Reflections and Conceptions Analysis of the Neosphere’s Actors on Teaching Pole Vault Activity throw Physical Education Program

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This study described specific characteristics of the Questionnaire of Trainers’ Conceptions (QTC) for neosphere’s actors used to assess the trainers’ conception thinking about new useful practice of pole vault in physical education program. The purpose of this study is to analyze its subscales and items validity and reliability in a sample of trainers from Tunisia. The questionnaire was applied to 238 actors of neospher, beside with five subscales to measure trainers’ conception (strategy, orientation, expectations, personality and security). Results concerning factor validity, highlighted the coherence between the internal structure of the questionnaire throw an exploratory factor analyses and a confirmatory factor analyses with Cronbach’s alphas range between (0.73 and 0.94). Regarding criterion validity, the QTC subscales are positively correlated and determined between (r = 0.44 and r = 0.79; p < 0.01). The reliability of the questionnaire factors and items are both adequate. It is concluded that the construct is valid and reliable through our population study.

Keywords: Trainers’ Conception, Strategy, Orientation, Expectations, Personality and Security

INTRODUCTION

This work is interested on the reference practices representing the prescriptive in potency with the school field and it focus on the implicit ones that generate the logics constituting the manuals and other official documents available to teachers for various disciplines school as physical education. In this context, a didactic approach makes it possible to ask questions of conceptions of the actors of the noosphere and to evoke the concept of didactic transposition. This concept takes into account the treatment of the transformation of a reference knowledge into a knowledge to be taught depends on what is the object of this transmission, namely the search for an exchange between the intention of the teacher and the potentials of students (Chevallard, 1985; Derbali et al., 2015a). As a result, the teacher is helped by the process of devolution and the process of institutionalization to achieve his ends. Devolution corresponds to the development of so-called a didactic situations (Brousseau, 1998), designed to create the conditions for appropriation by the organization of a favorable environment whereas institutionalization is the means by which the teacher states the “knowledge to be taught”, the one that was targeted by the implemented situation. The analysis of the transmission of knowledge by the teacher is carried out only by means of the junction between the transpositive analysis, taken in its function of choice and processing of knowledge and taking into account the term of the process, which is the institutionalization of knowledge for all pupils.

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Engagement in an academic activity may be linked to the representations of students and teachers. Noting that the term representation is a polysemy concept. It is introduced in several fields such as psycho-sociology, educational sciences, didactics of disciplines, etc. To better explain this concept, according to Cadopi Marielle (1994), representations are cognitive activities representative of a behavior in relation to an environment. Human conduct and the behavior are interdependent on the basis of previous knowledge for constructing new information about available knowledge. The use of what is constructed is often called representations (Marielle Cadopi, 1994). Hence, any representation is an exchange with the environment. For Denis (1989) the representations of the subjects determine internalized models of their environment as well as their own actions.

Curriculum theory is an academic discipline devoted to examine educational curricula. It can be approached from the educational disciplines. This theory identify the fundamental unit of curriculum with which to build conceptual systems. Curriculum theory is fundamentally concerned with values as a way of observing current educational curriculum and hypothesizing about the upcoming curricula. The purpose of which is to achieve comprehensive objectives and to exchange needs of society (Parkay, 2006). Functionally, curriculum could be three-dimensional considering the needs of the students, the content and instructional methodology. In addition, « It is a set of interrelated construct, definitions and propositions that present a systematic view phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena » (Kerlinger, 1973, p.9). In this context, the physical education curriculum will develop students' knowledge and skills in physical activities for completion of their undergraduate degree.

Because of this concerns, physical education and sports is one of the most important for the development of personality. The One of the major benefits of physical activity is that it helps people improve their physical fitness. Fitness is a state of well-being that allows people to perform daily activities with vigor, participate in a variety of physical activities, and reduce their risks for health problems. Sport helps an individual much more than in the physical aspects alone. It builds character, teaches and develops strategic thinking, analytical thinking, leadership skills, goal setting and risk taking, just to name a few. We specifically show how physical activity is related to personality development in two longitudinal samples. Physical activity can contribute to higher personality stability. An active lifestyle helps to maintain a resilient personality profile. Interest to study students’ use of strategies for learning stems from the assumption that students are active agents for learning, and as such, an understanding of their cognitive involvement could provide some insight into developing approaches to maximize learning and performance. In the learning of subject matters other than physical education, researchers had already begun to examine students' learning strategies as the mediator between teacher behaviour and student achievement. As to get students moving and physically active, to incorporate more difficult exercises into learning sports activities and to teach the students the health profits of being physically dynamic.

In line with these strategies, health and safety education are complementary. In fact, Characteristic level of playing risk throw some activities, concerning the complexity of the sport; have a preferential smooth of risk. Different Variables resembling physical ability and developmental competence, previous skill of learners and educators, may all affect the level of risk of the practice activity in physical education. Therefore, health and physical education can debate how contextual factors influence the safety, wellbeing, and physical activity configurations of individuals, groups and societies. Conceptualizing teachers' orientations to learn pole vault activity in physical education courses are deeply context dependent. The research on student learning orientations has fundamentally going to comprehend teachers’ pedagogical choices and interventions with the effect of psychological perspectives these have on students’ motivation to practice pole vaulting.

This study was focused on the reflections of trainers, didacticians, inspectors, teachers and coaches, in the field of the didactic of the pole vault. The main conceptual contribution of this study lies in the identification of a new didactical approach to teaching pole-vaulting in educational settings. This theoretical evolution would suggest an integration of the particular practice of pole vaulting into the educational system in physical education and sport. Percepts, on which this reflection was based, refer to the strategies and expectations of the trainers, as well as to the psychosocial orientations in favor of physical well-being and the physical self-concept (Derbali, et al., 2008). Anterior studies have led to analyze a variety of fields of conceptions studies (Erickson and Shultz, 1992; Eisner, 1990; Debali et al., 2015b). The study that will be described here, concerns reflections of trainers on teaching the pole vault as an athletic discipline.

**METHODOLOGY**

The research was conducted using the questionnaire of trainers’ conceptions containing 20 items in physical education area. The questionnaire was filled to 97 actors’ of the neosphere. To determine the item characteristics: distribution normality, exploratory factor analyses, internal consistency (Cronbach’s alpha) and reliability analyses. Furthermore, to determine confirmatory factor analysis (CFI) using Amos model for maximum likelihood estimation.
OBJECTIVE

The goal of this study was twofold:
To construct a French version of a questionnaire defining five conceptions of neosphere’s people, on the possibility of teaching the pole vault activity in educational setting:

- Study of the exploratory analysis through the factorial structure of the questionnaire, the internal consistency and the correlations between the determined subscales.
- To confirm the factor structure of trainers’ reflection, through a large population, in order to verify the validity of the construct. Thus, the second study aims to validate the results of the first study and confirm the theoretical model of the questionnaire.

Questionnaire’s subscales

The proposed questionnaire is based on the theory of representation, theory of curriculum and finality of physical education. For adequate identification and analysis of the neosphere’s conceptions, it is essential to have assessment instruments with adequate and rigorous subjects and specific properties. In this case study, trainers’ conceptions in physical education domain are compounded by five factors (Orientations, Expectations, Strategy, Personality, Security education), defined in details below.

*Personality*. It refers to individual differences that are affected by the development of an individual in competences, skills, attitudes and values. The understanding of the personality depends on the various parts of a person. (Example: Developing his belief in self-efficacy is a factor of success).

*Expectations*. Teachers’ expectations can influence how students perform. Educators can work together differently with students expected to do well. However, they can be educated to change those classroom behaviors. (Example: The practice of pole vaulting is teachable).

*Orientations*. It deals with educators’ orientations. It consciously creates a climate in which all students feel included. They believe that there is potential in each learner is required to find the key that will expose their varied potential throw creating a successful climate for learning. Operative teachers’ orientations believe that all students can learn providing quality education. (Example: I think that all learning must cover needs of the learner on the physical, psychological and playful level).

*Security education*. There is a growing need for qualified and knowledgeable physical education throw health education. It means having safety education by taking risk. (Example: The passive and active safety are two determining factors in the education of security)

*Strategy*. It is a theatrical method or a design selected to carry about an anticipated forthcoming like complex adaptations, such as achievement of a goal or solution to a difficulty (Derbali, 2010). Strategy is the art and knowledge of planning and establishing incomes for their most well organized and operative use. (Example: I think that strategies of control, self-determination and motivation could be effective in teaching).

Participants

The first study was conducted with trainers in physical education and sport (PES). The population consisted of 97 (didacticians, teachers, inspectors and coaches), volunteers for the study. It is a question of answering the questionnaire voluntarily for a duration of about a quarter of hour. The results obtained would remain anonymous and it would be used only for scientific purposes.

The sample of the second study is composed of 238 trainers from different regions of Tunisia. The social profile of the population is similar to that of study 1. We have adopted the same procedure for passing the questionnaire.

Study 2 takes advantage of the choice of the population of study 1, with the sociocultural criteria of the participants. In addition, taking into account the fact that educators are invested in a broader research, as a larger longitudinal study. It was also noted that participants were asked to respond to the questionnaire as a means of measuring different conceptions of teaching the particular practice of pole vaulting in an educational setting. The purpose of the study was to better understand the factors of trainers’ conception, the reliability check and the validity of the subscales of the questionnaire).

Procedure

Questionnaire to trainers: The questionnaire used in our desired study should include 5 subscales established above describing conceptions through the educational interests of PES in general, athletics in particular and singular in jumping;

- The qualities of the pole vault;
- Conceptions on the hierarchical evolution of the jumping practice in the school environment;
- Reflections on the integration of the pole vault in the educational setting;
- The evolution of the place, the material and the security;
To answer the questionnaire, the trainers responded to the Likert scale adapted to five points. [1]: not at all agree, [5]: completely in agreement.

RESULTS AND DISCUSSION

Initially, we show the analyses in study 1 and study 2 carried out the reflection of the trainers in conditions of physical education and sport. Subsequently, we present other sampling analyses that assess the validity of the measuring instrument.
Table 1: Standardized saturation results of the exploratory factor analysis on trainers’ conceptions

<table>
<thead>
<tr>
<th>Items measuring trainers’ conceptions</th>
<th>Strategy</th>
<th>Orientation</th>
<th>Security</th>
<th>Expectations</th>
<th>Personality</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 1</td>
<td>.836</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I 2</td>
<td>.560</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I 3</td>
<td>.824</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I 4</td>
<td></td>
<td>.745</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I 5</td>
<td></td>
<td></td>
<td>.700</td>
<td></td>
<td></td>
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<tr>
<td>I 6</td>
<td></td>
<td></td>
<td></td>
<td>.852</td>
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<tr>
<td>I 7</td>
<td></td>
<td></td>
<td></td>
<td>.894</td>
<td></td>
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<tr>
<td>I 8</td>
<td></td>
<td></td>
<td></td>
<td>.878</td>
<td></td>
</tr>
<tr>
<td>I 9</td>
<td></td>
<td></td>
<td></td>
<td>.718</td>
<td></td>
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<tr>
<td>I 10</td>
<td></td>
<td></td>
<td></td>
<td>.809</td>
<td>.841</td>
</tr>
<tr>
<td>I 11</td>
<td></td>
<td></td>
<td></td>
<td>.852</td>
<td>.746</td>
</tr>
<tr>
<td>I 12</td>
<td></td>
<td></td>
<td></td>
<td>.901</td>
<td>.914</td>
</tr>
<tr>
<td>I 13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.899</td>
</tr>
</tbody>
</table>

Notes. \( N = 97 \); \( I = \) item, there is only the factor saturations > à 0.5.

The questionnaire was passed to three scholars from the scientific community. They chose the items that offer a high degree of representation of the field studied. During this stage of expertise, the questionnaire was refined and reduced from 25 to 20 items. In addition, some statements were modified in order to improve their clarity and answer their purpose in the subscales of the questionnaire. Then, a pre-test was carried out with a target group of 10 teachers. They allowed us to check the language, the illustrations, and the messages presented in the questionnaire tool. After establishing the study material (questionnaire) comprehensible, we will proceed to the validation steps. These steps will allow for more credibility, realism and cultural adaptation. Therefore, we search for the validation of the questionnaire and its acceptability by study group.

Factor analysis

The factorial structure of the educator’s reflection in physical education and sports was carried up throw analysis of the primordial factors presented by all 16 items, accompanied by a varimax rotation. Factor structure analysis yields a completion of five factors that develops 57% of the total variance. Items are assigned to a specific factor and are based on their saturation weight. To do so, it is important to mention that the choice of factors is based on the predominant theoretical basis and representation described above for each of these five concepts. The resulting factor structure revealed the presence of five factors of trainers perceptions. We list four items for each of the factors that correspond to the concepts: strategy, orientation, safety, expectations and personality.

Distribution normality and exploratory factor analyses

Initially, the analysis of the data allowed the elimination of 4 items (among 20 items) that illustrated a distribution discomfort. This operation allowed us to remove items that showed too low saturations (<0.30, Gorsuch, 1983). Subsequently, the degree of flattening (kurtosis) and asymmetry (skewness) of the data, averages, and standard deviations were examined by the distribution of utterances. For this purpose, Oblimin oblique rotations have been carried out on the 16 preserved statements. The results indicate that the five factors have an eigen value greater than “1”. These factors account for 81% of the total variance. This percentage is admissible since it satisfies the criterion value of 40% mentioned by Gorsuch (1983). Each statement had saturations greater than 0.5 (values ranging between 0.50 and 0.97) on the factors concerned. Moreover, the results in Table 1 present the saturation coefficients for the 16 utterances. Moreover, it should be mentioned that the final structure has been discussed with men and women independently and is truly similar.

The results highlight the primary distributional indices of normality for the nine subscales. For the first case, the results of the averages show that there is no capping effect (value of 5). Whereas for the floor effect (value of 1), the subscales show averages greater than 1. On the other hand, the results reveal indices of kurtosis and asymmetry (skewness), which Indicate permissible values, with normality of distributions of conforming data. This result is endorsed by Bentler (1985), who proposes that the value of distribution normality indices should be close to “zero” and no more or less than “2”. However, we kept the statements that found the best distribution indices in those five subscales. Moreover, the structural factorial analysis defines certain purposes in the different categories of reflection. However, these results have yet to be confirmed using confirmatory factor analysis.

Internal coherence of trainers’ conceptions subscales

Results present also values of the internal consistency of the five subscales of the educator’s perception. The
Cronbach’s alpha indices (Cronbach, 1951) make it possible to verify the internal coherence of these subscales. Alpha values appear to be acceptable, since they are greater than 0.70 (Nunnally and Bernstein, 1994). Although, the internal consistency of one of these five subscales does not reach the recommended threshold of 0.80, it is higher than that of 0.70 recommended by Nunnally (1978). Moreover, a subscale is very restricted (three items); nevertheless, its reduced internal consistency mainly dominates the shimmering of this limited number of items. Generally, Cronbach’s alphas range between (0.73 and 0.94).

Building validity

Correlational analysis between the trainers’ reflection subscales was performed. Table 2 shows the results of these analyzes. The observation that subscales adjacent on the continuum show the most positive correlations between strategy, personality and expectations, determined between \( r = 0.44 \) and \( r = 0.79 \). This corroborates the data from the literature (Deci and Ryan, 1985; Deci and Ryan, 2002; Derbali et al., 2017).

### Confirmatory factor analysis (CFA)

First, confirmatory factor analysis is performed using Amos software. This analysis make it possible to examine and verify the level of adequacy of the model. The factorial model evaluated presents five subscales completed from three to four items. The Five Frequency Adjustment Indices, which are the most frequently used, provide inspiration for the validity of the model. The NNFI: Bentler-Bonett Non-Normal Fit Index (Tucker and Lewis, 1973); CFI: Comparative Fit Index (Bentler, 1990). The chi-square: \( \chi^2 \) (Bollen, 1993) and the chi-square ratio/degrees of freedom: \( \chi^2 / df \) (Marsh et al., 1996). The NNFI and CFI indices generally range from 0 to 1 (Fassinger, 1987). Indeed, values of these indices closer to 1, more the model illustrate considerable adjustment (Bentler, 1992; Schumacker and Lomax, 1996). With respect to the RMSEA, some authors confirm that a value of less than 0.05 means a very good level of adjustment, and even if the values are between 0.05 and 0.08. These values are also tolerable (Jöreskog and Sörbom, 1993). In addition, the chi-square evaluates to what degree the observed model data look like the alternative model. Therefore, the non-significance of chi-square shows a good fit of the data to the model. Yet, the sample size has an effect on this index. Indeed, more the population study is larger, more the value of the chi-square is significant. Finally, the chi-square ratio / degrees of freedom (\( \chi^2 / df \)) was used to evaluate the fit of a model. It is useful when the value of this ratio is less than 2, hence the model raises an appropriate level of adjustment (Marsh et al., 1996).

The confirmatory factor analysis in the second study shows that the results obtained confirm the factorial validity of the hypothetical model. Hence the most relevant results show a significant chi-square value (\( p < 0.001 \)). In addition, the adjustment indices show acceptable values for CFI, GFI, NNFI and ECVI, which vary significantly (0.91 and 0.94; \( p < 0.01 \)). In addition, the index of confidence interval RMSEA = 0.06 and still satisfactory. Thus, we proved through the confirmatory analysis that for each factor, the esteem of each standardized coefficients were greater than 0.70, and significant with (\( p < 0.01 \).) Similarly, it has been found that all the saturation and correlation coefficients, then the measurement errors, are significant (\( z > 1.80 \)). Finally, it was pointed out that the adjustment indices reveal a good level of data adequacy, supporting the profile of five subscales of trainers’ reflection. The results of the preliminary study show the theoretical relevance of the quantities corresponding to the usefulness of the integration of a new athletic discipline in the field of physical education. The analyses of two studies carried out in relation to the dimension of belief at the physical and motor level reveal a factor structure of five factors based on three areas, such as the personality, the value of the activity and the strategy of its teaching. Although, the internal consistency of one of these five subscales does not reach the threshold of 0.80, it reaches of 0.70 that was advocated by Nunnally (1978). Nevertheless, its reduced internal consistency dominates the image of this limited number of items. Moreover, the testimonies of validity of this instrument disseminate the positive perception as well as the negative one. According to this confirmed validity in the field of physical education and sports. The findings corroborate the research developed in the scientific literature by suggesting that this sport practice could be taught as a school subject (Lorcan and Justine, 2017; Derbali et al., 2015b). The neosphere’s people highlight their interest in integrating the practice of pole vaulting into the educational environment.

<table>
<thead>
<tr>
<th>Subscales</th>
<th>M</th>
<th>E-T</th>
<th>Alpha</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy</td>
<td>3.42</td>
<td>1.104</td>
<td>.936</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td>_</td>
</tr>
<tr>
<td>Orientation</td>
<td>3.30</td>
<td>1.202</td>
<td>.726</td>
<td>.699”</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td>_</td>
</tr>
<tr>
<td>Security</td>
<td>3.20</td>
<td>1.089</td>
<td>.831</td>
<td>.602”</td>
<td>.593”</td>
<td>_</td>
<td>_</td>
<td>_</td>
</tr>
<tr>
<td>Expectation</td>
<td>3.44</td>
<td>1.123</td>
<td>.734</td>
<td>.525”</td>
<td>.443”</td>
<td>.758”</td>
<td>_</td>
<td>_</td>
</tr>
<tr>
<td>Personality</td>
<td>3.22</td>
<td>.997</td>
<td>.899</td>
<td>.601”</td>
<td>.626”</td>
<td>.791”</td>
<td>.741”</td>
<td>_</td>
</tr>
</tbody>
</table>

Notes. \( N = 238; p < 0.01 \).
CONCLUSION

This work coveted to fill in the lack of studies on the educational approach to the integration of a particular practice of pole vaulting into educational domain of the physical self-perception at least in physical education and sport, describing the development of a theoretical model and the construction-measuring instrument specific to educators. The evaluation of the qualities of this questionnaire was carried out through two studies. Thus, the development and validation of the questionnaire on the reflection of trainers resides in the realization of two complementary studies. The questionnaire, consisting of five subscales, measure the reflection of trainers (didacticians, teachers and inspectors) on PES and is a reliable and valid instrument. The validity of the tool was assured by the exploratory and confirmatory factor analyses. To say that the observation of correlations between the subscales in accordance with the theoretical presuppositions, in addition to the collection of correlations in accordance with the theory and the results obtained in the academic field. Finally, the fidelity of the trainers’ conception questionnaire (QTC) was demonstrated by a high internal consistency and by a satisfactory temporal stability in the medium term.

REFERENCES

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