, degrees and ownership of the school. For the analysis of data according to age, the Levene test (Table 1) showed that there were only differences in variance in item 1 about whether teaching styles were necessary in physical education ($p= .006$).

Table 1. The Levene test based on age.

	Levene	gl1	gl2	Sig.
1. Are teaching styles necessary in physical education?	4.16	3	451	.006
2. How do you think that the teaching styles influence your classes?	0.24	3	451	.868
3. How do you relate physical education classes and teaching styles?	1.328	3	451	.265
4. Does it seem appropriate to use two or more teaching styles?	0.961	3	451	.411

In this item, where significant differences were observed, the Welch test was performed showing where there were significant differences between variables ($p = .003$). The Games-Howell post-hoc test was then used to discover among which groups there were these significant differences (Table 2).

Thanks to this test, it was observed that young teachers, under age 40, considered that teaching styles were needed for the teaching of physical education (< 30 years, $p = .02$; 31-40 years, $p = .006$), while teachers of over 51 and older did not consider them as necessary.

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

1. Are teaching styles necessary in physical education?				
(I) age	(J) age	Mean difference (I-J)	Typical error	Sig.
30 or less	31-40	-0.05	0.14	.985
	41-50	0.30	0.19	.413
	51 or more	.735 *	0.25	.02
31-40	30 or less	0.05	0.14	.985
	41-50	0.34	0.17	.167
	51 or more	.784 *	0.23	.006
41-50	30 or less	-0.30	0.20	.413
	31-40	-0.34	0.15	.167
	51 or more	0.44	0.26	.342
51 or more	30 or less	-.735 *	0.25	.02
	31-40	-.784 *	0.23	.006
	41-50	-0.44	0.26	.342

Note. The difference of means is significant at .05.

By contrast, for items in which there were no observable differences in variance (item 2) the ANOVA test was used, which showed significant differences among the variables ($p = .023$). However, Tukey's post-hoc test (Table 3) was performed to discover if there were some differences among the different groups, and none were found ($p > .05$).

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

2. How do you think that the teaching styles influence your classes?				
(I) age	(J) age	Mean difference (I-J)	Typical error	Sig.
30 or less	31-40	-0.22	0.18	.634
	41-50	0.19	0.22	.807
	51 or more	0.31	0.25	.597
31-40	30 or less	0.22	0.18	.634
	41-50	0.41	0.17	.086
	51 or more	0.53	0.21	.067
41-50	30 or less	-0.20	0.22	.807
	31-40	-0.41	0.17	.086
	51 or more	0.12	0.24	.962
51 or more	30 or less	-0.31	0.25	.597
	31-40	-0.53	0.21	.067
	41-50	-0.12	0.24	.962

Note. The difference of means is significant at .05.

Regarding degree, the Levene test was performed (Table 4), which showed that there were only differences of variance in item 4, about whether it is suitable to use two or more styles of teaching in physical education class ($p = .029$).

Table 4. Levene test regarding degree.

	Levene	gl1	gl2	Sig.
1. Are teaching styles necessary in physical education?	0.41	2	452	.664
2. How do you think that the teaching styles influence your classes?	2.519	2	452	.082
3. How do you relate physical education classes and teaching styles?	2.122	2	452	.121
4. Does it seem appropriate to use two or more teaching styles?	3.578	2	452	.029

Note. The difference of means is significant at .05.

In this case, the Welch test was used (Table 5), which showed there were not significant differences between variables ($p = .252$).

Table 5. Welch test regarding degree.

Items	Statistic	df1	df2	Sig.
4. Does it seem appropriate to use two or more teaching styles?	1.39	2	245.16	.252

Note. The difference of means is significant at .05.

In cases in which there were not significant differences in the Levene test (items 1, 2 and 3), an ANOVA was performed, and showed no significant differences (item 1, $p = .95$; item 2, $p = .873$; item 3, $p = .59$) (Table 6).

Table 6. ANOVA for independent factors regarding degree.

		Sum of squares	df	Root mean square	F	Sig.
	Inter-groups	0.16	2	0.08	0.05	.95
	Intra-groups	707.62	452	1.57		
1. Are teaching styles necessary in physical education?	Total	707.8	454			
	Inter-groups	0.54	2	0.27	0.14	.873
	Intra-groups	899.39	452	1.99		
2. How do you think that the teaching styles influence your classes?	Total	899.93	454			
	Inter-groups	2.53	2	1.26	0.53	.59
	Intra-groups	1079.96	452	2.39		
3. How do you relate physical education classes and teaching styles?	Total	1082.48	454			

Note. The difference of means is significant at .05.

Finally, regarding ownership of the school, the Levene test was used to show differences of variance in item 4 about if the teachers considered it necessary to use two or more styles of teaching ($p = .000$). In the rest of the items significant differences were not evident ($p > .05$) (Table 7).

Table 7. Levene test regarding ownership.

Items	Levene	gl1	gl2	Sig.
1. Are teaching styles necessary in physical education?	0.117	2	452	.89
2. How do you think that the teaching styles influence your classes?	0.771	2	452	.463
3. How do you relate physical education classes and teaching styles?	0.079	2	452	.925
4. Does it seem appropriate to use two or more teaching styles?	12.416	2	452	.000

Note. The difference of means is significant at .05.

In item 4, where there are differences of variance, the Welch test was carried out, which showed significant differences between variables ($p = .039$). For this reason, the Games-Howell post-hoc test was performed (Table 8), where it can be seen that these differences are observed between the teachers who work in private and state schools, with teachers who work in private schools considering that it is appropriate to use two or more teaching style compared with teachers who work in state schools ($p = .034$) (Table 8).

Table 8. The Games-Howell post-hoc test in relation to ownership.

4. Does it seem appropriate to use two or more teaching styles?		Mean difference (I-J)	Typical error	Sig.
(I) ownership	(J) ownership			
State	Semi-private	-0.24	0.15	.244

	Private	-0.50 *	0.20	.034
Semi-private	State	0.24	0.15	.244
	Private	-0.26	0.18	.336
Private	State	495 *	0.20	.034
	Semi-private	0.26	0.18	.336

Note. The difference of means is significant at .05.

In cases in which the Levene test showed no differences of variance (items 1, 2 and 3), an ANOVA test was performed, only showing significant differences in item 3 about how the teaching styles relate to physical education ($p = .01$).

Tukey's post-hoc test (Table 9) showed that these significant differences were between teachers who work in semi-private schools ($p = .023$) and teachers who work in private and state schools ($p = .048$), with the teachers who work in state and private schools supporting the claim that there is a relationship between the teaching styles and physical education compared with teachers who work in semi-private schools.

Table 9. Tukey's post-hoc test with respect to the ownership of the school variable.

3. How do you how relate physical education classes and teaching styles?				
(I) ownership	(J) ownership	Mean difference (I-J)	Typical error	Sig.
State	Semi-private	361 *	0.15	0.048
	Private	-0.32	0.25	0.418
Semi-private	State	-361. *	0.15	0.048
	Private	-676. *	0.26	0.023
Private	State	0.32	0.25	0.418
	Semi-private	676 *	0.26	0.023

Note. The difference of means is significant at .05.

Discussion

The importance of teaching styles in physical education is different for each one of the teachers and depends on their age and ownership of the school where they work.

The perceived need of teaching styles in physical education classes is related to age, since it is the younger teachers (aged under 40) who consider that they are required compared with teachers aged over 51. Some authors identify the type of methodology that teachers use according to their age, although there is not enough research on them. Thus, Gonzalez-Peitado and Pino-Juste (2016) claim that older teachers use more productive teaching styles, because they involve the students in learning, compared to younger teachers. In addition, Fernández and Espada (2017) carried out research which shows that younger teachers perceive that they have performed better in applying teaching styles compared to older teachers. Other research shows the benefits of using teaching styles in their physical education classes, such as Bautista and Cipagauta (2019), who said that if students are protagonists in their learning, teachers assign them roles to encourage active learning methodologies. In general, Rosenfeld and Rosenfeld (2008) observed in their research that teachers "teach the way they prefer to learn", although after the research, they changed their beliefs and practice and they got to teach in the more effective way.

Morgan, et al. (2005), in their research, claim that teaching styles are important when it comes to getting answers that involve the students cognitively and affectively, to increase their creativity. Also, Hortigüela-Alcalá, Pérez-Pueyo and Moncada-Jiménez (2015), show in their research that methodology influences the perception and responsibility of students. In addition, a lot of research considered that teaching styles are necessary in physical education, and therefore they are linked to physical education classes, because they enhance the class environment and increase students' motivation.

They provoke a positive attitude on the part of the students towards the tasks proposed, reaching targets and improving at the same time academic performance and autonomy (Fin et al., 2019; Isaza and Henao 2012; Kolovelonis et al., 2011; Salvara et al., 2006). For that, it is necessary that physical education teachers organize the classes (Milenković and Stanojević, 2014).

With respect to ownership of the school, teachers who work in state and private schools consider that teaching styles and physical education are related in contrast to teachers who work in semi-private schools. In addition, physical education teachers in private schools consider it necessary to use two or more styles of teaching in physical education classes in contrast to teachers who work in state schools, coinciding with research conducted by Cothran et al. (2005). They say that although there are differences in the use of the teaching styles

among different countries, all agree on the importance of using several of them, since each family of styles brings different benefits to the student such as improvement of cognitive, social and creative skills, student participation in the tasks, etc. (Delgado, 1991; Mosston, 1982; Mosston and Ashworth, 1993).

Regarding the physical education teachers' degree, the result showed no relations with any of the items. This is due to the importance given to the teaching styles by teachers regardless of their qualifications, since teaching styles if used correctly will enable students to acquire useful knowledge for their future (Escudero, 2005; Klinsberg, 2002; Ntoumanis et al., 2018). Thus, Hervás-Aviles (2005) and Muros et al. (2010) state that there is not a unique style, but teachers should experiment with different teaching styles, and can combine, modify and adapt them to the needs of the students and the particular situation, as it is suitable to use more than one teaching style in physical education classes. For this reason, the relationship between physical education and teaching styles is clear since they improve the teaching-learning process, allow clarification on the way in which the teacher interacts with students, improve the class environment and enhance educational experiences (Mosston and Ashworth, 1993). In the study carried out by Fernández and Espada (2020), it is observed that physical education teachers have preferences for one style or another according to the degree. Finally, the influence of teaching styles in physical education classes for the improvement of learning is highlighted, because the achievement of objectives depends on the teaching style used (Sparks et al., 2015). For the physical development of the student, the most commonly used styles are task assignment and the command style (Cothran et al., 2005; Hewitt and Kenneth, 2013; Jaakkola and Watt, 2011; Zapatero, 2017). However, other research claims that in teaching the most used are the styles that promote creativity and motivation, because students reject the traditional styles (Delgado, Medina, and Vicianá, 1996; Isaza y Henao, 2012). Despite this rejection, they are occasionally implemented because of the convenience for the students of reproducing a model or because motor practice is increased using these styles (Sánchez et al., 2012). Isaza and Henao (2012) mention the use of social styles, since they improve academic achievement and encourage positive attitudes toward the subject of physical education.

Conclusions

It should be pointed out that teaching styles are important, and therefore necessary in physical education classes, with mainly teachers of less than 40 years old supporting this assertion in contrast to teachers of more than 51 years of age. In addition, for teachers who work in both state and private schools, teaching styles are closely related with physical education and they have great importance in the classes, in comparison with what teachers who work in semi-private schools affirm.

Teachers, who work in private schools, consider that it is appropriate and important to use various teaching styles in their physical education classes in comparison with the teachers who work in state schools. No significant relations were found among any of the items with respect to the teacher's degree.

In this way, it is considered completely necessary to do research on teaching styles and their importance in physical education classes. This study has some limitations, since research should be implemented in the physical education classes in order to know how physical education teachers use teaching styles and to analyse how those affect the teaching-learning process.

Conflicts of interest

The authors declare that they have no competing interests.

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