Journal of Physical Education and Sport ® (JPES), 18(2), Art 140, pp. 944 - 954, 2018
online ISSN: 2247 - 806X; p-ISSN: 2247 – 8051; ISSN - L = 2247 - 8051 © JPES

Original Article

A rubric to assess the teaching competency using motor skills and body language games: initial development and validation

CARLOS CAPELLA-PERIS[1*], JESÚS GIL-GÓMEZ[2], AND ÒSCAR CHIVA-BARTOLL[3]
[1,2,3,]Department of Education, Universitat Jaume I, Castellón, SPAIN
[1]Department of Health, Physical Education, Recreation, and Dance, Morgan State University, USA

Published online: June 30, 2018
(Accepted for publication June 09, 2018)
DOI:10.7752/jpes.2018.02140

Abstract
This paper develops and validates an instrument to assess Teaching Competency in Physical Education, specifically while performing sessions of motor skills and body language games with children. A literature review highlights the great value of such competency and of implementing these activities in Physical Education during early childhood. The benefits of using rubrics in this field are also discussed. Following the curricular guidelines of the application context, the first version of the Teaching Competency while performing Motor Skills and Body Language Games Rubric (TC/MSBLG-R) was proposed. Elements of the instrument were reviewed critically by using expert judgement (n = 6) to ensure the high quality, relevance, and comprehensibility of the TC/MSBLG-R items and correct feature association. The excellent results obtained from the pilot test (n = 333) reinforced the curricular foundations, and the validity and reliability of the rubric was proved (Cronbach's alpha = .955). An Exploratory Factor Analysis proposed a set of categories consistent with the initial approach, and a Confirmatory Factor Analysis showed acceptable relationships among the rubric categories and items. The fit indices suggested that the data fit adequately to the default model (χ^2/df = 2.901, Root Mean square Residual = .06; Root Mean Square Error of Approximation = .076), and a Pearson's correlation test verified that there were positive significant correlations among the proposed categories. Therefore, the rubric has shown good results in this validation process and carries the potential to promote Teaching Competency while implementing sessions of motor skills and body language games in many ways and contexts.
Keywords: Teaching Competency; Pre-service Teachers; Physical Education assessment; Rubric validation and development; Motor skills and body language Games.

Introduction

The interest in competency-based education and training arose in the 1960s and 1970s as a result of several publications about organisational and teacher training programmes in the United States (Biemans, Nieuwenhuis, Poell, Mulder, & Wesselink, 2004). The growing importance of information, communication technology, and globalisation have heightened interest in competency-based education as a leading paradigm for innovation (Dochy & Nickmans, 2005).

Improving the Teaching Competency of Pre-service Teachers (PTs) is a critical element of initial teacher education programmes (Cheng, 2014). This competency is related to the acquisition and development of adequate skills, knowledge, attitudes, and experience to successfully perform professional teaching duties (McNamara, 1992). Teaching practices must be decisive to ensure the accurate development of Teaching Competency (Struyven, Blieck, & De Roeck, 2014); thus, most training programmes for PTs develop this competency through mandatory teaching practices. Darling-Hammond (2006) identified distinctive features that enable PTs to confront the challenges of teaching practices and to develop their Teaching Competency. The assessment of teaching performance involves the implementation of specific materials during evaluation processes; however, the reliable assessment of competency can be difficult due to the use of holistic approaches, specific nature of teaching, and the integration of knowledge, skills, and attitudes (Tigelaar, Dolmans, Wolfhagen, & Van der Vleuten, 2005).

Research on teacher training has revealed that teaching assessment offers meaningful learning experiences to teachers who take part in this process (Uhlenbeck, Verloop, & Beijaard, 2002). There is great teaching and learning value in these practices for PTs, and their training education should include assessments of several teaching activities. These practices should be focused not only on the assessment of their peers as teachers but also on their own performance. The tool proposed here is useful for assessing the Teaching Competency of PTs in Physical Education (PE) and to provide them with unique learning experiences. Very few studies have analysed the promotion of Teaching Competency in PE. We can highlight a research that examined

Corresponding Author CARLOS CAPELLA-PERIS., E-mail: capellac@uji.es

the perspectives of Slovenian PE teachers to assess their current and desired professional competencies (Kovač, Sloan, & Starc, 2008) and a comparative analysis of PE competencies among PTs in Poland (Buchta, 2012). Hence, research is crucial to advancing in this meaningful field, which is the goal of this paper.

Teaching strategies in PE commonly include games to promote learning in childhood education (Bühler, 1924; Caillois, 1961; Château, 1950; Claparéde, 1931; Elkonin, 1978; Gross, 1902; Huizinga, 1949; Moyles, 1989; Parlebas, 1986; Piaget, 1959). There is evidence that childhood is the optimal period in life for the promotion and development of coordinative motor skills (Bernstein, 1989; Hirtz & Starosta, 2002). Thus, it is crucial to ensure correct implementation of motor skills and body language games in childhood PE to develop children's motor skills. The proposed instrument specifically assesses the Teaching Competency of PE PTs while performing motor skills and body language games in childhood education. Few studies have addressed the development of children's motor skills throughout PE training and the effectiveness of related programmes, in terms of content, context, and teaching modality (Cothran, 2001). For example, during a nine-year period, a study of the effects of physical activity on motor skills and educational achievement in PEH was conducted to examine students' perceptions of physical, cognitive, and social involvement in physical activity lessons delivered in different teaching styles (Ericsson, 2011; Sanchez, Byra, & Wallhead, 2012) or through school-based interventions to improve health and fitness among children (McMurray et al., 2002; Thakor, Kumar, & Desai, 2004; Zahner et al., 2006). However, more research is needed to advance in this field.

A rubric is a document that describes varying levels of quality for a specific assignment (Andrade, 2000). In PE, rubrics provide criteria for correctly performing physical activities, guide students towards the attainment of educational goals, establish guidelines for evaluating performance, and outline rules that regulate the assessment of students (Lund, 2000). Rubrics clarify learning goals (Birky, 2012; Stiggins, 2001), guide instructional design and delivery (Arter & McTigue, 2001), make evaluation processes more accurate and fair (Mohnsen, 2006; Wolf & Stevens, 2007), provide students with a tool for self-assessment and peer feedback (Hafner & Hafner, 2004), and have the potential to advance learning expectations or assumptions about student tasks (Andrade & Du, 2005). Thus, rubrics have been used in PE to assess elementary metrics based on national standards (Dyson et al., 2011; Zhu et al., 2011), to analyse the effects of the Sport Education Model (Perlman & Goc Karpb, 2010), to assess the quality of PTs' and teachers' teaching practices (Chen, Hendricks, & Archibald, 2011; Chen, Mason, Staniszewski, Upton, & Valley, 2012), to contrast the teaching efficacy of different instructional models on PTs (Cohen & Zach, 2013), and to compare the teaching practices of expert and novice teachers (Chen & Rovegno, 2000). Rubrics have been used to assess PTs and novice teachers' development and performance in other areas as well (Edwards, 2017); thus, rubrics are an effective way to assess the Teaching Competency in PE.

To create a rubric, it is necessary to establish learning goals and assessment criteria, distinguish between project or skill assessments, and introduce the rubric to students, who must learn how to use (Gallo, 2004). Therefore, the specific steps to create a rubric are identifying performance criteria, setting performance levels, creating performance descriptors (Wolf & Stevens, 2007), applying the rubric, and reviewing its effectiveness to know if is necessary to make modifications (Wang & Rairigh, 2006). Thus, these processes were performed in the present study to develop and validate a rubric, as shown in the next sections.

Materials and Methods

Main Goal

Because research about assessing the Teaching Competency in PE is limited and the great value of using games in this field, the specific objective of this work was to develop and validate an instrument for assessing the Teaching Competency while implementing motor skills and body language games.

Procedures

According to previous works (Alfrey, O'Connor, Phillipson, Penney, Jeanes, & Phillipson, 2017; Cumming, Woodcock, Cooley, Holland, & Burns, 2015; Denson & Bowman, 2015; Perry, Nicholls, Clough, & Crust, 2015; Richards, Gaudreault, & Woods, 2017; Rossato, Uphill, Swain, & Coleman, 2016; Wang, Shen, Luo, Hu, & Garn, 2018) and the main recommendations in this field (Comrey, 1978; Cronbach, 1951; Hoyle, 1995; Kline, 2005; Pearson, 1948) the next processes were performed: theoretical foundation, initial rubric proposal, expert judgement (logical review), pilot test (empirical review), Exploratory Factor Analysis (EFA), and Confirmatory Factor Analysis (CFA). Thus, all statistical tests and the EFA were conducted using the SPSS software (version 24.0). To perform the CFA, the AMOS software (version 24.0) was used.

Participants

Three PE and three Higher Education experts took part in a logical review of the rubric (50% females; n = 3, 50% males, n = 3; mean age = 38.73, standard deviation (SD) = 4.62). The empirical review assessed individual sessions of motor skills and body language games performed in PE by 333 PTs from a Spanish university (96.9% females, n = 323; 3.1% males, n = 10; mean age = 21.56, SD = 3.83).

Theoretical foundation and initial rubric proposal

To establish a theoretical foundation, curriculum guidelines for the academic course were followed, and the rubric was initially implemented based on this context. These guidelines determined that the PTs should develop specific competencies to achieve learning outcomes in this field (Table 1).

Table 1. Competencies and learning outcomes from the curriculum guidelines

Code	Competencies and learning outcomes
C1	Arrange educational activities based on the progressive integration of students (e.g., adaptation, cohesion, consolidation, etc.)
C2	Promote body language to achieve better communication and to develop social skills
C3	Implement symbolic and role-playing games to promote knowledge of social issues
C4	Create suitable motor skill proposals for several age groups during the childhood stage
C5	Develop habits of personal autonomy and compliance with coexistence rules
C6	Select suitable materials and locations to perform motor skills games with children
C7	Use games as a main teaching resource, and design learning activities based on ludic terms
O1	Apply a wide range of body language proposals
O2	Design motor skills and body language activities within the curriculum for the childhood stage
O3	Promote values through motor skills games and body language activities to children (e.g., cooperation, solidarity, respect, etc.)
O4	Develop movement and body language activities that are appropriate to children's needs
O5	Implement motor skills games that effectively aid the attainment of educational goals
O6	Use movement as a tool for learning and socialisation and understand its relevance during the childhood stage

According to these competencies and outcomes, a list of features was proposed to assess Teaching Competency while performing motor skills and body language games. Several of these features were verified to be included in previous scales: efficacy for teaching PE, assessment, taking care of special needs, organisational resources, motivation, preparation, communication, students' engagement, instructional delivery, class management, content knowledge, diversity, and understanding, planning and implementation (Buns & Thomas, 2015; Gencay, 2015; Humphries, Hebert, Daigle, & Martin, 2012; Zhang & Chen, 2017). Thus, the nomological validity of the proposal was ensured based on relationships with other constructs in accordance with a relevant, broader theory (Cronbach & Meehl, 1955). Finally, an initial proposal was created to carry out the validation process. This first version of the Teaching Competency while performing Motor Skills and Body Language Games Rubric (TC/MSBLG-R) had 60 items.

Expert judgement

We underwent a logical review to assess the construct validation. An expert judgement was used to develop the process. To do this, PE and Higher Education experts (n = 6) rated four aspects for all items: quality, relevance, comprehensibility, and category association. Through this process, the second version of the TC/MSBLG-R was reduced from 60 to 40 items, distributed into ten categories of common features. Despite the reduction of items, all competencies and learning outcomes remained represented in the rubric (Table 2).

Table 2. Representation of competencies and learning outcomes in the TC/MSBLG-R

Categories	**Competencies**	**Learning Outcomes**
1- Adjustment of games to students	C4	O2, O4
2- Game presentation (explanation)	C4, C7	O4
3- Student organisation	C4, C5, C7	O4
4- Equipment organisation	C6	O2, O5
5- Space–time organisation	C6	O2, O5
6- Curricular adaptation	C4, C7	O2, O4, O5
7- Social features	C1, C2, C3	O3, O6
8- Motor skill games	C4, C7	O4, O5, O6
9- Body language games	C2, C3, C7	O1, O4
10- Other learnings	C1, C4, C7	O1, O5

Data Analysis

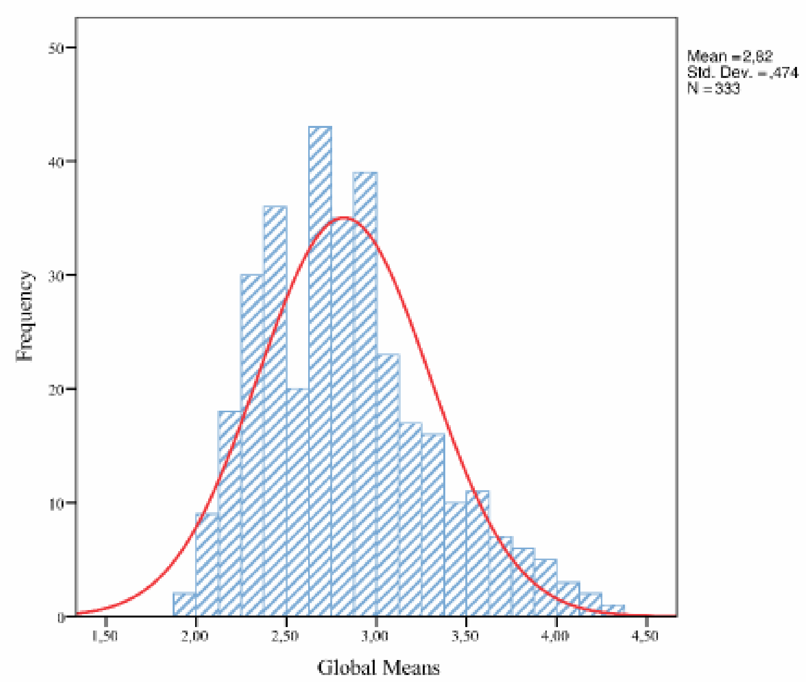
First, Cronbach's alpha, Kaiser–Meyer–Olkin (KMO), and Bartlett tests were used to analyse the reliability of the scale and whether the items were related strongly enough to conduct the factor analysis (Comrey, 1978; Cronbach, 1951). Then, the EFA was performed using the extraction method of principal component analysis. The rotation method used in this test was the Oblimin with Kaiser Normalisation. Later, the reliability test was applied again to analyse the new categories. Finally, to assess the distribution proposed in the EFA, a CFA was conducted using a range of fit indices to judge model adequacy, including Root Mean square Residual, Root Mean Square Error of Approximation, Incremental Fit, Tucker–Lewis, Relative Chi-square, and Comparative Fit indices (Hoyle, 1995; Kline, 2005). Finally, a Pearson's correlation test was performed to analyse correlations among the new categories (Pearson, 1948).

Results

Pilot Test

Throughout the pilot test, an empirical review of the TC/MSBLG-R was conducted to perform the EFA and CFA. During this procedure, the second version of the rubric was implemented using a large sample of PE PTs (n = 333) who performed sessions of motor skills and body language games. A five-point Likert scale, from 1 (very poor) to 5 (very good), was included to rate the performance of the students for each item. Then, descriptive statistics for all items (mean and SDs) were extracted. The lowest mean obtained was M = 2.06, SD = 1.086 (item d2) and the highest means were M = 3.44, SD = .616 and M = 3.44, SD = .607 (items b8 and c8, respectively). These data showed that the PTs properly encouraged their Teaching Competency during the course. Later, an analysis of the distribution for the global sample was conducted by extracting a histogram from the collected data. These data had a normal distribution with a high total mean of M = 2.82, SD = .474 for the entire sample (Figure 1).

Figure 1. Histogram from the pilot test.



Cronbach's alpha was applied to analyse the reliability of the TC/MSBLG-R items (Cronbach, 1951). This test revealed excellent reliability (α > 0.9) for the initial scale, α = .955; thus, the TC/MSBLG-R is reliable. There were not significant variations when individual items were deleted, in terms of total value: 0.953 in the lowest cases (if deleting items b3, c6, d6, a9, c9, d9, or b10) and 0.957 in the highest one (if deleting item a8). In both cases, reliability outcomes were excellent. These results prove that all included items are important to assess the Teaching Competency in PE when implementing motor skills and body language games.

Then, it was verified whether the items were related strongly enough to conduct a factor analysis by executing the KMO Measure of Sampling Adequacy and Bartlett's test of Sphericity, respectively (Comrey, 1978). The closer to 1 the KMO value is, the more similar are the variances of the items. A high value of 0.918 was obtained for the KMO test, which is a satisfactory result. The Bartlett test outcomes also indicated a significant common ground among the items (significance level $p < .05$), because it was obtained a result of χ^2 (780) = 12225.026, p = .000. Based on these findings, the collected data from the TC/MSBLG-R met all the requirements to proceed with the factor analysis.

Exploratory Factor Analysis

To understand the internal structure of the TC/MSBLG-R, an EFA was performed to categorise items. The EFA was conducted using the extraction method of principal component analysis. The rotation method used was the Oblimin with Kaiser normalisation, which converged in 17 interactions and showed ten main category groups that explained 77.2% of the cumulative variance. Regarding the extraction of common factors, the items were distributed into ten main groups (Table 3). This distribution was consistent with the initial, curricular-based approach.

Table 3. Rotated component matrix from the EFA

Item	*Component*									
	1	2	3	4	5	6	7	8	9	10
a8	-.770									
d8	-.575									
b7		.949								
c7		.933								
d7		.929								
a7		.608								
c9			-.949							
d9			-.949							
a9			-.932							
b9			-.916							
d2			-.667							
d10			-.501							
c8				.945						
b8				.941						
b6					-.950					
a6					-.934					
c6					-.865					
d6					-.829					
c1					-.489					
a4						.881				
b4						.879				
d4						.732				
c4						.638				
b10						.593				
a10						.575				
a1							.866			
b1							.833			
d1							.714			
b3							.646			
a3							.616			
c3							.588			
a2								.851		
c2								.830		
b2								.791		
d3								.538		
d5									.888	
c5									.886	
b5										.930
a5										.921
c10										.685

To examine the location of the items, a component plot in a rotated space graphic was extracted from the collected data. The results displayed the specific location of each item after the rotation was performed during the EFA, showing that the items were closely related (Figure 2).

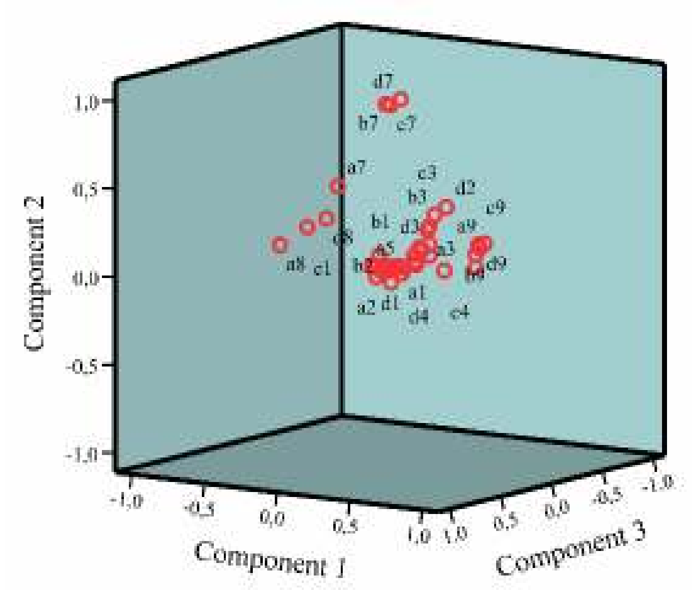


Figure 2. Component plot in a rotated space graphic from the EFA

Despite obtaining the same number of categories in this new distribution, compared to the initial organisation proposal (ten), the structure of the categories after the EFA differed slightly from the original proposal. However, this new distribution of items and categories was balanced, and the TC/MSBLG-R was reorganised according to the EFA results. Despite this reorganisation, the items from all original categories remained strongly related or were split in new coherent categories, apart from the items of category 10. The items from this category included several global aspects, so they could be moved to new categories without meaningful alterations. For this reason, all changes proposed based on the EFA were accepted without discussion. In addition, the fact that there were no significance changes in the new distribution of categories supported the proposal.

To finalize the EFA, a reliability test of the proposed categories was conducted. The reliability was found to be acceptable ($\alpha \geq .70$) for New Category 1; good ($\alpha \geq .80$) for New Categories 2, 5, 6, 7, 8, and 10; and excellent ($\alpha \geq .90$) for New Categories 3, 4, and 9, when taking into account analysis level and the reduced number of items included in each case (Table 4).

Table 4. Results of the reliability test for second order factors from the EFA

Second order factor	Cronbach's Alpha	Items
New Category 1	.771	2
New Category 2	.884	4
New Category 3	.920	6
New Category 4	.960	2
New Category 5	.890	5
New Category 6	.873	6
New Category 7	.862	6
New Category 8	.812	4
New Category 9	.954	2
New Category 10	.872	3

Confirmatory Factor Analysis

This process verifies whether the data fit a hypothesised measurement model (default model). The goal of this procedure was thus to demonstrate the consistency of the new distribution proposed. Globally, the path diagram showed acceptable relationships among the factors (categories) and items analysed in the new model (Figure 3).

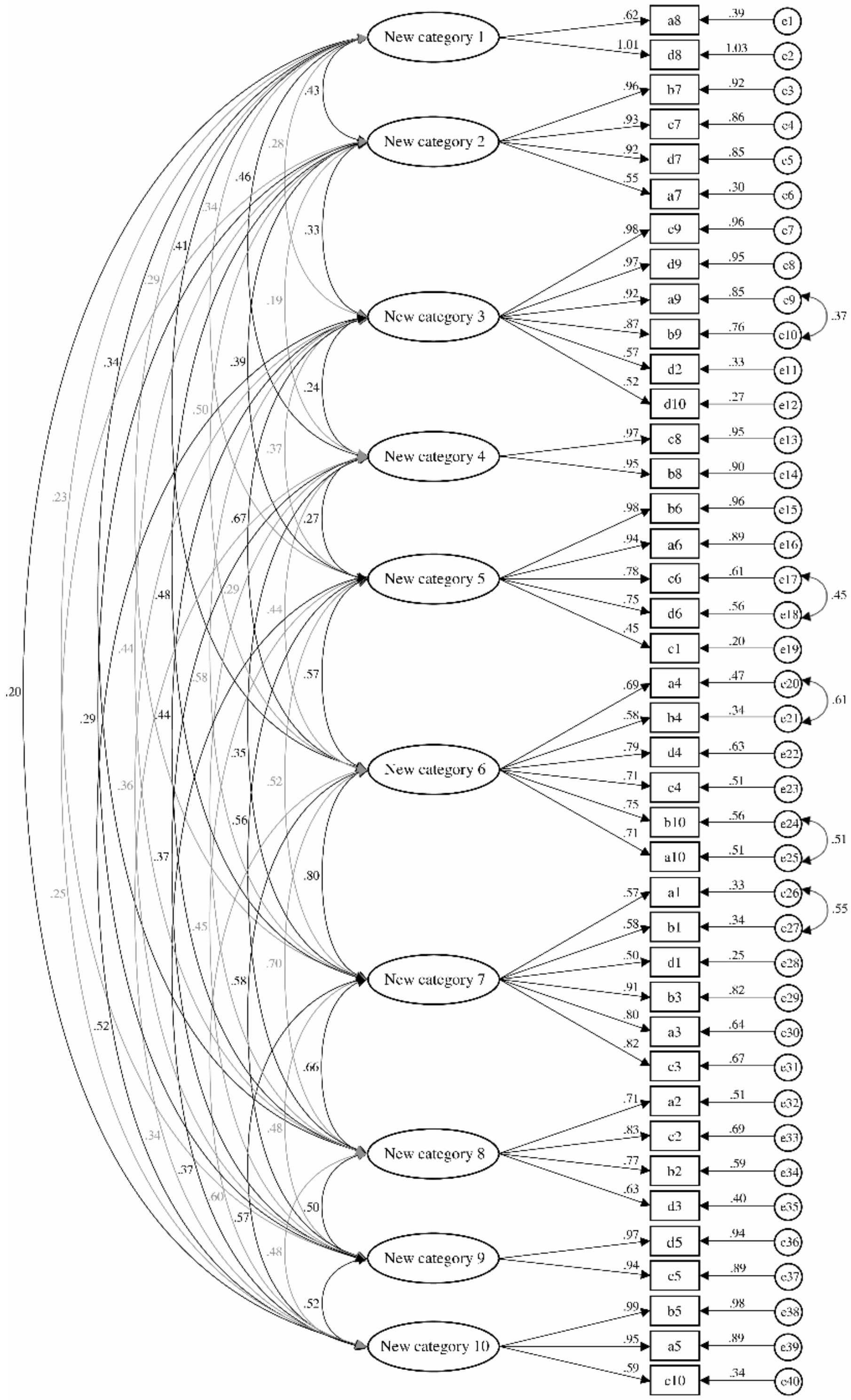


Figure 3. Path diagram from the CFA

Based on Hoyle (1995) and Kline (2005), a range of fit indices were used to judge model adequacy, including Root Mean square Residual (RMR < .08) and Root Mean Square Error of Approximation (RMSEA < .08) indices as absolute fit indices; the Incremental Fit Index (IFI > .90) and Tucker–Lewis Index (TLI > .90) as incremental indices; and the Relative Chi-square index (χ^2/df < 4) and Comparative Fit Index (CFI > .90) as relative fit indices (Table 5).

Table 5. Fit indices resulting from the CFA

RMR	*RMSEA*	*IFI*	*TLI*	χ^2/df	*CFI*
.06	.076	.891	.876	2.901	.891

The Relative Chi-square, RMR, and RMSEA indices showed excellent, good, and acceptable outcomes, respectively, and the IFI, TLI, and CFI indices gave results that were very close to reference levels. Thus, the data fit adequately to the default model of distribution. Finally, Person's test was conducted to evaluate the linear correlation among the new categories, which showed that there were positive significant correlations (p <

.05) among the new categories in all cases (Pearson, 1948). The correlation levels in these comparisons were very low ($.0 \le r_p < .2$) in five cases; low ($.2 \le r_p < .4$) in 16 cases; moderate ($.4 \le r_p < .6$) in 19 cases; and high ($.6 \le r_p < .8$) in five cases. In addition, the significance level was $p = .000$ in most of the cases (42), with only three cases having a value of $p < .05$. After the development and validation processes, the items and categories included on the rubric were ordered and re-numbered according to the EFA and CFA to present the final version of the TC/MSBLG-R (Table 6). This process did not change the internal structure of the new model of distribution at all.

Table 6. Teaching Competency while performing Motor Skills and Body Language Games Rubric (TC/MSBLG-R)

Categories and aspects	Very poor 1	Poor 2	Average 3	Good 4	Very good 5
1. Teacher organisation and game adjustment					
1a) Age	1	2	3	4	5
1b) Period	1	2	3	4	5
1c) Safety	1	2	3	4	5
1d) Roles distribution	1	2	3	4	5
1e) Participation	1	2	3	4	5
1f) Group/individual tasks	1	2	3	4	5
2. Game presentation and rule compliance					
2a) Description	1	2	3	4	5
2b) Rules understanding	1	2	3	4	5
2c) Structure	1	2	3	4	5
2d) Control of compliance rules	1	2	3	4	5
3. Equipment, originality, and ludic value					
3a) Equipment use	1	2	3	4	5
3b) Equipment variety	1	2	3	4	5
3c) Equipment distribution	1	2	3	4	5
3d) Equipment optimisation	1	2	3	4	5
3e) Ludic value	1	2	3	4	5
3f) Innovation and originality	1	2	3	4	5
4. Time organisation and game variety					
4a) Time balance	1	2	3	4	5
4b) Time optimisation/adaptation	1	2	3	4	5
4c) Game variety	1	2	3	4	5
5. Space organisation					
5a) Space balance	1	2	3	4	5
5b) Space optimisation/adaptation	1	2	3	4	5
6. Curricular adaptation to educational needs					
6a) Goal achievement	1	2	3	4	5
6b) Goal–content relationship	1	2	3	4	5
6c) Activity progression	1	2	3	4	5
6d) Educational value	1	2	3	4	5
6e) Educational needs adjustment	1	2	3	4	5
7. Social features					
7a) Transmission of social values	1	2	3	4	5
7b) Coexistence rules	1	2	3	4	5
7c) Cohesion/integration promotion	1	2	3	4	5
7d) Diversity outreach	1	2	3	4	5
8. Global features in motor skills games					
8a) Global coordination	1	2	3	4	5
8b) Gross motor skills	1	2	3	4	5
9. Specific features of motor skills games					
9a) Fine motor skills	1	2	3	4	5
9b) Specific coordination	1	2	3	4	5
10. Body language games and assessment					
10a) Expression activities	1	2	3	4	5
10b) Corporal communication	1	2	3	4	5
10c) Roles representation	1	2	3	4	5
10d) Symbolism	1	2	3	4	5
10e) Representation (visual description)	1	2	3	4	5
10f) Activities assessment	1	2	3	4	5

Discussion and Conclusions

After a literature review was conducted, improving the Teaching Competency of PTs was understood to be a critical element of initial programmes in Teacher Education (Cheng, 2014). This competency is needed to successfully perform teaching roles (McNamara, 1992), and its assessment faces several challenges (Tigelaar et al., 2005), although it offers meaningful learning experiences for teachers (Uhlenbeck et al., 2002). Using games is the most common and useful way to promote learning in Childhood Education (Caillois, 1961; Château, 1950; Claparéde, 1931; Gross, 1902; Huizinga, 1949; Parlebas, 1986; Piaget, 1959), especially for teaching PE; however, very few studies have explored these topics. The current proposal promotes research and knowledge in this field.

Due to the benefits of using rubrics in education (Andrade & Du, 2005; Arter & McTigue, 2001; Birky, 2012; Hafner & Hafner, 2004; Mohnsen, 2006; Stiggins, 2001; Wolf & Stevens, 2007), this rubric is a valuable tool to assess the Teaching Competency in PE. In addition, the processes implemented to develop and validate this instrument were performed following the methodologies of similar works (Alfrey et al., 2017; Cumming et al., 2015; Denson & Bowman, 2015; Perry et al., 2015; Richards et al., 2017; Rossato et al., 2016; Wang et al., 2018) and the main recommendations in this field (Comrey, 1978; Cronbach, 1951; Hoyle, 1995; Kline, 2005; Pearson, 1948). The guidelines for creating rubrics were also followed (Gallo, 2004; Wang & Rairigh, 2006; Wolf & Stevens, 2007), which strengthens the value of the TC/MSBLG-R and ensures its use for a wide range of applications.

The filtering process was undertaken using expert judgement to ensure the high quality, relevance, and comprehensibility of the items in the TC/MSBLG-R, as well as the correct association of features. Despite the reduction of items and the changes performed, no significance modifications were applied to the original proposal, which highlights the strong curricular support of the rubric and the appropriate selection of features for assessing the Teaching Competency while performing motor skills and body language games.

Statistically, the excellent results obtained in the pilot test reinforced the theoretical foundation of the rubric, and the TC/MSBLG-R yielded excellent reliability scale values in the Cronbach's alpha test, without significant variations when individual items were deleted. The KMO and Bartlett tests resulted in an excellent score and significant results, respectively, verifying that the items were related strongly enough to conduct the factor analysis. The EFA of the TC/MSBLG-R structure determined that the items should be distributed into ten categories, which was consistent with the initial (curricular-based) approach, prompting few variations from the original proposal. The new distribution was easy to understand, with no significance variations from the first version, which validated the TC/MSBLG-R structure. In addition, the level of reliability for the new categories was good. The CFA tested the TC/MSBLG-R structure on a deeper level, and the results showed acceptable relationships among categories and items. The absolute, incremental, and relative fit indices resulted in excellent, good, and acceptable results for the χ^2/df, RMSEA, and RMR tests, respectively; thus, it was concluded that the data were well fit to the default model of distribution. Finally, the Pearson's correlation test verified that there were positive and significant correlations among the new categories in all cases. Altogether reinforced the TC/MSBLG-R structure.

In conclusion, a process was designed to develop and validate a useful rubric for assessing the Teaching Competency while performing sessions of motor skills and body language games with children, achieving the initial goal of this work. Regarding educational implications, this instrument is valuable to the assessment and training processes of PTs in PE courses. In addition, the rubric promotes the production of new quantitative studies and academic progress in this field. Considering the outstanding results obtained and the strong curricular foundation, the TC/MSBLG-R is a useful tool for measuring Teaching Competency in different PE courses and social contexts.

References

Alfrey, L., O'Connor, J., Phillipson, S., Penney, D., Jeanes, R., & Phillipson, S. (2017). Attitudes of pre-service physical education teachers to healthism: Development and validation of the Attitude Towards Healthism Scale (ATHS). *European Physical Education Review,* 1–15. http://doi.org/10.1177/1356336X17742665

Andrade, H. G. (2000). Using Rubrics to Promote Thinking and Learning. *Educational Leadership, 57*(5), 13-18.

Andrade, H. G., & Du, Y. (2005). Student perspectives on rubric-referenced assessment. *Practical Assessment, Research & Evaluation, 10*(3), 1-11.

Arter, J., & McTighe, J. (2001). *Scoring Rubrics in the Classroom*. Thousand Oaks, CA: Corwin Press.

Bernstein, N. A. (1989). *Fisiologia del movimento*. Roma: Societa` Stampa Sportiva.

Biemans, H., Nieuwenhuis, L., Poell, R., Mulder, M., & Wesselink, R. (2004). Competence-based VET in the Netherlands: Background and pitfalls. *Journal of Vocational Education and Training, 56*(4), 523-538.

Birky, B. (2012). Rubrics: A Good Solution for Assessment. *Strategies: A Journal for Physical and Sport Educators, 25*(7), 19-21. http://doi.org/10.1080/08924562.2012.10590978

Buchta, K. (2012). The Competences of Physical Education Students. Unified Versus Two-Tier University Studies. *Polish Journal of Sport and Tourism, 19*, 151-154. http://doi.org/10.2478/v10197-012-0015-0

Bühler, K. (1924). *The mental development of child.* New York, NY: Harcourt.

Buns, M. T., & Thomas, K. T. (2015). Validation of the Physical Education Teacher's Efficacy for Standards-Based Instruction (ESBI) Scale. *Advances in Physical Education, 5*, 152-160. http://doi.org/10.4236/ape.2015.53019

Caillois, R. (1961). *Men, play and games.* New York, NY: Free Press of Glencoe.

Château, J. (1950). *L'Enfant et le jeu.* Paris: Scarabée.

Chen, W., & Rovegno, I. (2000). Examination of Expert and Novice Teachers' Constructivist-Oriented Teaching Practices Using a Movement Approach to Elementary Physical Education. *Research Quarterly for Exercise and Sport, 71*(4), 357-372. http://doi.org/10.1080/02701367.2000.10608919

Chen, W., Hendricks, K., & Archibald, K. (2011). Assessing preservice teachers' quality teaching practices. *Educational Research and Evaluation, 17*(1), 13-32. http://doi.org/10.1080/13803611.2011.578008

Chen, W., Mason, S., Staniszewski, C., Upton, A., & Valley, M. (2012). Assessing the quality of teachers' teaching practices. *Educational Assessment, Evaluation and Accountability, 24*(1), 25-41. http://doi.org/10.1007/s11092-011-9134-2

Cheng, E. C. K. (2014). Learning Study: nurturing the instructional design and teaching competency of pre-service teachers. *Asia-Pacific Journal of Teacher Education, 42*(1), 51-66. http://doi.org/10.1080/1359866X.2013.869546

Claparéde, E. (1931). *L'éducation fonctionnelle.* Neuchâtel, Paris: Delachaux & Niestlé.

Cohen, R., & Zach, S. (2013). Building pre-service teaching efficacy: a comparison of instructional models. *Physical Education and Sport Pedagogy, 18*(4), 376-388. http://doi.org/10.1080/17408989.2012.690374

Comrey, A. L. (1978). Common methodological problems in factor analytical studies'. *Journal of Consulting and Clinical Psychology, 46*(4), 648-659. http://doi.org/10.1037/0022-006X.46.4.648

Cothran, D. J. (2001). Curricular Change in Physical Education: Success Stories from the Frontline. *Sport, Education and Society, 6*(1), 67-79. http://doi.org/10.1080/713696038

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297-334. http://doi.org/10.1007/BF02310555

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin, 52*(4), 281-302. http://doi.org/10.1037/h0040957

Cumming, J., Woodcock, C., Cooley, S. J., Holland, M. J. G., & Burns, V. E. (2015). Development and validation of the groupwork skills questionnaire (GSQ) for higher education. *Assessment & Evaluation in Higher Education, 40*(7), 988-1001. http://doi.org/10.1080/02602938.2014.957642

Darling-Hammond, L. (2006). *Powerful teacher education: Lesson for exemplary programs.* San Francisco, CA: Jossey-Bass.

Denson, N., & Bowman, N. (2015). The development and validation of an instrument assessing student-institution fit. *Assessment & Evaluation in Higher Education, 40*(8), 1104-1122. http://doi.org/10.1080/02602938.2014.970513

Dochy, F., & Nickmans, G. (2005). *Competentiegericht opleiden en toetsen. Theorie en praktjik van flexibel leren.* Utrecht: Lemma.

Dyson, B., Placek, J. H., Graber, K. C., Fisette, J. L., Rink, J., Zhu, W., … Park, Y. (2011). Development of PE Metrics Elementary Assessments for National Physical Education Standard 1. *Measurement in Physical Education and Exercise Science, 15*(2), 100-118. http://doi.org/10.1080/1091367X.2011.568364

Edwards, F. (2017). A rubric to track the development of secondary pre-service and novice teachers' summative assessment literacy. *Assessment in Education: Principles, Policy & Practice, 24*(2), 205-227. http://doi.org/10.1080/0969594X.2016.1245651

Elkonin, D. B. (1978). *Psikhologiya igry.* Moscow: Pedagogika.

Ericsson, I. (2011). Effects of Increased Physical Activity on Motor Skills and Marks in Physical Education: An Intervention Study in School Years 1 through 9 in Sweden *Physical Education and Sport Pedagogy, 16*(3), 313-329. http://doi.org/10.1080/17408989.2010.545052

Gallo, A. M. (2004). 5 Simple Steps to Designing a Rubric. *Strategies: A Journal for Physical and Sport Educators, 17*(5), 21-24. http://doi.org/10.1080/08924562.2004.11000360

Gencay, O. A. (2015). Teacher efficacy of Turkish Physical Education teachers. *Educational Research and Reviews, 10*(9), 1354-1360. http://doi.org/10.5897/ERR2015.2191

Gross, K. (1902). *The play of animals.* New York: Appleton.

Hafner, J. C., & Hafner, P. M. (2004). Quantitative analysis of the rubric as an assessment tool: An empirical study of student peer- group rating. *International Journal of Science Education, 25*(12), 1509-1528. http://doi.org/10.1080/0950069022000038268

Hirtz, P., & Starosta, W. (2002). Sensitive and Critical Periods of Motor Co-ordination Development and Its Relation to Motor Learning. *Journal of Human Kinetics, 7*, 19-28.

Hoyle, R. H. (1995). *Structural equation modeling: Concepts, issues, and applications.* London: Sage.

Huizinga, J. (1949). *Homo ludens. A study of the play-element in culture.* London, UK: Routledge and Kegan Paul.

Humphries, C. A., Hebert, E., Daigle, K., & Martin, J. (2012). Development of a Physical Education Teaching Efficacy Scale. *Measurement in Physical Education and Exercise Science, 16*(4), 284-299. http://doi.org/10.1080/1091367X.2012.716726

Kline, R. (2005). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: The Guildford Press.

Kovač, M., Sloan, S., & Starc, G. (2008). Competencies in physical education teaching: Slovenian teachers' views and future perspectives. *European Physical Education Review, 14*(3), 299-323. http://doi.org/10.1177/1356336X08095668

Lund, J. L. (2000). *Creating rubrics for physical education. Physical education teacher preparation assessment series.* Reston, VA: National Association for Sport and Physical Education.

McMurray, R. G., Harrell, J. S., Bangdiwala, S. I., Bradley, C. B., Deng, S., & Levine, A. (2002). A School-Based Intervention Can Reduce Body Fat and Blood Pressure in Young Adolescents. *Journal of Adolescent Health, 31*(2), 125-132. http://doi.org/10.1016/S1054-139X(02)00348-8

McNamara, D. (1992). The reform of teacher education in England and Wales: Teacher competence; panacea or rhetoric? *Journal of Education for Teaching, 18*(3), 273-286. http://doi.org/10.1080/0260747920180305

Mohnsen, B. (2006). Assessment and Grading in Physical Education. *Strategies: A Journal for Physical and Sport Educators, 20*(2), 24-28. http://doi.org/10.1080/08924562.2006.10590709

Moyles, J. R. (1989). *Just playing? Role and status of play in early childhood education.* Philadelphia, PA: Open University Press.

Parlebas, P. (1986). *Eléments de sociologie du sport.* Paris: Presses Universitaires de France.

Pearson, K. (1948). *Early Statistical Papers.* Cambridge: University Press.

Perlman, D., & Goc Karp, G. (2010). A self-determined perspective of the Sport Education Model. *Physical Education and Sport Pedagogy, 15*(4), 401-418. http://doi.org/10.1080/17408980903535800

Perry, J. L., Nicholls, A. R., Clough, P. J., & Crust, L. (2015). Assessing Model Fit: Caveats and Recommendations for Confirmatory Factor Analysis and Exploratory Structural Equation Modeling. *Measurement in Physical Education and Exercise Science, 19*(1), 12-21. http://doi.org/10.1080/1091367X.2014.952370

Piaget, J. (1959). *The language and thought of the child.* London, UK: Routledge and Kegan Paul.

Richards, K. A. R., Gaudreault, K. L., & Woods, A. M. (2017). Understanding physical educators' perceptions of mattering: Validation of the Perceived Mattering Questionnaire – Physical Education. *European Physical Education Review, 23*(1), 73–90. http://doi.org/10.1177/1356336X16637320

Rossato, C. J. L., Uphill, M. A., Swain, J., & Coleman, D. A. (2016). The development and preliminary validation of the Challenge and Threat in Sport (CAT-Sport) Scale. *International Journal of Sport and Exercise Psychology,* 1-14. http://doi.org/10.1080/1612197X.2016.1182571

Sanchez, B., Byra, M., & Wallhead, T. L. (2012). Students' Perceptions of the Command, Practice, and Inclusion Styles of Teaching. *Physical Education and Sport Pedagogy, 17*(3), 317-330. http://doi.org/10.1080/17408989.2012.690864

Stiggins, R. (2001). *Student-Involved Classroom Assessment* (3rd ed.). New York, NY: Merrill.

Struyven, K., Blieck, Y., & De Roeck, V. (2014). The electronic portfolio as a tool to develop and assess pre-service student teaching competences: Challenges for quality. *Studies in Educational Evaluation, 43,* 40-54. http://doi.org/10.1016/j.stueduc.2014.06.001

Thakor, H. G., Kumar, P., & Desai, V. K. (2004). Effect of Physical and Mental Activity on Blood Pressure. *Indian Journal of Pediatrics, 71*(4), 307-12. http://doi.org/10.1007/BF02724095

Tigelaar, D., Dolmans, D., Wolfhagen, I., & Van der Vleuten, C. L. (2005). Quality issues in judging portfolios: Implications for organizing teaching portfolio assessment procedures. *Studies in Higher Education, 30,* 595-610. http://doi.org/10.1080/03075070500249302

Uhlenbeck, A. M., Verloop, N., & Beijaard, D. (2002). Requirements for an assessment procedure for beginning teachers: implications form recent theories on teaching and assessment. *Teachers College Record, 104*(2), 242-272.

Wang, J., & Rairigh, R. M. (2006). Using Instructional Rubrics in Physical Education. *Teaching Elementary Physical Education, 17*(3), 37-41.

Wang, J., Shen, B., Luo, X., Hu, Q., & Garn, A. C. (2018). Validation of a Teachers' Achievement Goal Instrument for Teaching Physical Education. *Journal of Teaching in Physical Education, 37*(1), 91-100. http://doi.org/10.1123/jtpe.2016-0210

Wolf, K., & Stevens, E. (2007). The role of Rubrics in Advancing and Assessing Student Learning. *The Journal of Effective Teaching, 7*(1), 3-14.

Zahner, L., Puder, J. J., Roth, R., Schmid, M., Guldimann, R., & Puhse, U. (2006). A School-Based Physical Activity Program to Improve Health and Fitness in Children Aged 6–13 Years ("Kinder-Sportstudie KISS"): Study Design of a Randomized Controlled Trial. *BMC Public Health, 6,* 147-158. http://doi.org/10.1186/1471-2458-6-147

Zhang, T., & Chen, A. (2017). Developing a Psychometric Instrument to Measure Physical Education Teachers' Job Demands and Resources. *Measurement in Physical Education and Exercise Science, 21*(3), 142-153. http://doi.org/10.1080/1091367X.2017.1308948

Zhu, W., Fox, C., Park, Y., Fisette, J. L., Dyson, B., Graber, K. C., … Raynes, D. (2011). Development and Calibration of an Item Bank for PE Metrics Assessments: Standard 1. *Measurement in Physical Education and Exercise Science, 15*(2), 119-137. http://doi.org/10.1080/1091367X.2011.568366