

An analysis of the responsibility of physical education students depending on the teaching methodology received

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Published online: June 26, 2015

(Accepted for publication April 20, 2015)

DOI:10.7752/jpes.2015.02031;

Abstract:

To determine the effects of two teaching methodologies on the student's perceptions about responsibility in the evaluation of a physical education teaching unit. A pre-experimental design was used on 785 high-school students taught with two methodological approaches during a stunt unit: a) traditional method, and b) attitudinal method. Perceptions of responsibility were surveyed before and after the teaching unit. Student's perception towards responsibility was similar between groups in the pre-test ($p < 0.05$). After intervention, the attitudinal group showed higher sense of responsibility in the evaluation ($p = 0.011$). The traditional methodology group perceived a different level of responsibility depending on the high-school institution ($p = 0.011$); while the attitudinal style group perceptions were influenced by the school-year ($p = 0.038$) and the number of students per class ($p = 0.013$). An attitudinal methodology implemented in a stunt unit in a Physical Education class directly influences the perception of students about responsibility in their evaluation.

Key words: responsibility, perception, physical education, teaching methods, attitudinal style, acrobatics.

Introduction

The methodology and the evaluation of teachers in the classroom largely define their conception of the course as well as the intended purposes (Gessa-Perera, 2011). The type of assessment may serve different areas and approaches and are associated with greater or lesser involvement of students in the process of teaching-learning (Dancer & Kamvounias, 2005).

When looking at the domain of Physical Education (PE) in school settings it is found that the assessment becomes a tool of utmost relevance in student learning often associated with a final grade (Velázquez-Buendía & Hernández-Álvarez, 2005). Interestingly, the difference between these two concepts should be made, since some authors suggest that everything susceptible to grading is evaluated; however, everything that evaluated does not necessarily has to be graded (Ní Chróinín & Cosgrave, 2013). In this sense, it seems essential to allow students to participate in their own assessment, thus ensuring a greater control of their work and consequently greater involvement in the class (Capllonch-Bujosa, Buscá-Donet, Martín-Horcajo, Martínez-Mínguez, & Camerino-Foguet, 2008). In the PE class there has been a tendency to exclusively grade, usually in the mode of fitness tests, without questioning often the true learning that this practice entails for the student (Domangue & Solmon, 2011). Thus, it is logical, fair and relevant to ask the following questions: in the domain of physical education is it only important everything related to motor skills? Is it possible to use motor actions as a means to achieve other aspects rather than become an end in itself?

Understanding PE as a multidisciplinary area in which the motivational and relational aspects are fundamental to the generation of a positive attitude in students, analyzing their responsibility in personal homework generates reflection and processes of change. This topic has been addressed in some reports that are based on the perception of students about their satisfaction towards an activity performed in the classroom (Huéscar & Moreno-Murcia, 2012; Martínez-Galindo, Alonso, Cervelló, & Moreno, 2009). In this respect, valuing aspects such as motivation, responsibility or student satisfaction in PE classes provide valuable information to teachers to truly know what a student thinks, and therefore, make appropriate changes if needed (Quay & Peters, 2008). Therefore, it is essential to reflect on teaching methodology, and can therefore be very useful to generate processes of bidirectional feedback between teacher and student (Such-Aparicio, Criado-Pacheco, & García-Fornes, 2011). Thus, using one or another methodology in the classroom does not guarantee a better or worse perception of students on achievements, since the key is to analyze each of the variables involved in the process (e.g., making student groups, content type, manner to addressing to students, implicit evaluation) (Casey & O'Donovan, 2013).

Proposals for classroom work grounded in open and participatory methodologies promote higher cognitive responses of students, thus approaching the acquisition of greater autonomy (Smith, 2004). However, some PE teachers are reluctant to teach this type of approach because it generates a sense of lack of control in their classes (Shehu, 2009). One of the reasons leading to think in such a way is the lack of knowledge of new methodological trends for the classroom; therefore, some teachers tend to reproduce those tasks and activities used by their teachers when they were students (Backman & Larsson, 2014). Others (Standal & Moe, 2013), argue that if we want the PE class to be considered more than physical fitness testing and playing sports, it is necessary to modify the manner in which the class develops. Therefore, encouraging classroom learning environments able to generate positive climate for action among students will progressively affect their intrinsic motivation to practice.

Feedback received in the classroom, the diversity of methodological and assessment strategies and facilitating student's decision making process in developing tasks, become three fundamental factors that teachers have to handle depending on the type of content that addresses the course in which students are, and their psycho-pedagogical characteristics (Pérez-Pueyo & López-Pastor, 2010). Students enjoy when they find themselves capable and having sufficient mechanisms and alternatives to achieve their goals, not having to always be the same goals (Hutzler & Bar-Eli, 2013). On the contrary, to pretend that students overnight become autonomous in their learning can frustrate teachers because to achieve that autonomy is necessary establishing planned work processes, structured and if possible, shared with other peers (Thorburn & MacAllister, 2013).

Educators should be able to propose and test different methodological strategies to get the most out of their students and promote autonomous thinking and responsibility. In this context, the purpose of the study was to determine the effects of two teaching methodologies on the student's perceptions about responsibility and decision making in the evaluation of a stunt-acrobacies teaching stunt (STU). For this purpose two groups are compared; one in which it is applied a traditional and more directive method and another in which an attitudinal style is used (Pérez-Pueyo, 2005, 2010).

Method

Participants and procedures

Volunteers were 785 students (58.7% females, 41.3% males) from four groups of compulsory secondary education (CSE). The mean age of the participants was 13.7 ± 1.1 years. The students were registered in three high-school institutions; two located in the province of Burgos and one in Soria, Spain. The groups were assigned based on the teaching methodologies used to cover the STU: a) traditional methodology (TM) with 395 students, and b) attitudinal methodology (AM) with 390 students (Table 1).

Table 1. High-school participants by school-year, institution and methodology (n = 785)

School-year	Institutions	TM	AM	Total
1 st CSE	Santa Catalina and Empecinado	65	73	138
2 nd CSE	Empecinado, Comuneros	93	71	164
3 rd CSE	Santa Catalina, Juan Empecinado and Comuneros	122	112	234
4 th CSE	Santa Catalina, Juan Empecinado and Comuneros	115	134	249
Total (n) =		395	390	785

Note: CSE: compulsory secondary education; TM: traditional methodology; AM: attitudinal methodology

Measurement instrument

Responsibility was measured with a modified version of the Student's Responsibility in the Assessment of PE Scale (SRAPES) (Moreno, Vera, & Cervelló, 2006). In this scale, students respond 11 items using a 0-10 Likert scale, where 0 means total disagreement and 10 total agreement. Reliability of the scale is acceptable based on a Cronbach's $\alpha = 0.83$. Factorial validity shows two factors: a) the value of transferring the responsibility for evaluation (5 items), and b) the role in giving the student the responsibility for evaluating (6 items). Factor I refers to issues related to the decision of assigning a grade together between teacher and student, student interest in the evaluation process, knowledge obtained from the learning process, and the feeling of deserving a grade understood as a perceived effort. Factor II refers to the assessment, opinion and feedback from the teacher, the student approach in assigning homeworks, and the student decision making and autonomy (Moreno et al., 2006).

Design and Procedures

The stunt unit was carried out in different quarters for each of the four courses of the CSE. All data were collected along three school years (between 2011 and 2014). The research design is pre-experimental, where a questionnaire was administered to each student before (pre-test) and after (post-test) participating in the STU (Campbell, Stanley, & Gage, 1963). The TM was taught by three different teachers, while the AM only by one teacher. The AM units were taught for a duration of 10 sessions and the TM ranged from six to nine sessions.

The TM experimental treatment consisted in reproducing figures and standard elements for each of the groups formed in class. The suitability of the element is based on the greatest similarity to the pattern shown by the teacher. The progression of the stunt is based on a motor logic, and the most important feature is the figure execution and not the role played by each of the group members.

The AM experimental treatment relates to each of the elements that the teacher poses on the unit. The progression of activities not only attends motor patterns, but also the motivational and relational dimensions, which are considered as key factors. The groups are made by affinity, which caters individual needs. In this method, the main aim is that all students achieve.

Therefore, despite the unit addresses the same content, stunts or acrobatics, educational goals in each of the groups are different, being defined largely by the type of methodology used. During both, the pre- and post-test, anonymity was guaranteed to encourage that student responses were as sincere as possible. Confidentiality in the processing of data was also guaranteed.

Statistical analysis

Descriptive statistics (M ± SD) were obtained for each group during pre- and post-tests. Inferential analysis included Pearson product-moment correlations, contingency tables, Chi², and analysis of variance (ANOVA). Bonferroni *post-hoc* test followed significant ANOVAs. Statistical significance was set *a priori* at $\alpha = 0.05$.

Results

Descriptive analysis. The Shapiro-Wilk test was used to test normality in the samples studied (p = 0.125). The number of participants by school-year, institution and methodology received is presented in table 1. No significant between-groups differences in the two factors were found, which indicates the similar degree of initial perception that students had towards PE responsibility. For the TM group, mean factor I and II were 6.57 ± 1.23 and 6.72 ± 1.45, respectively. For the AM group, mean factor I and II were 7.54 ± 0.85 and 7.33 ± 0.91, respectively.

Table 2. Contingency tables and χ^2 analysis for the items related the assessment and assignment of the role of responsibility in the post-test

Association between scale items for Factor I (F-I) and Factor II (F-II)	Chi- Square Test		
	χ^2	df	p =
Traditional methodology groups			
Importance in the decision of a grade assigned together with the teacher (F-I) / Peers should be interested in participating in grading PE (F-II)	16.10	5	0.135
My teacher allows me to plan my own exercises (F-II) / My teacher asked me about the exercises performed in class (F-II)	10.23	4	0.225
We can decide together with my teacher the grade that we can have (F-I) / The teacher asks me questions about my perception of my evaluation (F-II)	9.31	4	0.261
Attitudinal methodology groups			
Importance in the decision of a grade assigned together with the teacher (F-I) / Peers should be interested in participating in grading PE (F-II)	13.11	7	0.131
My teacher allows me to plan my own exercises (F-II) / My teacher asked me about the exercises performed in class (F-II)	11.81	5	0.021
We can decide together with my teacher the grade that we can have (F-I) / The teacher asks me questions about my perception of my evaluation (F-II)	11.23	5	0.034

Inferential analysis. There was a significant Pearson’s correlation between factor I and II for the AM group (r = 0.14, p = 0.011) in the post-test. No significant correlation was observed for the factor I and II in the TM group (r = 0.13, p = 0.612) in the post-test. These results show the association between the degree of responses regarding the assessment and assignment of the role of responsibility, being higher for the AM group than for the TM group.

The groups taught under the TM did not have a significant association between the answers given in the post-test as shown in the contingency tables (Table 2). However, in the AM group perception changed, especially in the responses related to student autonomy on the proposed activities and on the interest shown by the teacher ($\chi^2 = 11.81$, p = 0.021). This is also true with regard to the involvement of students in their own evaluation process, allowing students to decide on their own grade ($\chi^2 = 11.23$, p = 0.034).

From the factor analysis and in relation to the items related to perceived responsibility in the classroom, the scale variable called “level of perceived responsibility” was calculated. Then, one-way ANOVAs were performed to determine statistically significant differences in the perceived level of responsibility according to

independent variables such as institution, number of students in class and school-year. High-school institutions were categorized as follows: 1 = ‘Santa Catalina’, 2 = ‘Juan Empecinado’, and 3 = ‘Comuneros de Castilla’. The number of students was categorized as follows: 1 = < 20, 2 = 20-30, and 3 = > 30. School-year was categorized as: 1 = First, 2 = Second, 3 = Third, and 4 = Fourth.

There were significant differences for the groups taught with TM ($p = 0.011$), with Santa Catalina obtaining higher levels of perceived responsibility. Class size < 20 students taught with the AM perceived higher levels of responsibility ($p = 0.013$). Similar findings were observed for the school-year in which the AM was taught, students in 4th CSE showed higher levels of perceived responsibility (Table 3).

Table 3. ANOVA summary table and Bonferroni *post-hoc* analysis for each of the independent variable analyzed

Level of perceived responsibility	F	df	p =
Traditional methodology groups			
High-school institution*	110.09	1	0.011
Number of students/class	92.19	2	0.234
School-year	66.23	1	0.131
Attitudinal methodology groups			
High-school institution	102.14	1	0.114
Number of students/class**	95.33	2	0.013
School-year***	66.48	1	0.038

Note:

* $p < 0.05$, Bonferroni’s post hoc: ‘Comuneros de Castilla’ ($M = 5.68$) vs. ‘Santa Catalina’ ($M = 8.12$)

** $p < 0.05$, Bonferroni’s post-hoc: ‘< 20’ ($M = 6.56$) vs. ‘> 30’ students ($M = 8.31$)

*** $p < 0.05$, Bonferroni’s post-hoc: ‘First school-year’ ($M = 6.14$) vs. ‘Fourth school-year’ ($M = 8.31$)

Discussion

The results from this study showed how before receiving the STU neither group experienced significant differences in their perception towards the value of transferring the responsibility for evaluation and the role in giving the student the responsibility for evaluating. However, after experiencing the work in the classroom the groups receiving the AM indicate a significant association between the two factors, reflecting a perception of exercised responsibility and autonomy in making more decisions. In the TM groups the level of perceived responsibility was significantly different for each of the high-schools, while the AM classes with fewer students and more advanced courses showed higher levels of responsibility.

In the study there were found no differences in the pre-test performed at each of the groups in perceived responsibility in PE classes. However, there are higher means in each both factors for the groups participating in the AM, demonstrating the influence of the teaching received so far. The role played by the PE teacher in the classroom greatly influences the student’s perceptions without forgetting the contents covered in class (Escartí, Gutiérrez, Pascual, & Wright, 2013). This is a reason why the teaching methodology acquires a fundamental role in the educational process, which directly affects the opinions, motivations and future decisions students make, both, inside and outside the classroom (Dancer & Kamvounias, 2005).

Once the STU was experienced by each group, the students’ perceptions of perceived responsibility varied substantially, reaching significance in the AM group in responses related to the transfer and involvement in their grades. Evidence shows that open and participatory methodologies in the classroom PE are increasingly common, with the fundamental characteristic of greater autonomy in making decisions on what the student does in class (Martos-García, Torrent-Benavent, Durbà-Cardo, Saiz-Llopis, & Tamarit-López, 2014). In this study there was also a higher perception for the AM group on responses concerning the teacher interest on the learning and student engagement in their own evaluation process as demonstrated by a significant relationship between these areas. According to others (Hemphill, Templin, & Wright, 2013), PE teachers should reflect on the ‘why’ and ‘for what purpose’ of the classes, considering what the students need to learn. Thus, in a competency-based learning, students must be able to decide and evaluate what it does and to seek information and interrelate autonomously acquired learning. Therefore, it does not seem logical that in PE classes students only reproduce what the teacher says (Severinsen, 2014). Here, we show that the same content does not have to be approached in the same way, and also the perception of the students after practice can vary significantly, being highly positive when it enables them to take an active part of their own evaluation. If students participate in the evaluation process and is not only the teacher who decides the grade, we can contribute to creating more critical, conscious and autonomous students (Hutzler & Bar-Eli, 2013).

The analysis of the influence of the independent variables on the level of perceived responsibility in the student indicated differences between high-school institutions in the perception of students who received the TM. This finding may be partially explained by the teacher who taught the STU in the Santa Catalina high-school who only used a TM in the way students performed the motor elements using standardized teaching cards. However, there was a more open part of the class where students independently decided the elements to choose, with whom and when, prompting the student to perceive greater responsibility compared to other institutions.

Significant differences in the AM style on the perceived levels of responsibility were found in the number of students in the class, with greater perceived responsibility in classes having fewer students. It is likely that with fewer students per class the teacher and student could go deeper into the achievement experience of all members, which allows students to change roles more often and to experience more vividly the individualized assessment. Student's perception of responsibility also varied significantly between the first and fourth school-year, being higher in the latter; perhaps because of a greater autonomy observed in higher grades, both in the performance of motor elements and the choice of them in the final assembly. In this respect, to grant a progression in the autonomy of tasks throughout the course allows students the opportunity to experience what they have learned, and every time with a more coherent and better result (Vera-Lacárcel & Moreno-Murcia, 2007). Therefore, the planning of teaching in the classroom as to 'what to teach' and 'how to do it' must be critical, establishing consensus favoring the search for common methodological lines in the area that promotes a progressive autonomy (Standal & Moe, 2013).

Conclusions

In this study we have shown that the methodology implemented in the STU in a PE classroom directly influences the perception of students about responsibility in their evaluation. We observed in the pre-test how the previous perception that the students had towards accountability in PE did not vary significantly between groups. In the post-test the perceptions were modified towards the groups taught with the AM style. After the STU, students who received TM perceived a lesser involvement in their own assessment and decision-making on the motor elements to perform. Finally, in the TM group significant differences in the level of perceived responsibility depending on the school were obtained, while in the AM group differences were obtained in classes with less than 20 students and in the fourth level school-year students.

The findings of this study may interest PE teachers who want to analyze their teaching practice. The focus of their thoughts might be on the type of methodology used in the classroom as well as the student's perceived responsibility and autonomy in the evaluation process. Similarly, the findings may interest teachers who want to reflect on the need of student involvement in their learning process.

This study has some limitations and possibilities for improvement. Future research should implement other curricular contents to determine its impact on PE classes and use other measurement scales reflecting, for example, the level of motivation or attitude of the student. The use of a control group should be also considered; however, finding the appropriate controls for these types of studies also arises an ethical debate. Similarly, researchers could also assess the teacher's perception towards such methodological practices to determine whether perceptions change throughout the course after implementing the same methodology.

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