

Original Article

Effects of the command and mixed styles on student learning in primary education

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Abstract:

Problem Statement: Since Dr. Muska Mosston published the book *Teaching Physical Education* in 1966, Teaching Style principles have been applied to all disciplines. The fifth edition demonstrated that the effective teacher must master different Teaching Styles and know how to apply them after establishing a prior analysis of the situation, because this conditions the relationship between pedagogical elements. However, in Physical Education, Teaching Styles tend to focus to a greater extent on the faculty and they do not respond to the requirements of Physical Education programs, with direct instruction as the model, which is mainly associated with the conductive theory of learning and which is the most commonly used model in teaching techniques and motor skills. **Aims and methods:** This article investigates the influence of Teaching Styles on Physical Education, specifically on 12 sessions of dance lessons. The sample consists of 159 students with a control group (n=80, Command) and an experimental group (n=79, mixed Reciprocal and Guided Discovery Teaching Styles). Learning rate, technique, cognitive skills, pre- and post-lesson assessment, student attention and satisfaction, and appropriate or inappropriate behaviors were measured during the teaching and learning process. **Results:** The experimental group scored significantly higher in attention, satisfaction and appropriate behaviors. **Conclusions:** These findings indicate that a more varied use of Teaching Styles could improve student involvement and satisfaction and provide a better response to the requirements of Physical Education curricular programs. Thus, the teacher should be familiar with the Teaching Styles, and how to properly combine them and transform them in order to create new Teaching Styles and achieve the intended learning objectives.

Keywords: Spectrum teaching styles, dance education, student behavior, satisfaction, attention, physical education.

Introduction

Since Dr. Muska Mosston published the book *Teaching Physical Education* in 1966, teaching style (TS) principles have been applied to all disciplines (Byra, 2000). Mosston's Spectrum has been a great success, and its logic forms the current basis of the conceptualization of education in many Western educational systems, including those in the U.S., Australia, Spain, and the UK (Sicilia-Camacho and Brown, 2008). Therefore, TS has become one of the most important conceptual frameworks for Physical Education (PE), with studies conducted for more than 30 years treating it as a linchpin to systematically study teaching and learning across a wide range of content (Chatoupis, 2010).

The Spectrum continues to exert influence and provide an important theoretical basis in PE teacher education (PETE) programs (Parker and Curtner-Smith, 2012), becoming a versatile tool through which teachers can express their creativity and individuality (Goldberger et al., 2012). This fact, coupled with the growing recognition of the constructivist nature of learning and the diversity of student learning styles, highlights the need for teachers to use different TS (Kulinna and Cothran, 2003), both in their initial training and throughout their careers (Blasco, Romer, Mengual, Fernández-Revelles, Delgado and Vega, 2011).

In the first edition of *Teaching Physical Education* (Mosston, 1966), the Spectrum was composed of a chain with 8 concepts of TS, categorized as reproductive teaching (Command, Task Assignment, and Reciprocal, in small groups and individual programs) and productive teaching or discovery (Guided Discovery, Problem Solving, and Creativity). In the second edition (Mosston, 1981), this concept evolved from being the teacher's personal style to an independent structure of one's personal idiosyncrasies. The fifth edition (Mosston and Ashworth, 2002) demonstrated that the effective teacher must master different TS and know how to apply them after establishing a prior analysis of the situation, because this conditions the relationship between pedagogical elements. Thus, the teacher should be familiar with the TS, and how to properly combine them and transform them in order to create new TS and achieve the intended learning objectives.

Literature review

However, in PE, TS tend to focus to a greater extent on the faculty and they do not respond to the requirements of PE programs (Ince and Hunuk, 2010), with direct instruction as the model, which is mainly associated with the conductive theory of learning and which is the most commonly used model in teaching

techniques and motor skills (Silverman, 1991; Sweeting and Rink, 1999). This tendency is also described by Aktop and Karahan (2012), who reveal that 99.1% of teachers prefer to use expository strategies in their classrooms. Curtner-Smith, Todorovich, McCaughy and Lacon (2001) and Sympas and Digelidis (2014) have reached similar conclusions, indicating that teachers spend most of their time teaching classes using reproductive styles; specifying that the reproductive teaching style provides students with more opportunities for fun, learning skills, and motivation for learning and that the process is influenced by their prior experiences as school students.

There are also a large number of studies that associate higher levels of physical activity with the use of independent supportive teaching strategies (Lim and Wang, 2009; Lonsdale, Sabiston, Taedeke, Ha and Sum, 2009; Mandigo, Holt, Anderson and Sheppard, 2008; Perlman, 2015).

Similarly, the conclusions of Duaigües and Giménez Fuentes-Guerra (2010) and Abad, Giménez Fuentes-Guerra, Robles and Rodriguez (2011) denounce the lack of constructivist methodology in those responsible for the creation of Spanish school sports programs, indicating that the traditional model is the most commonly used in teaching tennis and youth football. However, studies on the views of PE teachers claim that the most preferred style is legislative and the least preferred style is conservative (Caglayan, 2012).

Therefore, although teachers generally value opportunities for active participation, collaboration, and experiential learning over theoretical knowledge (Aelterman et al., 2013), faculty members continue to use reproductive TS because they are not familiar with other TS (Duaigües and Giménez Fuentes-Guerra, 2010; Guedea, 2009). This effect reveals an inconsistency between suggestions for the PE curriculum and the preferred methods used to teach classes. Salvara, Jett and Aboot (2006) argue that it is necessary to use less directive styles, claiming that knowledge reproduction adversely affects motivational orientations towards learning perceived by students, whereas a positive attitude is found towards styles that involve assimilation and discovery. López Jiménez (2012) also defends this argument, concluding that productive TS in PE are associated with determinants of overall quality.

Authors such as Mouratidou, Goutza and Chatzopoulos (2007) propose the use of Task Assignment and Reciprocal TS to favor moral reasoning. In a more recent study, Gokhan (2012) finds that the cooperative learning technique (i.e., the puzzle technique) has a more positive effect on academic achievement and student attitudes than the traditional method in teaching sports fundamentals. In addition, Sánchez et al. (2012) suggest that students felt more physically and cognitively (thought processes and operations) involved in lessons with an Inclusive Style compared to with the Command and Task Assignment TS in Pilates classes, although no differences were found in social participation. The Reciprocal and Self-Check TS are also effective for improving performance in primary education for learning the chest pass (Kolovelonis et al., 2011), and the Reciprocal TS facilitates the development of motor skills in episodes of the indoor ladder (Hennings et al., 2010). In this respect, Mascet (2011) indicates that the development of a scholastic form of practice in individual opposition sports such as badminton in the context of physical education requires reflection on the nature of the dyad.

Nowadays, dance is used as a source of education in the teaching units of many schools throughout Europe and the USA (Charleroy, Rubino, and Schatz, 2011). In Spain, dance and body expression are included in the Primary Education curriculum, specifically in two subjects: Physical Education and Art Education. In the case of PE, body expression and dance are taught in the *Cuerpo, Expresión y Comunicación* (Body, Expression and Communication) block content. To develop such contents in Primary Education the use of productive TS is recommended.

Dance, in its artistic nature, has an enormous potential which enables the development of physical, cognitive, creative, expressive, emotive and sensitive capacities. It also transmits a sense of values and attitudes which make it possible to share emotions and ideas with other individuals. Furthermore, it is a scenic art that can be used as a powerful tool for social-educative action and intervention (Official State Gazette [BOE], 5 June 2010). Thus, it should be taught based on TS which develop these characteristics in students.

A huge number of researchers promote dance education in schools, since it encourages the self-esteem and self-understanding of students (Giguere, 2014) as well as promoting positive attitudes, satisfaction and intrinsic motivation (Stivaktaki, Mountakis, and Bournelli, 2010). All things considered, the methodology should be active, participative and social, since it is necessary for students to organize concepts and relations of cognitive, affective and emotional processes together with volitional processes in which values are included (Kaufmann, 2006).

The consideration of academic efficiency in dance implies the analysis of its conditional agents, which are especially important in this discipline since emotional factors are as important as motor or cognitive ones. However, in Spain dance learning identifies mainly with a transmission and reception process, which is associated with reproductive styles (Requena and Martín Cuadrado, 2015). Dance teachers who only teach through direct movement appear to be failing in their task as educators, since they are asked to maximize the potential of their pupils and they do not succeed in doing so (Cunliffe, Stopforth, and Rist, 2011). The variety of abilities and capacities developed in dance require the use of TS which facilitate the development of cognitive, affective and motor skills (Requena and Martín Cuadrado, 2015). Studies on motivation, responsibility or student satisfaction in PE classes provide teachers with a valuable insight into what students think, and therefore, enable them to make appropriate changes if necessary (Quay and Peters, 2008).

Current research aims

Taking the above into consideration, this study investigates the use of mixed TS which enable a converged response from students in a manner in which they interact and get involved in the activity instead of just replicating actions. This idea and its effectiveness are analyzed in relation to the use of single TS, specifically the Command TS, which has traditionally been used in academic teaching (González-Peiteado and Pino-Juste, 2014), especially in teaching traditional dances (Pitsi, Digelidis and Papaioannou, 2015), although most instruction in physical education takes place under the practice style of teaching (Hodges Kulinna and Cothran, 2003; Jaakkola and Watt, 2011). However, very few investigations have been carried out, and this is the main reason why we have decided to apply TS theory to dance research. Thus, this study is considered innovative in two ways. On the one hand, it contributes to the enlargement and development of TS incorporating dance. On the other hand, it enriches dance thanks to the advancements made in PE, since dance is a motor skill with pedagogical principles that are present in teaching itself. All things considered, this research has taken into account the most traditional and direct methodology which is normally used in professional dance lessons (Command TS) compared to the mixed methodology. This mixed methodology combines Reciprocal TS to “reproduce knowledge, replicate models and practice skills”, in order to facilitate better interaction and the cognitive implication of students in this process (Mosston and Ashworth, 2002) and Guided Discovery to enable teachers to guide the discovery of students (Goldberger, Ashworth, and Byra, 2012). The main goal of this TS is the promotion and involvement of students in the learning process.

The practical and emotional character of dance leads us to consider the following hypothesis: teaching based on a mixed style which will develop the attention and satisfaction levels of students without overlooking cognitive or motor factors. A second hypothesis establishes that these factors will promote the involvement of students in the task and will improve their behavior in the classroom.

Therefore, this study aims to analyze the effects of TS on student learning based on the methodology used to: a) compare the level of motor (rhythm and technique) and conceptual results, analyzing the effectiveness of the Command TS compared to a mixed-method (Reciprocal and Guided Discovery TS); b) investigate the association between students' thought processes and beliefs (variables of attention and satisfaction); and c) investigate the appropriate behavior of students in classes to identify whether greater learning is achieved and whether students have a more satisfactory and involved perception of classes depending on the methodology used.

Methods

Participants and design

To meet the objectives of the study, an investigation was conducted in 2 public schools in Andalusia, Spain, for a total of 12, 50-minute sessions involving 8 full classes, of which 4 (control group) classes were taught using the Command TS (100%), and 4 (experimental group) were taught using the mixed style, consisting in the Reciprocal and Guided Discovery TS at a proportion of 50%.

A total of 159 students (77 male and 82 female), divided into 8 classes, participated in the study and the average number of students per class was 20 (23 in the largest class, and 18 in the smallest). The age of the students ranged from 8 to 10, the average being 9 years old. Of these, 80 were assigned to the control group and 79 to the experimental group.

Lessons with both groups were led by two female dance teachers with a degree in Dance and with more than nine years of experience. A quasi-experimental design was employed for the two lessons (Thomas et al., 2011). Teacher A taught her lessons using the Command TS in two different groups (3rd and 4th year primary school classes) and used mixed styles with the other two groups, which shared both the same level and the same characteristics. Teacher B proceeded in the same manner.

Measurements

Motor and cognitive content was measured at the beginning and at the end of the Experimental Teaching Unit, by applying 3 previously validated tests:

- A Rhythm test. Reliability of over 0.80 and Cronbach's alpha of 0.80 were obtained for the first factor (palms) and 0.85 for the second (footwork) by calculating the intra-class correlation coefficient. The analysis of the test's internal validity was conducted by calculating bivariate correlations. The results were highly significant at $p < .001$, demonstrating the existence of a direct correlation between the factorials of palms, footwork, and overall, and the global score was found to verify the reliability of the test. Additionally, the results of the factorials of the rhythm test reached highly significant values, indicating their correlation and reaffirming the test's validity (Cuéllar and Batalha, 2003).
- A Technical test. The intraclass correlation coefficient was 80% in all cases studied, indicating satisfaction between the 2 observers. The result of the analysis of internal consistency using Cronbach's alpha was 0.55, in the range $0.41 < \alpha < 0.55$ and with a high significance level of $p < .05$. The correlation results between the 2 scores revealed a high degree of significance at $p.001$, indicating that the studies were reliable and confirming the test's validity (Cuéllar, Morales, Sánchez and Sánchez, 2001).
- A Conceptual test. First, item selection was conducted, as previously established by McGee and Farrow (1987), and a validity coefficient of 0.77 was obtained using Kuder-Richardson's formula 21. This ratio is considered appropriate because it is a very strict and conservative test that establishes a range of 0.60 to

0.80. The test's internal consistency was calculated using Cronbach's alpha coefficient. The results of the 2 factors were significant at $p < 0.05$. For the first factor (frecall), it was 0.66 (in the range $0.66 < \alpha < 0.68$) (Cuéllar, Delgado and Delgado, 2003). To maintain anonymity, publication of the validation has been omitted.

To measure the variables of attention, satisfaction, and appropriate behaviors, the following analytical tools were used in the teaching-learning process:

- The Attention variable. To measure the mental and cognitive capacity of students, the questionnaire developed by Locke and Jensen (1974) was applied on four different occasions during the session after the teacher's explanation. Students were asked for their views after the explanation, after performing the exercise, after a break interval, and after the completion of a game. After this question, a qualitative analysis of the content of the answers was performed. Reliability (Bellack et al., 1966) exceeded 80% in the data analysis.
- Satisfaction variable. This emotional process directly affects the cognitive implication of students, since it mediates between the teaching and the success of the learning process. The questionnaire developed by Carlier et al. (1991) was applied to measure this variable. In this manner, students rated their degree of satisfaction with the activity at the end of the session (I liked it: a lot, a little, or very little).
- Appropriate and inappropriate behavior. We used the Placheck method proposed by Siedentop (1998); Siedentop, Hastie, and Der Mars (2011), which consists in visually surveying the classroom and counting the number of pupils responding appropriately to the teacher's instructions. Appropriate behavior is when the students respect all pedagogical indications or conduct rules established by the teacher (i.e. a student moves from his place to see a partner performing the exercise or sits and pays attention to the teacher); whilst inappropriate behavior implies a situation in which students do not respect the indications given by the teacher for the lesson's development (i.e. the student stays still and does not even try to perform the exercise, does not pay attention or impedes the development of the lesson). A total of 8 sessions for each of the groups were analyzed for 30 seconds. The intervals were determined by dividing the total time of each session by 8. The sessions analyzed using this method were sessions number 3, 4, 6, 7, 9, and 10. The total number of sessions analyzed amounted to 48 (24 for the control groups and 24 for the experimental groups). The inter-observer reliability achieved was 97.85%. This study was conducted by applying the percentage of agreement and disagreement (Bellack et al., 1966).

All classes were recorded with fixed monitor uptake and wireless microphones for subsequent laboratory analysis of the teaching.

Teaching style fidelity

Teaching style implementation in this study was verified through systematic observation. Style analysis checklists (Sherman, 1982) for the Command, Reciprocal and Guided Discovery TS were employed to ascertain the level of fidelity between the teacher's instructional behaviors and style-specific behaviors.

Both teachers taking part in the study had extensive experience and training in dance and past teaching success. Both received specific training through a methods course (PETE) that combined learning the TS, managing a PE class, and developing curriculum models (Curtner-Smith et al., 2009). In the first phase, the teachers received training on the original 8 TS (Mosston, 1981) for 4 weeks, during 4 hours per week, using theoretical explanations and analysis of videos with multiple examples of the performed activity. In the Guided Discovery TS, they were asked to propose questions about technique, rhythm, and understanding of the activity.

In the second phase, the teachers participated in a practice session in which each TS was practiced for 10 minutes in a small gym. The following teaching cases were explored:

- Command (Style A). The teacher demonstrates the basic technique to perform. The student repeats the sequence to the rhythm of the music or the rhythm marked by the teacher. The teacher provides feedback for improvement and motivation.
- Reciprocal (Style C). The teacher demonstrates the basic technique and distributes observation sheets to the students. The student performs the exercise, while the student acting as the teacher takes notes on the performance technique. The teacher provides feedback to the student playing the teacher role but not to the student. The students then exchange roles.
- Guided Discovery (Style F). The teacher proposes different exercises to the students, who must experiment with different methods of implementing them while seeking the most effective method. The teacher later questions the students to promote understanding about rhythm, technique, and segmental coordination.

In the third phase, after planning the activities, the teacher gave a 15-20 minute class on selected content using each TS. The teachers received corrections and suggestions for the implementation of effective and efficient teaching that would fit the anatomy of the TS.

In the fourth phase, the teaching style implementation in this study was verified through systematic observation. Style analysis checklists (Sherman, 1982) for the Command, Reciprocal and Guided Discovery TS were employed to ascertain the level of fidelity between the teacher's instructional behaviors and style-specific behaviors. Each checklist included 55 style-specific variables, such as: a) the aims of the style; b) type of organization; c) type of communication; d) role of the teacher; d) role of the learner; and e) feedback. From a total

of 24 dance lessons (12 Command TS and 12 mixed style) taught, 2 trained observers coded 12 lessons which were randomly selected (3 for each TS applied) to determine the level of inter-observer agreement. The fidelity between the two observers has been stated through the correlate intra-class calculus, considered to be one of the most appropriate methods to verify the fidelity of the motor tests by the majority of authors (Colaço and Preto, 1976). The fidelity criterion was that of .80 (Martinez Arias, 1995; Suan and Ary, 1989). The intra-class correlation coefficient was 86% in all the cases studied, indicating satisfactory levels between the 2 observers (a minimum of 83% in Guided Discovery and a maximum of 97% in Command). These scores indicate that the fidelity between the teacher's instructional behaviors and style-specific behaviors was high.

Command and mixed TS dance lessons

The tasks included in the dance contents were common across the 2 teaching style lessons. During the first lesson the students performed 12 basic dance tasks. The sessions of both groups (control and experimental) were structured as follows: a) Warm-up: rhythm and polyrhythm exercises (the basic principles which characterize the dance in terms of body and technique, the basic rhythm 4/4); b) Main part: postural technique, coordination, and staging of choreography (bending of the body, hand and leg movements, postural attitude and signature movements in the dance) and; c) Cool down: dances with distinct organizations and/or relaxation exercises and a final round of reflection on body awareness. In the case of the Reciprocal and Guided Discovery TS, reflections on class progression took place in the final part of the session.

Analysis and results

An inferential analysis of the results obtained in the tests and questionnaires used was performed to compare the percentages of improvement in the 2 methodologies analyzed. The test used for this purpose was the Kruskal-Wallis Test, since certain variables resulting from the test were considered significant and others not. Thus, the Kurskal-Wallis Test unified all results under the same scope. All analyses were performed using the SPSS Statistical Package for Social Sciences (SPSS, Chicago, Illinois, USA), and the alpha level was set at $p < 0.05$.

Table 1. Average (SD) of the variables of rhythm, technique, concept, attention, and satisfaction.

| Dimensions | Categories | Control Group | Experimental Group | Chi-Square | Sig. |
|---------------------|-------------------|---------------|--------------------|------------|------|
| <i>Rhythm</i> | Palms | 76.49 | 83.56 | 0.96 | .327 |
| | Footwork | 75.42 | 83.58 | 1.284 | .257 |
| | Overall | 71.91 | 85.13 | 12.946 | .163 |
| <i>Technique</i> | | 73.83 | 86.25 | 2.894 | .089 |
| <i>Concept</i> | Recall | 66.82 | 93.34 | 13.212 | .000 |
| | Comprehension | 77.22 | 82.81 | 0.586 | .444 |
| | Overall | 77.56 | 82.47 | 0.454 | .5 |
| <i>Attention</i> | After explanation | 50.12 | 81.17 | 22.07 | .000 |
| | After exercise | 53.15 | 74.03 | 10.274 | .001 |
| | After break | 55.19 | 72.67 | 7.217 | .007 |
| | After games | 55.37 | 70.51 | 5.566 | .018 |
| | Overall | 50.74 | 73.08 | 12.085 | .01 |
| <i>Satisfaction</i> | Measure 1 | 69.15 | 87.85 | 12.87 | .000 |
| | Measure 2 | 71.45 | 75.55 | 0.657 | .418 |
| | Measure 3 | 73.99 | 79.89 | 1.255 | .263 |
| | Overall | 63.32 | 76.39 | 4.919 | .027 |

$p < .05$ Regarding inappropriate-appropriate behavior, the results indicate that students in the experimental group spent 94.56% of the time exhibiting appropriate behaviors, compared to 87.99% in the control group. Inter-observer reliability was 97.85% (Bellack *et al.*, 1966).

As previously noted, the results achieved in the variables of rhythm, technique, and concept (Table 1) in both methodologies were quite similar, and although higher values were found in all cases for the experimental group, no significant differences between groups were detected. However, the results significantly favored the experimental group in all cases studied with regards to the attention variable and overall with regards to the satisfaction variable (Table 1).

Discussion

The aim of this study was to examine the effects on student learning in PE classes according to the methodology used in terms of motor results (rhythm and technique), concept, attention, satisfaction and appropriate-inappropriate behaviors of students.

The results obtained for rhythm and technique indicate that, although these variables are not significant for any of the aspects studied, the results are superior for the experimental group, which obtained improvements for all students analyzed. Kolovelonis *et al.* (2011) find similar results when contrasting the Command TS with the Reciprocal, self-Check, and Mixed (Reciprocal and Self-Check) TS in learning the chest pass, with significant differences in favor of the latter. However, Zeng *et al.* (2009) found that the Task Assignment TS obtained better results compared to the Inclusive and Reciprocal TS, although no significant differences were found between these

2 in improving volleyball skills. By contrast, Byra, Sánchez and Wallhead (2014) found that the time devoted to instruction was higher in the Inclusive TS than in the Command and Task Assignment TS.

In a review of the effectiveness of teaching physical activity, Dudley et al. (2011) also highlight that teaching methods involving direct instruction are more effective strategies for increasing the physical activity levels of children and improving movement skills. Fanarioti (2014) also indicated that the direct method presented better results in the development of the examinee's movement skills in the case of children between 12-14 years old, but with an important difference compared to the indirect teaching method. According to Dudley et al. (2011), Goldberger et al. (2012), and Kulinna and Cothran (2003), these problems are mainly due to the inadequate selection of objectives and the poor quality of the instruments used for measurement, and the analysis of some of these studies revealed a lack of quality assessment and statistical power to draw conclusions about the effectiveness of the interventions carried out in PE and school sports to improve enjoyment results.

Regarding cognitive learning, the results are not significant when comparing both groups, both in the case of the variables analyzed and in terms of the overall factorials. Conversely, the recall factor displays a high level of significance of $p < 0.000$. This may be because, initially, the experimental group achieved better knowledge input, but the lessons were insufficient when greater cognitive involvement was required. However, the results of the measures in all factors analyzed are skewed in favor of the experimental groups, suggesting that the experimental techniques improved learning for all groups regardless of the methodology developed. Therefore, although the results are not significant on a general level, we agree with Cleland (1994), who found that the use of critical thinking strategies in PE enhances the ability of children to generate different patterns of movement. Although the results are not significant in all items, the values obtained are higher in all cases analyzed.

Regarding the attention variable, it can be observed that the results are significant in all cases studied. Therefore, it can be argued that differences in the attention variable are conditioned by the TS employed. The scores are higher for the experimental groups, and we can therefore deduct that use of the Reciprocal TS and Guided Discovery TS promotes student involvement and encourages students to be more attentive in class, thereby facilitating the acquisition of learning and demonstrating the importance of attention in learning motor actions (Dupont et al., 2009).

With regards to the satisfaction variable, the results are greater in all cases analyzed for the experimental groups. Therefore, it can be concluded that the experimental group achieved higher levels of satisfaction than the control group. This relates to the findings of Morgan, Kingston and Sproule (2005), who studied the effects of different TS on teaching behaviors that influence the motivational climate and cognitive and affective responses of students in PE. The TS were Command, Task Assignment, Reciprocal, and Guided Discovery. These results reveal that the Reciprocal and Guided Discovery TS focus less on performance behaviors and are better suited to cognitive and affective responses than the Command and Task Assignment TS. Pitsi, Digelidis and Papaioannou (2015) examine the effects of the reciprocal, Self-Check and command TS in students in terms of intrinsic-extrinsic motivation, enjoyment and perceived motivational climate in Greek traditional dances. The results show that the self-check style triggers a significantly greater increase in intrinsic motivation, identified regulation, enjoyment and autonomy in comparison to the reciprocal and command-teaching styles. It is also connected with a decrease in external motivation. These findings are associated with this study, taking into account that similar results have been found with regards to students' perceptions, consequences in cognition and appropriate behaviors. However, Kirby, Byra, Readdy and Wallhead (2015) compared the practice TS and inclusion TS in terms of students' psychological needs, satisfaction and self-determined motivation. The results show no difference between styles and demonstrate that both are equally effective in positively influencing students.

Finally, the fact that the experimental group demonstrates a greater percentage of appropriate behaviors (6.57%) compared to the control group supports and strengthens the conclusions regarding the attention and satisfaction variables, establishing that the improvement of these variables contributes to a more positive, effective, and appropriate attitude in teaching, the realization of a more involved practice in PE, and better use of time for motor commitment. This finding is consistent with that of Koka (2013), who states that the teacher-student interaction influences the dimensions of perceived teaching behaviors and motivation of students for the activities undertaken. Another conditioning factor could be inactive periods associated with teaching instructions by applying directive methodologies (Roberts and Fairclough, 2011). Thus, although we agree with Parker and Curtner-Smith (2012) that the use of these directive styles can be conditioned to be more familiar and provide the faculty with a greater role in decision-making, we predict that the fact that students take a more passive role may result in discipline problems in classes.

Conclusions

The choice of TS is an important decision for teachers because it affects their relationship with the various elements of the didactic act, encouraging the acquisition of cognitive and social skills for configuring various types of subjects (Tsolakidis and Anagostou, 2011). The results of this study can help PE teachers to employ these TS during their teaching sessions.

The main conclusion of this study is that the combination of TS, as opposed to using only a traditional and reproductive TS, contributes to more varied and positive PE teaching, strengthening students' attention capacity, satisfaction, and appropriate behavior, while also enabling the proper development of motor skills.

Therefore, we agree with Abbas, Fiaz and Fareed (2011) that using different teaching methodologies is necessary for suitable personality development in children. Furthermore, teachers must be cognizant of the motivational climate and understand which elements contribute to the mastery climate and which contribute to the performance climate because climate is positively related to positive student outcomes (Sinelnikov and Hastie, 2010).

Although, from the motive perspective, we agree with Byra et al. (2014) that Command is the most appropriate TS when teachers aim to provide a continuous pattern though the duration of the activity. We consider that its exclusive use is not appropriate for the objectives of primary education, which are not focused solely on the psychomotor domain. Therefore, in primary education, our recommendation would be to use mixed TS with some cognitive involvement (Guided Discovery TS) and participation (Reciprocal TS).

Sánchez, Byra and Wallhead (2012) suggested that Spectrum is a *tool box* which provides PE teachers with 11 teaching options in order to cope with student diversity and achieve multiple PE goals. The structure of the Spectrum reflected two basic human capacities. Mosston and Ashworth (2002) stated that according to the capacity for reproduction and based on this assumption, teaching styles were categorized within two clusters which shall be combined for the development on an innovative methodology which pushes the student to this art in an active and motivating way.

Finally, we emphasize the importance of further research in this area to confirm and extend what has been observed in this study. Proposed future studies include the expansion of socializing TS and their role in teaching PE to acquire educational value as well as conducting retention measures to analyze their long-term effects. It would also be opportune to expand the sample of students and teaching context, which is a fruitful and necessary area that would be interesting to address in future research.

References

- Abad, M.T., Giménez Fuentes-Guerra, F.J., Robles, J. and Rodriguez, M. (2011). Perfil, experiencia y métodos de enseñanza de los entrenadores de jóvenes futbolistas en la provincia de Huelva [Profile, experience and teaching methods of coaches of young football players in the province of Huelva.] *Retos. Nuevas tendencias en Educación Física, Deportes y Recreación*, 20, 21-25.
- Abbas, N., Fiaz, M. and Fareed, Z. (2011). A sculpturing of personality and calligraphy on Mind In: *International Conference on Applied Social Science*, Changsha, China, Mar 19-20 2011, pp. 323-328. Changsha: China. Changsha.
- Aelterman, N., Vansteenkiste, M., Van Keer, H., De Meyer, J., Van den Berghe, L. and Haerens, L. (2013). Development and evaluation of a training on need-supportive teaching in physical education: Qualitative and quantitative findings. *Teaching and Teacher Education*, 29, 64-75. doi: [10.1016/j.tate.2012.09.001](https://doi.org/10.1016/j.tate.2012.09.001)
- Aktop, A. and Karahan, N. (2012). Physical education teacher's views of effective teaching methods in physical education. In: *G.A. et al. 4th World Conference on Educational Sciences*, pp. 1910-1913. Barcelona: Universidad de Barcelona. doi: [10.1016/j.sbspro.2012.05.401](https://doi.org/10.1016/j.sbspro.2012.05.401)
- Bellack, A., Kliebard, H., Hyman, R. and Smith, F. (1966). *The Language of the Classroom*. New York: Columbia University Press.
- Blasco, J.E., Romero, C., Mengual, S., Fernández-Revelles, A.B., Delgado, M. and Vega, L. (2011). Estilo de aprendizaje de los estudiantes de magisterio de educación física y de ciencias del deporte de las universidades de Granada y Alicante [Learning style of student teachers in physical education and sport science at the universities of Granada and Alicante]. *Cultura y Educación*, 23(3), 371-383. doi: [10.1174/113564011797330289](https://doi.org/10.1174/113564011797330289)
- Byra, M. (2000). A review of spectrum research: the contributions of two eras. *Quest*, 52(3), 229-245. doi: [10.1080/00336297.2000.10491712](https://doi.org/10.1080/00336297.2000.10491712)
- Byra, M., Sánchez, B. and Wallhead, T. (2014). Behaviours of students and teachers in the command, practice, and inclusion styles of teaching. Instruction, feedback, and activity level. *European Physical Education Review*, 20(3), 3-19. doi: [10.1177/1356336X13495999](https://doi.org/10.1177/1356336X13495999)
- Caglayan, H. (2012). The investigation of thinking styles of physical education teachers in Turkey. *Energy Education Science and Technology Part B-Social and Educational Studies*, 4(3), 1639-1648. doi: [10.1016/j.sbspro.2012.05.401](https://doi.org/10.1016/j.sbspro.2012.05.401)
- Carlier, G., Radelet, K. and Renard, J.P. (1991). Sources de variations des feedbacks et leur perception par les élèves [Varieties of feedback and student perception]. *Revue de L'Éducation Physique* 31, 137-176.
- Chatoupis, C. (2010). An analysis of Spectrum research on teaching. *The Physical Educator*, 67(4), 188-197.
- Cuéllar, M.J and Batalha, A.P. (2003). Construcción y validación de un instrumento para la evaluación de aspectos rítmicos en danza [Construction and validation of an instrument to evaluate rhythmic aspects in dance]. *Apunts. Educación Física y Deportes*, 71, 54-60.
- Cuéllar, M.J. Delgado, M. and Delgado, M.A. (2003). Construcción y validación de un instrumento para la evaluación de aspectos conceptuales en danza [Construction and validation of an instrument to evaluate conceptual aspects in dance]. *Tándem. Didáctica de la Educación Física*, 14, 93-105.
- Cuéllar, Morales, M., Sánchez, E. and Sánchez, (2001). Construcción y validación de un instrumento para la evaluación de aspectos técnicos en danza [Construction and validation of an instrument to evaluate