

## CONSTRUCTION OF A LEARNING SCALE FOR POSTMODERN PHYSICAL EDUCATION LESSONS

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### ABSTRACT

*Postmodernism advocates the removal of old concepts to generate new thinking and is applied to the physical education ideas of self-reflection and self-awareness, so that students can unleash their creative potential in sports, and experience new understanding and rich diversity. Consequently, not only must the PE teacher focus on the well-established teaching ideas, but also be broad-minded enough to accept diverse opinions and differences in learning. Therefore, this study constructed a physical education learning scale based on the conception of postmodernism to understand whether students are ready for the challenges of learning. A five-step process (literature collection, focus group discussions, in-depth interviews, exploratory factor analysis, and confirmatory factor analysis) was applied to construct a scale with good reliability and validity. First-order and second-order confirmatory factor analyses were carried out on the study results to confirm the four aspects of 'reflection', 'innovation', 'diversity', and 'criticism'. The 21 questions had good levels of fit and met the criteria for reliability and validity. An overview of the Learning Scale of Postmodern Physical Education (LSOPPE) can be used to drive curricular thinking among teachers and impact students' learning.*

**Keywords:** Postmodern; Physical education; Learning scale.

### INTRODUCTION

Physical education in schools has long focused on improving exercise techniques, but has overlooked the interests, needs and opinions of the students themselves regarding physical education (Larsson, 2018). However, in contrast to traditional ideas about physical education, postmodernism does not require a single-minded and elitist teaching approach towards seeking the truth. Postmodernism emphasises that knowledge is constructed from individual thoughts, consciousness and creativity (Cherryholmes, 1988). Therefore, from a postmodern perspective, physical education should focus on multiple ways of seeing and view the archive as dynamic, virtual and ever-evolving (Larsson, 2018).

Rationality has long been the core of modern education and knowledge must adhere to the rigid standards of science and objectivity. Nevertheless, as society enters into what is widely known as the post-industrial era, and various cultures stride towards the so-called

postmodernism, individual thoughts, consciousness and creativity will constitute the key components in the emergence of new knowledge (Cherryholmes, 1988). Postmodernism can be deemed as the continuation of modernism. By no means is the idea to dismiss the modern-day products, rather it is to contemplate, question and criticise existing ideologies and convictions in a bid to construct new and more pragmatic knowledge (Doll, 1993).

The significance of physical education, as postmodernism suggests, lies in generating a learning environment that embraces varied learning needs, thoughts and creativity to enhance students' innovation capability, reflective ability and critical thinking regarding sports knowledge and skills. This enables learners to constantly create new knowledge and cultures and apply them to their everyday lives, truly liberating them from the authority of knowledge and realising the ideology of 'people-oriented' education (Cherryholmes, 1988; Dowling *et al.*, 2015; Fyall & Metzler, 2019). Therefore, teachers and students should jointly devise the content and approach of physical education that are suitable for learning.

The learning environment of decentralisation so created emphasises the processes of unleashing students' potential and applying it to learning activities in physical education, satisfying students' learning needs while promoting the sustained cultivation of their creativity, critical thinking skills and reflective ability (Rittle-Johnson & Star, 2009; Zajda & Gamage, 2009; Oliver & Oesterreich, 2011; Schukajlow *et al.*, 2015; Ardolino *et al.*, 2016). Postmodern physical education content should contain four main qualities: diversity, innovation, criticism, and reflection (Foucault, 1984; Jameson, 1984; Lyotard, 1984; Hassan, 1987; Lather, 1991; Miller, 1997; Zajda & Gamage, 2009; Vargish, 2014).

Diversity advocates free and open thinking (Doll, 1993), posing new challenges for traditional teaching content, that is, students and teachers should jointly create physical education content that is suitable for students. This non-teacher led learning environment (decentralisation) focusses on developing the creativity and potential of students and its course content is practised in physical education activities (Zajda & Gamage, 2009; Ardolino *et al.*, 2016).

In education, innovation refers to the process of reform, selection of the most suitable materials (forms, methods, measures, concepts or procedures) and realisation of these activities, that is, creation in teaching practice (Kavacık *et al.*, 2015; Jurgena & Ceder, 2016). Consequently, when appropriate, teachers should provide students with opportunities to express new ideas during the physical education process fully and encourage them to carry out brainstorming to jointly create relevant learning content and environments to seek better learning methods for physical education classes (Kavacık *et al.*, 2015; Jurgena & Ceder, 2016).

Physical education requires more concrete and critical pedagogical methods (Ruiz & Fernández-Balboa, 2005). Heijltjes *et al.* (2015) pointed out that the cultivation of critical thinking depends on a student-centred teaching method. This concept emphasises the importance of peer learning, accepting the opinions of others and teamwork. When this is combined with clarifying ideas, assessing the accuracy of information and inference-related abilities, students can use the evaluative nature of critical thinking to analyse any claim, source, or belief objectively to judge its accuracy, validity or worth (Shih *et al.*, 2017; Paul, 2018).

Postmodern education emphasises exercising creativity, particularly creative thinking and critical thinking. During structured reflection, students consciously consider and improve

individual understanding of knowledge and analyse their self-performance in their learning experiences (Sanders *et al.*, 2016). When appropriate, physical education teachers should employ reflective activities in teaching to improve students' understanding of relevant knowledge and skills, which, together with self-analysis and learning, can improve proactive learning attitudes and problem-solving abilities effectively (Landi *et al.*, 2016).

Postmodernism emphasises the removal of old concepts to generate new thinking (Cherryholmes, 1988; Doll, 1993) and is applied to the physical education ideas of diversity, innovation, criticism and reflection. Hence, this study aims at creating a new postmodern physical education learning scale, which will be useful in improving the breadth of relevant studies and actual learning effectiveness.

## METHODOLOGY

To ensure good scale reliability and validity, a five-step process in compiling the LSOPPE (Learning Scale of Postmodern Physical Education) was applied. The five steps comprised the literature collection, focus group discussions, in-depth interviews, an exploratory factor analysis (EFA), and confirmatory factor analysis (CFA). Both qualitative and quantitative designs were adopted to compile the optimal scale items progressively.

### Literature survey

First, papers on postmodernism (Foucault, 1984; Jameson, 1984; Lyotard, 1984; Hassan, 1987; Cherryholmes, 1988; Lather, 1991; Doll, 1993; Miller, 1997; Vargish, 2014; Shih *et al.*, 2017; Larsson, 2018) were searched as part of a preliminarily draft. The commonalities collected initially included 'diversity', 'innovation', 'criticism', and 'reflection'. Based on these features, this study devised a 26-item learning scale of postmodern physical education suitable for students.

- a. *Diversity*: This refers to stimulating the unlimited imagination of students and encouraging them to present their ideas (six questions).
- b. *Innovation*: Students brainstorm to design new courses and formulate teaching content for physical education classes (seven questions).
- c. *Criticism*: During the learning process, students make valuable, objective and just judgments by clarifying intrinsic values (six questions).
- d. *Reflection*: Students can do self-analysis and think deeply on the amount of knowledge obtained (seven questions).

### Focus group discussions

On the basis of literature on postmodernism, focus group discussions were conducted to elucidate the key concepts of postmodernism and questionnaire items gradually. While the purpose was to confirm questionnaire items, the collected data should be conducive also to the design of survey tools. Hence, the participants should be selected through purposive sampling to search for samples relevant to the research (Neuman, 2003).

### ***Participants***

Ten experts in education administration and school physical education were invited to participate (gender distribution: six male experts and four female experts; level of education: three with PhDs, seven with master's degrees). These experts have an average of more than 12 years of teaching experience.

### ***Procedures***

Three focus group discussions were conducted. Each discussion was coded in the form of FG-01-P1. FG, 01 and P1 denoting 'focus group, Round 1, and Participant 1 respectively, all of which connected by a '-'. Upon each discussion, the transcribed notes were immediately cross-validated with the audio recordings and the collected literature to ensure the accuracy and validity of the obtained data.

- The *first focus group* discussion (FG-01): First, the discussion focused on a conceptual overview on the dimensions of the learning scale of postmodern physical education. Afterwards, the participants were asked to decide if the designed items required any addition, deletion, or modification based on the intelligibility of each word and the relevance of each item.
- The *second focus group* discussion (FG-02): The focus group reviewed the suggestions and any addition, deletion, or modification from the first discussion and continued to identify any new concept or idea for constructing scale items, to yield more diverse and comprehensive data.
- The *third focus group* discussion (FG-03): As the last round of discussion, the focus group reviewed the data obtained from the second round and verified that no relevant subject of importance had been omitted, to obtain more comprehensive data for further discussions during the in-depth interviews.

### **In-depth interviews**

To increase the reliability and validity of the scale and ensure that the core concepts were truly delivered by each of the items, in-depth interviews were conducted for re-validating the authenticity of the scale compiled by the focus group discussions. The interviews were coded in the form of (DI-S1-01), with DI, S1, and 01 signifying 'in-depth interview', Subject 1, and Round 1, respectively. The signifiers were connected by a '-'.

### ***Participants***

Five additional experts in education and physical education were invited to participate in the study (gender distribution: four male experts and one female expert; level of education: two with PhDs, two PhD candidates, and one with a master's degree). These experts have an average of more than 20 years of teaching experience.

### ***Procedures***

To avoid excessive disputes arising from subjectivity, the researchers must explain the topic and purpose of research, as well as the definitions of terms clearly before the interviews, to foster a better understanding of the overall research framework. The procedures were as follows: in-depth interview with the first expert → revision → verification → in-depth interview

with the second expert→ revision→ verification. To consolidate the precision of the items, the same process was repeated until after the final verification by the fifth expert.

## **Analysis of results**

### ***Exploratory factor analysis***

After compiling the textual materials, the reliability and validity of the scale had to be corroborated through statistics. Questionnaire surveys of Grade 6 primary school students from national elementary schools in Taipei City were conducted. The students were sampled through stratified random sampling. The first stratum was the division of Taipei City into 12 administrative zones, from which six administrative zones were randomly selected. Six classes as subjects for the survey were further randomly selected. In total, 156 valid questionnaires were completed. SPSS for windows 20.0 were employed for the first round of question screening, which included an item analysis, factor analysis, and reliability analysis to obtain initial reliability and validity data.

### ***Confirmatory factor analysis***

To refine the scale as much as possible, confirmatory factor analysis was performed to verify the relevance of the scale items and dimensions. According to the results of Stage 4 of the compilation process, the survey was continued by conducting a questionnaire with Grade 6 primary school students from national elementary schools in Taipei City. Stratified random sampling was, once again, used across 12 administrative zones, and a school was sampled from each zone for conducting the survey. A total of 304 valid questionnaires were collected. AMOS 20.0 software was used to confirm the intrinsic structure of this factor model, including composite reliability, convergent validity, discriminant validity, and other indicators. Before testing, every school completed an institutional consent form to conform to the requirements of the Institutional Review Board (IRB).

## **RESULTS**

### **Qualitative compilation**

A preliminary literature search revealed four aspects and 26 questions, and there were revision suggestions for 15 major aspects (e.g. “Please draft the items from the students” perspective’, FG-01-P9) and 132 minor aspects (e.g. “It is preferable to change ‘classmates’ into the subject form to achieve formal consistency with the preceding items”, FG-02-P2) for focus group discussions. Twenty-eight (28) questions were drafted. Based on our experience from the early stages, suggestions were only made for the revision of 11 major aspects (e.g. “Please revise if the original design intention aligns with the intended messages conveyed by the items”, DI-S3-01) and 68 minor aspects (e.g. ‘Please find an alternative to the term ‘perspectives’ in this item, as it is slightly ambiguous’, DI-S2-01) of the questions for in-depth interviews, and no questions were added or deleted.

### **Exploratory factor analysis**

The item analysis must achieve a critical ratio that is above 3.0 (Wolman, 1973). The correlation coefficient between each item and the total score must exceed the 0.30 threshold (Noar, 2003). In this study, Questions 15 and 21 did not reach the critical ratio threshold of 3.0 and were removed.

Hair *et al.* (2010) suggested that the Kaiser-Meyer-Olkin (KMO) value must exceed 0.6, and the Bartlett's test of sphericity must achieve  $\alpha < 0.05$  before embarking on subsequent research. The remaining questions passed the KMO and Bartlett's test of sphericity, and 26 questions were retained for factor analysis. After the scale was rotated, the cross-question factor in Question 6 was removed and four factors extracted from the remaining questions: reflection, innovation, diversity, and criticism.

These factors explained by 18.85%, 14.65%, 13.03%, and 10.62% of the variance, respectively, and the total variance explained was 57.15%. This confirmed the acceptable validity of the scale. Cronbach's  $\alpha$  internal consistency test was used to test the reliability of the scale. The overall Cronbach's  $\alpha$  was 0.89, and the  $\alpha$  values for reflection, innovation, diversity, and criticism were 0.90, 0.85, 0.85 and 0.79, respectively, demonstrating that the scale has good reliability.

### **Confirmatory factor analysis**

#### ***Parameter estimation***

If the absolute value of skewness for the variable distribution is greater than 3, it is considered extremely skewed. If the peak absolute value is greater than 10, it is considered problematic (Kline, 1998). The maximum likelihood method was employed for model estimation. The value of skewness was between  $-1.423$  and  $-0.099$ , and its absolute value was smaller than 2. Furthermore, the peak value was between  $-1.131$  and  $2.474$ , and the absolute value was smaller than 3, indicating that the structure fulfilled the assumption of normality. Kline (1998) pointed out that the scale can only be used stably, when the data conform to the assumption of a multivariate normal distribution. The multivariate coefficient was 56.361 and followed a multivariate normal distribution. Therefore, outlier processing was unnecessary.

#### ***Offending estimates***

Hair *et al.* (1998) proposed that offending estimate items fulfil these conditions: (1) presence of negative error variance; (2) standardised regression coefficient exceeds or approaches 1 (with 0.95 as a threshold); and (3) presence of a large standard error. The estimate in this study demonstrated a significant level of difference but did not have negative error variance. Furthermore, the standardised regression coefficient was between 0.515 and 0.847, and the estimated value of the standard error was between 0.022 and 0.094. This model did not contain offending estimates.

#### ***Validation of the overall model***

To validate the fit of the model, Bagozzi and Yi (1988) recommended that the sample size be considered and using the ratio of  $\chi^2$  to its degree of freedom – the smaller the ration, the better. Nair *et al.* (1998) believed that the closer the Goodness-of-Fit Index (GFI) and Adjusted

Goodness-of-Fit Index (AGFI) values were to one, the better, and that there is no definite standard to determine the fit of the model. The RMSEA (Root Mean Square Error of Approximation) should be smaller than 0.08; NFI (Normed Fit Index), TLI (Tucker-Lewis Index), and CFI (Comparative Fit Index ) greater than 0.90; and PCFI (Parsimonious Comparative Fit Index), PNFI (Parsimonious Normed Fit Index) and PGFI (Parsimonious Goodness-of-Fit Index) greater than 0.50 for the model to be acceptable (Byrne, 2001). The validation indicators obtained in preliminary goodness-of-fit tests in this study were not ideal, and minor modifications were required (Table 1). Therefore, Questions 17, 25, 23 and 12 were modified individually. Six questions were retained for the diversity aspect, six for the innovation aspect, four for the criticism aspect, and five for the reflection aspect (Table 2).

**Table 1. GOODNESS OF FIT ANALYSIS FOR FIRST-ORDER VALIDATION FACTORS**

| Fit level                | Fit indices | Acceptable limit# | Model (before) | Model (after) | Determining model fit |
|--------------------------|-------------|-------------------|----------------|---------------|-----------------------|
| Absolute Fit indices     | $\chi^2$    |                   | 637.98         | 325.63        |                       |
|                          | GFI         | >0.90             | 0.86           | 0.91          | Conformed             |
|                          | RMSEA       | <0.08             | 0.07           | 0.05          | Conformed             |
| Incremental Fit indices  | AGFI        | >0.90             | 0.83           | 0.89          | Satisfactory          |
|                          | NFI         | >0.90             | 0.84           | 0.90          | Conformed             |
|                          | TLI         | >0.90             | 0.89           | 0.94          | Conformed             |
| Parsimony Fit indicators | CFI         | >0.90             | 0.90           | 0.95          | Conformed             |
|                          | PCFI        | >0.50             | 0.81           | 0.83          | Conformed             |
|                          | PNFI        | >0.50             | 0.75           | 0.78          | Conformed             |
|                          | PGFI        | >0.50             | 0.71           | 0.72          | Conformed             |
|                          | $\chi^2/df$ | <3                | 2.37           | 1.78          | Conformed             |

$\chi^2$ =(Chi-square) # The smaller the better 'Before' modification 'After' modification  
 GFI=Goodness-of-Fit Index RMSEA= Root Mean Square Error of Approximation  
 AGFI=Adjusted Goodness-of-Fit Index  
 NFI=Normed Fit Index TLI=Tucker-Lewis Index CFI= Comparative Fit Index  
 PCFI= Parsimonious Comparative Fit Index PNFI= Parsimonious Normed Fit Index  
 PGFI= Parsimonious Goodness-of-Fit Index

### **Intrinsic structural validation of model**

#### **Composite reliability**

The composite reliability value should be greater than 0.60, and the average variance extracted should be greater than 0.50 (Bagozzi & Yi, 1988). Raine-Eudy (2000) showed that the intrinsic quality of the model is ideal if the composite reliability of latent variables is greater than 0.50. The composite reliability of diversity, innovation, criticism and reflection were 0.86, 0.85, 0.79, and 0.90, respectively, and the average variance extracted was 0.50, 0.50, 0.49 and 0.63, respectively. Although the average variance extracted of criticism is 0.49, this value approaches 0.50, indicating that the LSOPPE has good reliability.

**Table 2. SUMMARY OF FACTOR LOADINGS FOR EACH QUESTION**

| <b>Aspect</b> | <b>Question</b>   | <b>Factor</b> |
|---------------|---|---------------|
| Diversity     | 1. I believe that different physical education content can enable me to have balanced physical and mental development.                    | 0.74          |
|               | 2. I believe that accepting students with different characteristics from mine will aid in improving my interpersonal relationships.       | 0.67          |
|               | 3. I believe that every action will have different functions in different scenarios.  | 0.73          |
|               | 4. I believe that using different methods to learn motor skills will aid in improving my exercise capability.                             | 0.73          |
|               | 5. I believe that using different perspectives to identify learning problems will improve different thinking abilities.                   | 0.71          |
|               | 6. I believe that different fitness assessment methods can be used to better understand my learning outcomes.                             | 0.64          |
| Innovation    | 7. I believe that innovative physical activities will make my learning more interesting.  | 0.72          |
|               | 8. I believe that having an innovative concept will enable me to have more room for improvement.  | 0.81          |
|               | 9. My classmates and I jointly create new learning content, which makes me want to learn more.  | 0.73          |
|               | 10. My innovative ideas for physical education classes are accepted by my classmates, which is a big encouragement to me.                 | 0.68          |
|               | 11. I believe that innovative sports competitions will increase my degree of participation.   | 0.63          |
|               | 12. When faced with changes in the future learning environment, I believe that having an innovative mindset is important.                 | 0.64          |
| Criticism     | 13. I believe that physical education classes only teach me how to play.  | 0.60          |
|               | 14. I believe that boys are the main learners in physical education classes.  | 0.62          |
|               | 15. I believe that opportunities for performance in physical education classes are only reserved for people with good athletic abilities. | 0.80          |
|               | 16. I believe that individual performance is more important than teamwork in physical education classes.                                  | 0.74          |
| Reflection    | 17. I am aware of the amount of class content I have learned and will try to continuously improve.  | 0.79          |
|               | 18. I am aware of accurate motor skills and will attempt to make improvements.  | 0.86          |
|               | 19. I am aware of whether I have achieved my own learning objectives and will pay more attention to learning in the next class.           | 0.85          |
|               | 20. I am aware of whether my learning attitude is proactive and will encourage myself to be more proactive in learning.                   | 0.76          |
|               | 21. After physical education classes, I will reflect on areas I should work on in the future.   | 0.70          |



**Convergent validity**

The standardised coefficient of individual observation variables should be greater than 0.45 (Bollen, 1989), and composite reliability and the average variance extracted should be greater than 0.50. The scale has good convergent validity when these three conditions are met. The standardised coefficients of individual observation variables for *diversity* ranged from 0.64 to 0.74, for *innovation* from 0.63 to 0.81, for *criticism* from 0.60 to 0.80, and for *reflection* from 0.70 to 0.86. Furthermore, the LSOPPE has good convergent validity.

**Discriminant validity**

Torkzadeh *et al.* (2003) pointed out that if the correlation coefficients between aspects obtained using the confidence interval method do not include 1, discriminant validity is present within aspects. The results showed that the estimated correlation coefficients do not contain 1 and that discriminant validity was present.

**Second-order confirmatory factor analysis (CFA)**

Fit indices identical to those in the first-order CFA were used to measure the goodness of fit in the second-order CFA. The results showed that the physical education scale composed of four latent factors can be used to measure jointly the latent concept of ‘postmodernism’ (Table 3).

**Table 3. GOODNESS OF FIT ANALYSIS FOR SECOND ORDER VALIDATION FACTORS**

| Fit level               | Fit indices | Acceptable limit# | Model  | Determining model fit |
|-------------------------|-------------|-------------------|--------|-----------------------|
|                         | $\chi^2$    |                   | 333.92 |                       |
| Absolute Fit indices    | GFI         | >0.90             | 0.91   | Conformed             |
|                         | RMSEA       | <0.08             | 0.05   | Conformed             |
|                         | AGFI        | >0.90             | 0.89   | Satisfactory          |
| Incremental Fit indices | NFI         | >0.90             | 0.90   | Conformed             |
|                         | TLI         | >0.90             | 0.94   | Conformed             |
|                         | CFI         | >0.90             | 0.95   | Conformed             |
| Parsimony Fit indices   | PCFI        | >0.50             | 0.84   | Conformed             |
|                         | PNFI        | >0.50             | 0.79   | Conformed             |
|                         | PGFI        | >0.50             | 0.73   | Conformed             |
|                         | $\chi^2/df$ | <3                | 1.81   | Conformed             |

$\chi^2$ =(Chi-square) # The smaller the better ‘Before’ modification ‘After’ modification  
 GFI=Goodness of Fit Index RMSEA= Root Mean Square Error of Approximation  
 AGFI=Adjusted Goodness-of-Fit Index  
 NFI=Normed Fit Index TLI=Tucker-Lewis Index CFI= Comparative Fit Index  
 PCFI= Parsimonious Comparative Fit Index PNFI= Parsimonious Normed Fit Index  
 PGFI= Parsimonious Goodness-of-Fit Index

## DISCUSSION

This study used postmodernism as a foundation and employed a qualitative study method. Finally, three questions were removed after the EFA and four after testing using a first order CFA. Overall, 21 questions were retained, which obtained acceptable fit test results, and the presence of four aspect factors was detected. These four aspect factors were 'reflection', 'innovation', 'diversity', and 'criticism' of the LSOPPE. Acceptable results for fit were still obtained after carrying out a second order CFA. These four aspect factors belong to the postmodern concept and are important components that affect individual thinking and judgment, as well as practice during physical education. Previous studies (Foucault, 1984; Jameson, 1984; Lyotard, 1984; Hassan, 1987; Mangena, 2016) employed discursive methods to describe the postmodern perspective, and no postmodern-related scale for students exists. Only one paper by Shih *et al.* (2017) constructed and carried out a weight analysis of physical education teachers' belief indices based on postmodernism. That paper ultimately used an analytic hierarchy process to show that 'reflection' has a higher weight than age value, similar to the average variance extracted in this study.

Structural reflection revolving around a target concept enables students to structure their knowledge. This is highly effective in enhancing the understanding of concepts, and can become meaningful learning (Sarwar & Trumpower, 2015). Through structural reflection, students engage in conscious thinking, promoting individual knowledge and understanding, and self-analysis of performance during physical education learning. This significantly increases personal growth, and students exhibit good self-efficacy (Sanders *et al.*, 2016).

Postmodernism considers refactoring as one key element of education innovation that can provide a free, reliable, practical and creative learning environment for students (Cherryholmes, 1988; Kavacik *et al.*, 2015), in which designing open outcome tasks by 'decentralisation' that require students to engage independently and deeply and in tasks often lead to diverse outcomes and innovations matched with the individual's prior knowledge, experience and interests (Ennis, 2015). This mindful learning experience occurs as students innovate and apply/transfer knowledge to reskill or 'upskill' their competencies for physical literacy development or fitness challenge environments (Cobo, 2013).

The diverse outlook of postmodernism has affected onsite teaching and learning. Regardless of teaching concepts, problem-solving strategies, or learning assessments, this outlook can result in effective knowledge acquisition (Oliver & Oesterreich, 2011). Students' construction of diversified solutions to problems can be applied in teaching to improve the learning efficacy of students and promote their cognitive flexibility in solving unknown problems (Rittle-Johnson & Star, 2009; Schukajlow *et al.* 2015). Based on this, diversity has flexibility and inclusiveness in physical education, emphasising the importance of 'rich' authentic interactions, and providing a context for diverse and transferable skills, movement and mental development outcomes (Schukajlow *et al.*, 2015; Dickinson & Adelson, 2016).

Critical thinking is considered a complex and integrated ability. It can provide valid evidence to individuals to validate rational judgment in these individuals (Ruiz & Fernández-Balboa, 2005). Critical thinking also belongs to a form of higher-order thinking that requires the processing of principles and deduction, and is important for effective learning (Thaiposri & Piriyasurawong, 2016). Heijltjes *et al.* (2015) noted that a student-centric method in which

students concentrate all acquired information after active discussions can be combined with critical thinking to make a rational judgment during learning. Therefore, this ability is a basic element of prospective learning and must be considered seriously in physical education practice (Tseng *et al.*, 2016).

An overview of the LSOPPE, comprising four aspects, revealed that the meanings represented by these aspects are related to school education. This can be used to drive curriculum thinking in PE teachers and to evaluate the learning efficacy of students.

## CONCLUSION

For 12-year-old adolescents, physical education classes have an educational function of promoting physical and mental health, expanding social relationships, establishing the concept of teamwork, and cultivating self-concept, creativity and logical thinking (Amado-Alonso *et al.*, 2018). If physical education content still falls within the fixed framework, students can experience forced selective learning only (Cherryholmes, 1988). Regarding broad learning methods, this would still be considered a narrow form of education that overlooks the diverse potential of children (Jess *et al.*, 2016). Based on this aspect, physical education activity in schools is the starting point for everyone to understand and learn sports. Therefore, postmodernism should be integrated in daily physical education class content so that students can have broader opportunities for learning (Larsson, 2018).

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(Subject editor: Prof. Charl Roux)

