Teaching Skills in Teacher Training: Theoretical and Factor Models

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Abstract

Training in skills requires implementing reliable tools allowing them to prove their development during teacher training. This research is aimed at assessing the psychometric properties of a measuring tool implemented when training teaching skills for physical education teachers and at proving whether its internal structure fits in the theoretical models reviewed in the literature. The research included 1104 undergraduate students (59.78% male and 40.22% female) from Spanish higher education institutions. A factor and exploratory analysis of the Teaching Skills in Physical Education Teacher Training survey was carried out for such a purpose. The results showed a good fit to the three-correlated model and some discrepancies regarding the skills of the theoretical models suggested by the literature. Implications for the teaching practice and the students' skill development are hereby discussed.

Key Words: Factor Analysis, Teaching Skills, Physical Education, Skills Assessment, Teacher Training

Introduction

The knowledge society claims for teacher qualification at all the different educational levels. After the Sorbonne Declaration (1998), higher education takes a Skills Approach. The teacher training institutions establish that prospective teachers should learn to know, live-in and be-in an ever-evolving society and school (Delors, 1996). This requires bringing the university closer to the society within the context of the new European Higher Education Area (EHEA) (OECD, 2016; Palmer et al. 2009).

In the international scene (Giroux, 2018, Laval and Dardot 2013, Muros and Fernández-Balboa, 2005); it has been questioned whether the teacher training institutions might have been aligned with neoliberal political interests. Often, the search for a greater connection between the university and the business demand seems to lead us to creating professional profiles according to financial demands. Bernstein (2001) advised on the situation arising from the economy and the cultural practices, as well as the sort of educational practices being replicated in the various educational scenarios. According to Apple (2000), both the teacher training institutions and the schools themselves ended up adjusting to the needs and interests of the neoliberal society.

Nevertheless, regarding the skills training in initial teacher training, Echeverría (2002) thinks there should be three levels of professionalization: learning to develop teaching tasks, acquiring and improving personal skills and knowing how to implement them in an integrated fashion within a context. For such purposes, personal and professional skills must be activated, strategically combining skills and abilities. Corominas et al. (2006) and Tejada and Navío (2005) also support the need for learning how to dynamically harmonize intellectual and practical skills combined with other personal and interpersonal ones during the theoretical- practical

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training, in order to allow prospect teachers to overcome uncertainty when social changes arise (OECD, 2016).

From a critical training perspective, the teachers' skills development must be linked to the social transformation (Laval, 2004; Ritzer, 2007), in order to train reliable teachers willing to commit themselves to the training of a citizenry (Sachs, 2016). In this regard, within the educational scenarios, there is a need for professionals with high capacities to take part in the teaching-learning processes and solve issues in a creative and ethical fashion (Evetts, 2013; Frey et al., 2019; Gluchmanová, 2017; Ribeiro and Amorim, 2020). Hence, it is necessary to train skills in novel teachers by seamlessly addressing their personal and professional capacities. Therefore Capitanescu-Benetti and D´Adonna (2020) and Perrenoud (2004) find mastering the teaching development skills are crucial for teacher training, as well as other interpersonal skills to learn how to involve students in the learning activities. Erhorn et al. (2020) and Silva et al. (2021) also encourage the development of training opportunities resulting in learning how to support students with specific learning needs by means of inclusive, interactive, and collaborative pedagogical sequences aimed at addressing diversity and different learning paces within the classroom.

Campos-Izquierdo and Martín-Acero (2016), and Tilbury and Wortman (2004) consider two types of skills for training novel teachers: **generic skills and specific skills**. Acquiring and developing them will require a disciplinary and transdisciplinary collaboration, which will overcome the traditional issue of balkanization or fragmentation of the existing knowledge inherent to the educational programmes for those novel teachers (Hargreaves and Fullan, 2014). The project Tuning Educational Structures in Europe (González and Wagenaar, 2003) arises from a methodology based on four pillars: a) generic skills; b) specific skills; c) the role of the ECTS system within the curricula; and d) the learning, teaching, assessing and performance roles to achieve quality. This skills training model means a benchmark for Europe regarding the design and academic organization of university degrees. For Spain, the design of higher education degrees lies on the Spanish National Agency for Quality Assessment (ANECA), which guides and monitors specific and generic teaching skills (De Miguel et al., 2005; González Maura and González Tirados, 2008). Specifically, in Initial Teacher Training in Physical Education (ITTPE) such teaching skills are organized at instrumental (including cognitive skills), interpersonal (relating to the capacity to express one's feelings, critical skills, and the capacity for self-criticism) and systemic (such as creativity or leadership) levels (ANECA, 2005a, 2005b).

In ITTPE, the development of instrumental skills enables to optimize the pedagogical capacity of prospective teachers by activating communicative, technological, and cognitive skills (Kirk et al., 2006; Romero et al., 2017). Changes observed in physical education teaching have evolved from positivist traditional training to constructivist and social-critical ones (Anderson and Krathwohl, 2001; Arends, 2012; Kelly, 2004; Kirk et al., 2006). Thus, new skills are included: cognitive skills in order to understand ideas and thoughts supporting the motor field; to take decisions and solve issues connected to the practice of physical and motor activities, as well as technological ones enabling the management of new tools and operating systems, both for the teaching practice and for collecting data and monitoring sport performance; and lastly, linguistic skills as the oral and written communication method for accessing knowledge arising from the different international scenarios.

Personal and interpersonal skills stand for affective-social abilities enabling success in social relationships resulting from collaborative work, the development of personal and group accountability, the ethical commitment and social skills (Hopkins and Ravindranath, 2007; Wright et al., 2021). Such abilities require

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consensus, consultation and discussion capacities, problem solving and the search for solutions (Aririguzoh, 2022; Jafar, 2016), which are vital for organizing and leading educational institutions (Bourgonje and Tromp, 2011; Sánchez- Tarazaga, 2016). In the specific field of physical education, this is related both to the emotional body language capacity and the improvement of social skills connected to the sport activity where there is teamwork enabled by the social and ethical commitment promoted by such processes of interaction and social cooperation.

Systemic and integrative skills require awareness and knowledge to understand how the parts interrelate and integrate within a whole (Ceo-DiFrancesco et al., 2019). Combining understanding and knowledge enables the (teaching and learning) person to analyse how the parts of a whole interrelate and group with each other. In the case of body-expressive activities, students are encouraged to create, experiment, choose gestures and dynamic movements by the music in order to find ways to face challenges either individually or in group, with creative and innovative actions where the body self-awareness is present (Buck and Snook, 2018; De Bono, 2005; Harker et al., 2018). This triggers personal autonomy, self- efficiency to perform tasks and the capacity to solve problems (Hepplestone et al., 2016; Keller-Mathers, 2011). All this requires previously acquiring and mastering instrumental and personal skills. In this sense, the European Commission (2013) has called for the development of a teacher-training model incorporating such skills aimed at learning how to think, know, feel and act as a teacher.

Palacios-Picos, López-Pastor and Fraile Aranda (2019) in recent studies in ITTPE on the training of generic and specific skills for teaching physical education, point out that not all of them are equally present or valued in curricula programmes or assessment systems. As for Meier (2020), Moreno- Murcia et al. (2015), training teaching skills means developing capacities for planning learning, its development and implementation, the teacher performance and results assessment.

Despite the reviewed theoretical models guiding the teacher's skills training, there are no studies proving the validity of tools for measuring skills within the context of teachers' higher education. The polysemous concept of skill and the models suggested by the Tuning Project or the ANECA have not yet been empirically verified. Therefore, the purpose of this study was focused on assessing the metric properties of a measuring tool used in teaching skills training for Physical Education teachers and on verification of its suitability to the theoretical models suggested by Tuning and ANECA.

Method

Sample

This study involved 1104 undergraduates (660 male participants 59.78%, 444 female participants 40.22%) from 20 University Centres in 20 Spanish Cities. Out of them, 751 (68%) were undergraduates studying the fourth academic year of degree in primary education teacher with Special Mention in Physical Education (SMPE) and 353 (32%) were undergraduates studying the fourth academic year of Degree in Physical Activity and Sports Sciences (DPASC). The participants' selection was carried out by a non-probabilistic sample, taking universities belonging to a Red Nacional de Evaluación Formativa en Educación Superior (Spanish National Network of Formative Assessment in Higher Education) as the benchmark. The data collection was performed by duly trained teachers, with the participants explicit consent. The ethical rigor was guaranteed as established by the Ethics Committee of the University Researchers . Also, an informed consent form was

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signed by all participants, who, in turn, were not only informed, verbally and in writing, about the purposes and the procedure of the study, but also were ensured anonymity and that the data would exclusively be used for the purposes of the investigation.

Tool

The Questionnaire of **Perception of Teaching Skills in Physical Education** (Palacios-Picos, et al., 2019) made up of four subscales relating to teaching skills and three subscales relating to transversal skills was used. The initial set of items was reviewed by eight expert judges specialised in ITTPE, both for primary physical education and the degree in DPASC, with a minimum of 15 years of experience in ITTPE and renowned prestige as teachers and researchers. After reviewing and analysing the experts' appraisals, items were grouped, removed and changed, resulting in a total of 21 items out of the 24 initial ones.

This questionnaire has proved sufficient evidence regarding reliability and validity (Palacios-Picos et al., 2019) when talking about teaching skills, although the metric properties of the transversal skills segment have not been analysed. Those 21 items relate to the perception students have of the help received by means of the subjects taken for each degree in order to develop every transversal skill included in them. The first subscale is made up of nine items relating to **personal and interpersonal skills** (e. g. "Ability to analyse and summarise", "Ability to organise and plan", "Teamwork", "Abilities in interpersonal relationships"). The second subscale is made up of seven items on **skills for managing teaching-learning processes** (e. g. "Organising and encouraging learning settings", "Devising and implementing attention to diversity strategies"). The third subscale refers to **instrumental skills** and has five items (e. g. "Knowledge of a foreign language", "Computer knowledge related to study"). The participants articulated their level of agreement with regard to each of the statements in a five-point Likert scale (0 = not at all and 4 = a lot).

Data Analysis

The analysis process was developed following two stages. At **Stage 1** the initial sample was divided into two random subsamples of n = 552 participants each and performed an exploratory factor analysis (EFA) with respect to the polychoric correlations matrix among the items (Hair et al., 2010) assessed taking into account the replies of the first half of the sample (n = 552).

After verifying the data suitability for the factor analysis with the Kaiser Meyer Olkin (KMO) test and Bartlett's test of sphericity (KMO = .94; Bartlett's test of sphericity, $\chi^2(276) = 1296.07$; $p < .001$) an optimised parallel analysis was carried out (Timmerman & Lorenzo- Seva, 2011).

At stage 2, three models were assessed by the confirmatory factor analysis (CFA) with respect to the polychoric correlations matrix obtained through the second random subsample (n = 552): **the single-factor model, the two-correlated factor model and the three-correlated factor model**. Reliability of measurements (internal coherence, reliability of individual indicators, construct reliability and measurement error) was assessed on the last model. All the models were assessed through diagonally weighted least squares with respect to the polychoric correlations matrix using the R 3.6.3 software (R Core Team, 2021) and the Lavaan package (Rosseel, 2012).

Results

The aim was to verify whether the grouping of systemic, instrumental and personal skills carried out by the Tuning study matched the exploratory and confirmatory analysis of this work.

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Stage 1. Exploratory Factor Analysis

The optimised parallel analysis performed on 1000 random replications obtained an optimal solution of a factor when considering the 95th percentile of the random variance ratio and of three factors when considering its mean value. The three-factor selected solution explains the 52% of common variance. Table 1 shows the factor analysis results. **The first factor**, with an polychoric correlations value of 8.87, explains the 21% of common variance and has been named as *Personal and Interpersonal Skills* (F1). It is made up of 9 items with their contents being related to individual skills concerning being able to express feelings, having criticism and self-criticism capabilities, having social skills related to interpersonal skills, developing the ability to work in teams or expressing social or ethical commitment. These skills usually promote social interaction and cooperation processes. **The second factor**, with an eigenvalue of 1.37, explains the 18% of common variance and has been named as *Teaching-Learning Process Management and Planning* (F2). It groups 7 items related to various organisational and managing skills for teaching-learning processes. **The third factor**, with an eigenvalue of 1.03, explains the 13% of common variance and refers to the *Instrumental Skills* (F3). It is made up of items related to technological skills concerning the use of the new technologies and information management, as well as linguistic skills such as oral and written communication or the knowledge of a foreign language.

Table 1 **Exploratory Factor Analysis. Saturations, Communalities and Explained Variance.**

Factor 1. Personal and Interpersonal Skills		**F1**	**F2**	**F3**	**h2**
1.25	Analysis and synthesis capabilities	.46	.22	.08	.39
1.26	Organisational and planning abilities	.52	.20	.00	.46
1.30	Teamwork	.62	.01	.10	.33
1.31	Interpersonal relationship skills	.56	.15	.04	.48
1.32	Critical thinking	.88	.12	.04	.69
1.33	Ethical commitment	.66	.07	.17	.53
1.34	Autonomous learning	.82	.14	.02	.55
1.35	Adjusting to new situations	.67	.10	.04	.59
1.36	Creativity	.48	.22	.00	.43
Eigenvalue: 8.87; Explained common variance: 21%; Ordinal Cronbach's α = .89; McDonald's ω = .89					
Factor 2. Teaching-Learning Process Management and Planning					
1.23	Knowing educational institutions organisational features	.03	.43	.23	.39
1.24	Developing suggestions for changing the educational reality	.10	.52	.13	.48
2.1	Organizing and encouraging learning settings		.69	.17	.61
2.2	Managing learning progress		.78	.16	.65
2.3	Devising and implementing attention to diversity strategies		.78	.01	.51
2.4	Involving students in their learning and the institution's life		.76	.04	.64
2.7	Informing and involving families		.49	.46	.56
Eigenvalue 1.37; Explained common variance: 18%; Ordinal Cronbach's α = .87; Mcdonald's ω = .89					

(*Continued*)

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Factor 3. Instrumental Skills		F1	F2	F3	h2
1.28	Knowledge of a foreign language		.11	.58	.38
1.29	Computer knowledge related to study		.20	.82	.59
2.6	Taking part in institution's management		.42	.51	.59
2.8	Using Information and communications technology		.13	.78	.57
2.9	Addressing the profession's duties and ethical dilemmas		.16	.48	.53
Eigenvalue: 1.03; Explained common variance: 13%; Ordinal Cronbach's α = .83; McDonald's ω = .86					

Stage 2. Confirmatory Factor Analysis

At the second stage, the goodness-of-fit of three one-, two- and three-factor models was compared. The result was very favorable to the three-correlated factor model. As shown in Table 2, the improvement of fit in model 3 with respect to the rest of the models, was conclusive.

Table 2 **Comparison of Fit Indexes for the Three Models Considered**

Model	χ^2 (df)	$\Delta\chi^2$ (Δdf)	p($\Delta\chi^2$)	RMSEA	ΔRMSEA	CFI	ΔCFI	TLI	ΔTLI
1	1106.63 (189)	-	-	.066	-	.96	-	.963	-
2	732 (188)	374.43(1)	< .001	.051	.015	.98	.013	.978	.015
3	645.59 (186)	86.81(2)	< .001	.047	.004	.98	.003	.981	.003

Note. RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker- Lewis Index; df = Degrees of Freedom; Δ (CFI, TLI, RMSEA) = Changes in Fit with Respect to the Previous Least Restrictive Model.

Overall, ordinal alpha reliability results (Gadermann, et al., 2012) of α = .94, and McDonald's omega (McDonald, 2013; Revelle and Zinbarg, 2009) of ω = .95 were obtained. Both values were considered as excellent. As for the first subscale, internal consistency indexes (α_1 = .89; ω_1 = .89) were good. Regarding the second subscale, reliability indexes (α_2 = .87; ω_2 = .89) were good. Likewise, regarding the third subscale, reliability values (α_3 = .83; ω_3 = .84) were adequate.

The composite reliability (CR) analysis of every latent variable provides a construct reliability indicator. The CR was higher than .70 (CR_1 = .86; CR_2 = .85; CR_3 = .80) for all instances. This means the three subscales' indicators, when taken together, are a reliable measurement for the construct. As for the average variance extracted (AVE), values of AVE 1 = .51 for the first latent variable, AVE_2 = .52 for the second latent variable, and AVE_3 = .51 for the third latent variable were obtained. Since the average variance extracted was higher than .50 for all instances, it was concluded that a substantial amount of the indicator's variance was explained by the construct when compared to the measurement error. Overall, all these indicators meant reliability signs in the operationalisation of the three latent variables making up the scale.

The single-indicator's reliability was also simultaneously analysed. Each indicator's reliability could be verified by R^2 values, which show a variance ratio for each indicator explaining the latent variable, where high R^2 values meant the indicator was reliable. The most reliable indicator of Factor 1 (Personal and Interpersonal Skills) was item 1.35 (*Adjusting to new situations*; R^2 = .55) and the least reliable was item 1.30 (*Teamwork*; R^2 = .19). As for factor 2 (Teaching-Learning Process Management and Planning), the most reliable was item 2.4 (*Involving students in their learning and the institution's life*; R^2 = .53) and the least reliable item was 1.23 (*Knowing educational institutions organisational features*; R^2 = .32). Finally,

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regarding factor 3 (Instrumental Skills), the most reliable was item 2.9 (*Addressing the profession's duties and ethical dilemmas;* R^2 = .6) and the least reliable was item 1.28 (*Knowledge of a foreign language*; R^2 = .3). With regard to convergent validity evidence (e. g. indicators for each latent variable share a high ratio if common variance), as shown in Table 3, (a) the factorial loads for all the indicators were significant; (b) all of them, except one, were higher than .5; and (c) the saturations's average variance of the items for each factor were all higher than .5, which can also be considered as a convergent validity indicator.

The discriminant validity evidence showed that all of the constructs analysed are unique and different to each other. In order to verify whether there is discriminant validity evidence, three approaches (Hair et al., 2010) were used. Firstly, the correlation between each pair of factors was set to 1, and the fit of the resulting models was compared to the initial three-correlated factor model's fit. The results showed that this model was significantly higher than the models were the correlation between F1 and F2 ($\Delta\chi^2$ (1) = 3272.3, p < .001), between F1 and F3 ($\Delta\chi^2$ (1) = 3066.8, p < .001), and between F2 and F3 ($\Delta\chi^2$ (1) = 2504.4, p < .001) was set to 1, as shown in Table 4.

Table 3 Three-Correlated Factor Solution Assessments

Latent Factor	Indicator	B	SE	Z	p-value	Beta
F1	1.25 Analysis and synthesis capabilities	1	0	-	-	0.68
F1	1.26 Organisational and planning abilities	0.9	0.03	34.89	0	0.65
F1	1.30 Teamwork	0.6	0.02	28.47	0	0.45
F1	1.31 Interpersonal relationship skills	0.97	0.03	34.82	0	0.66
F1	1.32 Critical thinking	1.02	0.03	35.87	0	0.71
F1	1.33 Ethical commitment	1.06	0.03	35.43	0	0.68
F1	1.34 Autonomous learning	0.87	0.03	33.23	0	0.61
F1	1.35 Adjusting to new situations	1.09	0.03	36.4	0	0.73
F1	1.36 Creativity	1.06	0.03	34.64	0	0.64
F2	1.23 Knowing educational institutions organisational features	1	0	-	-	0.61
F2	1.24 Developing suggestions for changing the educational reality	1.14	0.03	34.21	0	0.67
F2	2.1 Organising and encouraging learning settings	1.01	0.03	34.58	0	0.7
F2	2.2 Managing learning progress	1.02	0.03	34.66	0	0.72
F2	2.3 Devising and implementing attention to diversity strategies	1.01	0.03	33	0	0.62
F2	2.4 Involving students in their learning and the institution's life	1.19	0.03	35.2	0	0.74
F2	2.7 Informing and involving families	1.27	0.04	33.66	0	0.64
F3	1.28 Knowledge of a foreign language	1	0	-	-	0.54
F3	1.29 Computer knowledge related to study	1.15	0.04	31.75	0	0.65
F3	2.6 Taking part in institution's management	1.29	0.04	32.67	0	0.73
F3	2.8 Using Information and communications technology	1.18	0.04	31.68	0	0.66
F3	2.9 Addressing the profession's duties and ethical dilemmas	1.24	0.04	32.88	0	0.75

Secondly, the confidence interval test (Anderson and Gerbing, 1988) showed that the confidence interval of correlations between factors did not include 1 (ρF1-F2 = .778 [.762 - .794], SE = .008; ρF1-F3 = .703 [.687 - .719], SE = .008; ρF1-F3 = .835 [.817 - .853], SE = .009). Thirdly, it was confirmed that the HTMT ratio (Henseler et al., 2015) of correlations between indicators of different factors (heterotrait-heteomethod correlations – HT) and between the correlations of the same factor (monotrait-heteomethod correlations – MT) was lower than .9 (F1 – F2, HT / MT = .771; F1 – F3, HT / MT = .693; F2 – F3, HT / MT = .835).

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Table 4	Comparison of Fit Indexes for the Four Three-Factor Models								
Model	**χ^2 (df)**	**$\Delta\chi^2$ (Δdf)**	**p($\Delta\chi^2$)**	**RMSEA**	**ΔRMSEA**	**CFI**	**ΔCF**	**TLI**	**ΔTLI**
3 Factors	645.59 (186)	-	-	.047	-	.983	-	.981	-
1 (F1-F2)	3917.69 (187)	3272.3(1)	< .001	.134	.087	.865	.118	.848	.133
2 (F1-F3)	3712.69 (187)	3066.8(1)	< .001	.131	.084	.872	.111	.856	.125
3 (F2-F3)	3149.76 (187)	2504.4(1)	<.001	.120	.073	.893	.09	.879	.102

Note. RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker- Lewis Index; df = Degrees of Freedom; Δ (CFI, TLI, RMSEA) = Changes in Fit with Respect to the Previous Least Restrictive Model.

Discussion

The results obtained showed an integral formative view of skills in physical education teacher training, where three dimensions developing teaching skills were aligned with ANECA (2005a, 2005b). The exploratory factor analysis showed an in-training skills three-factor structure. With regard to **the first factor** concerning personal and interpersonal skills, it was made up of nine items integrating a logic unit around two dimensions of skills development: (1) attributes of the person, such as their readiness to develop autonomous learning, critical thinking, ethical commitment or the ability to contribute with creative, alternative and innovative solutions, as well as being able to adjust to new situations, by implementing analysis, synthesis, organisation and planning abilities. All of them depend on the participant's involvement and allow them to develop and extend to the classroom the necessary interpersonal skills and abilities to handle teamwork and social skills (Wright et al., 2021). The existence of critical thinking and ethical commitment evince that the basic skills training model teaches self-awareness skills in order to adjust to different situations and settings by implementing creative, innovative and flexible ideas to the necessities of the persons in the changing contexts, as recommended by Evetts (2013), Frey et al. (2019), Laval (2004) and Ritzer (2007). The integrated development of personal and interpersonal skills requires a training model structured into logic teaching units used for dynamising, combining and practicing them (Echeberría, 2002; OECD, 2016). Some of those skills included in Tuning (González and Wagenaar, 2003) are understood when combined as critical to know, understand, become aware and thrive in a working environment, promoting self-knowledge and collaborative relationships with others.

With regard to **the second factor**, which is related to the skills needed to manage and develop learning processes, it is made up of seven items following two training approaches:

(1) knowing the functioning and organisation of institutions and the educational reality itself and (2) planning and developing the learning process by leveraging, boosting and generally managing learning progress. Both approaches address a teacher skill training macromodel recommended by the European Commission (2013), urging to teach skills for learning to think, know, feel and act as teachers, by integrating teaching knowledge, skills and attitudes to manage both the institution and the classroom. This view highlighted the need for knowing the organisation and actual functioning dynamics of the educational institutions (Bourgonje and Tromp, 2011) in order to get professionally involved in institutional projects (Sánchez- Tarazaga, 2016). This factor also incorporated skills and abilities for planning and managing the students' learning process, by boosting and monitoring their progress in the classroom, developing pedagogical strategies and helping

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students that are most in need of assistance (Erhorn et al., 2020). According to Lukas et al. (2014), Moreno-Murcia and S nchez-Latorre ( ), Perez-Gonz lez et al. (2019), and Yew and Wang (2016) these skills are critical and transversal to quality teacher training models. Besides, basic training seems to address the development of skills aimed at involving students in developing their own learning, as well as in the institution's life, by placing value in informing and involving families, calling for communication, dialogue and discussion with them, as well as involving them in the learning of their own children around an open and welcoming educational community they all belong to (Capitanescu-Benetti and D´Adonna, 2020).

With regard to **the third factor**, that is instrumental skills, it includes various skills around the technological mastering and knowledge of languages in order to greatly contribute to institution's management, by allowing, for instance, to manage internal administrative issues or resources, or undertake different professional roles (teaching, administrative, managing and institutional roles) along with other teachers and organisations in order to develop national and international transdisciplinary shared projects (Perrenoud, 2004). In line with Tuning (González and Wagenaar, 2003) and ANECA's instructions (2005a, 2005b), communicative, technological and cognitive instrumental skills allow one to better understand the educational reality and transform it. Technological skills for teacher training as a way to access and handle information (Prat and Camerino, 2012; Prat et al., 2013; Romero et al.,2017) are especially highlighted. It also includes the professional duty of understanding and addressing challenges and ethical dilemmas inherent to the profession, even against the educational system itself and its misalignments, and of advocating for the socially accepted great values such as the respect for human dignity and gender equality (Gluchmanová, 2017; Ribeiro and Amorim, 2020).

The integrated approach of the Physical Education skills teacher training presented in this study is also observed in the studies carried out by Hortigüela-Alcalá et al. (2018), where various skills, such as creative skills, autonomous work, inter- and intrapersonal skills, reflective skills, critical skills, communicative skills and metacognitive skills are included.

Besides, according to Meier (2020) and Moreno-Murcia et al. (2015), the ability to develop pedagogical strategies in the classroom are vital to drive the students' autonomy, increase their active development and promote a classroom atmosphere facilitating efficient teaching- learning processes (Aelterman et al., 2014; Cheon and Reeve, 2015; Perez-Gonz lez et al., 2019; Yew and Wang, 2016).

There has been sufficient evidence contributing to support that the three subscales making up the measuring tool have an adequate internal consistency, enough reliability for single indicators and an appropriate reliability for the construct. Regarding validity, there has been sufficient evidence of convergent and discriminant validity. However, it would be advisable to study the potential existence of a strong common factor, as suggested by the correlation values among the three latent variables and the results of the optimised parallel analysis.

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