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Educational beliefs and the development of professional identity during secondary teachers' initial training

Creencias docentes y desarrollo de la identidad profesional en la formación inicial del profesorado de secundaria

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ABSTRACT:

The development of a Teacher's Professional Identity (TPI) is fundamental along student teachers' initial training that is influenced by the conceptions of those who aspire to be part of that profession. This study explores the beliefs of Secondary Education Teaching Master's degree students as regards the training they receive and the construction of their TPIs. The aspects that attract most interest are related to the curriculum, along with the capacity to motivate pupils and resolve conflicts in the classroom.
Keywords: Initial training; secondary education; educational beliefs; professional identity.

RESUMEN:

El desarrollo de la Identidad Profesional Docente es un pilar fundamental en el proceso de formación inicial del profesorado que se ve influenciado por las concepciones de quienes aspiran a tal profesión. Este estudio indaga las creencias del alumnado del Máster de Formación del Profesorado de Educación Secundaria sobre la formación que reciben y la construcción de la IPD. Los aspectos que suscitan mayor interés son las creencias curriculares, la capacidad por motivar al alumnado y resolver conflictos de aula.
Palabras clave: formación inicial; educación secundaria; creencias docentes: identidad profesional

1. Introduction

One of the principal challenges confronted by those who currently undertake Initial Secondary Education Teacher Training (ISETT) lies in ensuring that the academic programmes designed for them will prepare them for a continuously evolving educational reality (EURYDICE, 2013; OCDE, 2015). However, literature shows that teacher-training programmes do not always satisfy their students' expectations as regards their development

as educators (Murray, 2010; Hobson & Ashby, 2012; Cameron & Grant, 2017).

The professional profile of a Secondary Education Teacher has given rise to debates regarding the competencies that these professionals should acquire and develop during their period of training, along with the need to orientate this training towards the construction of a Teacher's Professional Identity (TPI) such that, after completing their initial training, they will identify more with and feel more committed to their profession (Manso Ayuso & Martín Ortega, 2014). According to Beijard, Meijer y Verloop (2004), it is, to a great extent, during ISETT that future educators forge their TPI, although it will continue to evolve throughout their professional career, in accordance with their beliefs, their teaching-learning contexts and the previous experiences that they have acquired (Boulton, 2014; Lorenzo Vicente, Muñoz Galiano & Beas Miranda, 2015).

In this respect, initial training models should place special emphasis on the professional identities of the teachers themselves, i.e. "specify which roles professionals are going to play as teachers and what can be realistic objectives in their daily work…and teachers should, moreover, provide a profile of their own styles that is appropriate for their personalities and their own ideas regarding teaching (Esteve, 2009, p. 20). If this does not occur, then teachers may fail professionally at an early stage that could directly affect the quality and excellence of their teaching and, as a consequence, the results of their pupils at that educational level (Hong, 2010). It is for this reason that Lenuta, Tomsa, Rebega and Apostol (2013) state that a teacher's initial training has a considerable effect on the construction of his or her TPI. There is obviously a strong relationship between people's educational beliefs before working in the profession and the effect that learning has on the way in which they develop their identities as teachers (Stenberg, Karlsson, Pitkaniemi & Maaranen, 2014). Swennen, Jones & Volman (2010) and Izadinia (2014) agree that the TPI is a social construct that is modelled by means of one's own educational experiences, the social vision shared by the profession and the initial training received. Olsen (2008) is of the opinion that a continually developing TPI is a conglomeration of the individual's prior points of view together with the integration of new knowledge and beliefs. Vloet and Van Swet (2010) similarly state that in a good training centre we should not forget the construction of the TPI owing to the significant impact that it will have on the quality of future teachers. We should, therefore, be conscious of the mark that initial training programmes and educational beliefs leave as regards not only the acquisition of contents, but also the construction of future teachers' TPIs.

1.1. Educational beliefs and the construction of the TPI

Teachers' educational beliefs are of great interest and are a supportive strategic framework for the continuous organisational and curricular changes that take place (Azcarate & Cuesta, 2012). Numerous studies showing the importance of knowing the professional aspects that concern trainee teachers at different stages have been carried out on this subject with the intention of improving these teachers' preparation (Soininen, Merisou & Korhonen, 2013).

In the context of the professional teacher, the term 'identity' refers to all those characteristics that converge to enable a professional to be produced (Salazar Noguera & McCluskey, 2017). Bearing the various educational beliefs in mind, Beijaard, Verloop and Vermont (2000) define three main types of TPIs: the expert in material, the expert in didactics and the expert in pedagogy. The first of these is related to a more traditional concept of the educational function in which the teacher merely transmits contents in which s/he has a high level of expertise. The expert in didactics focuses on those types of teaching that are more instrumental and places special emphasis on the development and learning of the various learning models. This type of TPI is influenced by the teachers' perceptions of each approach and their feeling of responsibility and autonomy as regards putting them into practice. The last type of TPI is related to the fact that teaching cannot be simply reduced to a technical or instrumental action resulting in the students learning, but rather the need to evaluate the didactic side of the profession and ensure that it is related to the pedagogic side, with ethical and moral characteristics. With regard to this idea, in the research developed by Cantón, Cañón, Arias y Baelo (2015) concerning Trainee Secondary Education

Master's degree students' expectations as regards the construction of their TPIs, the majority of future teachers were of the opinion that their educational training should principally be focused on keeping them academically up to date as regards the teaching of the discipline itself (Martínez & Villardón, 2015), and that general pedagogic preparation was of less importance.

Izadina (2016) is, however, of the opinion that the construction of secondary teachers' TPI is determined by beliefs that manifest themselves in aspects such as: an interest in education; their perception of the development of educational competencies; their view of secondary education; the teachers' professional problems; the role played by motivation in professional development; how the learning process is interpreted; their evaluation of learning and the initiation of educative research, etc. As Williams (2010) points out, it is, therefore, necessary to know the future teachers' positions in these respects in order to be able to establish training programmes that will coincide with their demands, and these programmes will contribute to the reflexive construction of their TPIs. Chong, Ling and Chuan (2011) similarly maintain that, while the research-based discussion on TPI has focused on the beginnings of teachers' professional careers and on their progress during the course of those careers, little research has been carried out into this subject during the first years of initial teacher training, and even less so as regards the changes in depth and content that occur in student teachers' educational identities between starting and finishing their initial training programmes (Lorenzo Vicente, Muñoz Galiano & Beas Miranda, 2015; Martínez & Villardón, 2015). It is important to establish an initial understanding of future teachers' beliefs as regards teaching while they are undergoing their initial training and this is a fundamental principle if ISETT is to be improved (Chong & Low, 2009). Zivkovic (2016) likewise emphasises that the role played by teachers as regards concepts such as reflexion and self-evaluation is a significant factor in the formation of their TPIs.

It has, therefore, been recognised that educational beliefs as a part of the construction of the TPI play a significant role in the teacher's development (Atkinson, 2004; Trent, 2011) and suppose new challenges that will oblige initial training to be improved with regard to those aspects commented upon previously.

Studies on the TPI are, effectively, a fundamental aspect for ISETT, not only because it represents a training space in which students will develop into future professionals, but also because it is here that those identifying characteristics that will, in the near future, define them as teaching professionals will be constructed and reconstructed. This research is similarly oriented towards discovering the educational beliefs of trainee teachers, thus enabling us to focus on their own perceptions in order to understand their feelings towards the profession and the components that are linked to working in this profession, thereby allowing us to contribute towards improving ISETT.

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2. Methodology

2.1. Objectives of the study

The general objective of this research was to discover ISETT Master's degree students' beliefs during their initial training process as regards what type of education they believe is required to enable them to practise their profession. Our specific objectives were the following:

- To identify the aspects of initial teacher training that most ISETT Master's degree students believe they should be taught.

- To discover the relationship among the various educational beliefs and the creation of the TPI.

2.2. Population and sample

The population being studied corresponded with the group of students enrolled on the ISETT Master's degree at the University of Cordoba in the academic years 2014-2015 (44.6%) and

2015-2016 (55.4%), comprising 361 students (94.1%). The majority of the students are between 20 and 25 years of age (41.8%), followed by a group of students of between 26 and 30 (34.6%) and, finally, those aged 30 and over (23.5%). With regard to gender, there is a slightly higher proportion of women (53.7%). In the case of knowledge areas, the sample was grouped in four macro-areas of knowledge: Experimental Sciences (Physics and Chemistry, Biology and Geology, Health and Sport Sciences) (31.5%), Instrumental Sciences (Technical Drawing, Computer Science and Mathematics) (30%), Social Sciences (History-Geography, Economics-Business Studies, Tourism, Work Training and Orientation, Educative Orientation) (20.4%) and Humanities (Foreign Languages, Spanish Language and Literature, Music) (18.1%).

2.3. Instrument

We created an ad hoc Likert-type questionnaire based on the theoretical antecedents focused on educational beliefs and their link to the construction of the TPI, with a five-point evaluation scale (Completely disagree, Disagree, Neither agree nor disagree, Agree and Completely agree). An inter-rater validation system comprising four experts (professors and professor-doctors from the University of Cordoba) was used to eliminate those questions that – on a Likert-type scale – obtained values of below four as regards the clarity and importance of the item. The questionnaire was tested on small sample of subjects (12), after which we verified its content and established the definitive instrument.

The final questionnaire was composed of 26 variables and divided into two sections. Section A concerned general data relating to the students (age, gender and Master's degree specialist subject). Section B contained 23 propositions related to the ISETT Master's degree students' educational beliefs. The reliability of the questionnaire obtained a Cronbach's alpha value of 0.909.

Furthermore, in order to verify whether the questionnaire provided similar results for different subsamples of the same population, we carried out a study in which we compared the means among the groups of subjects corresponding to the various knowledge areas (Kruskall-Wallis). Since we were unable to find any significant differences among the four groups, we used the K-S and M-W tests to check the mean values of these items between the students from the Experimental Sciences (SE) macro-area and those from the Technology and Instrumental (TAI) macro-area, and did not observe any significant differences. We, therefore, placed the subjects from both groups in the subsample of the Science, Technology and Mathematics (STM) macro-area. The same occurred with the groups of students from the Social Sciences (SS) area and the Humanities (HUM) area, and the subjects from both groups were consequently placed in the subsample of the Social Sciences and Humanities (SSH) macro-area.

A comparative study of the STM and SSH subsamples, during which the Kolmogorov-Smirnov (K-S) Z test was again applied to contrast the mean values of the items in this section of the questionnaire, is shown below. The Z values obtained after carrying out the K-S test are shown in Table 1. Note that there are no significant differences between the science (STM) and Arts (SSH) subsamples.

Table 1
Contrast of mean values obtained for STM and SSH groups

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Z (K-S)	0.763	1.066	0.558	0.782	0.940	0.663	1.035	0.258
p	0.606	0.206	0.914	0.573	0.340	0.771	0.234	0.954
Variables	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Z (K-S)	0.364	0.921	0.495	0.409	1.232	0.389	0.746	1.103

p	0.999	0.364	0.967	0.996	0.096	0.998	0.634	0.175
Variables	**17**	**18**	**19**	**20**	**21**	**22**	**23**	
Z (K-S)	0.953	1.015	0.584	1.354	1.216	1.007	1.277	
p	0.324	0.254	0.884	0.051	0.104	0.263	0.076	

The validity of the research instrument was analysed by carrying out a discriminant analysis of the various items in it. The subjects were classified in three groups containing similar numbers (a third in each group). The Kruskall-Wallis test, which was applied to the mean values of the variables contained in Section C of the questionnaire, showed the existence of significant differences among the subjects in the different levels.

The capacity to distinguish among these subjects can be appreciated in the data shown in Table 2, which illustrates that there are significant differences among the results obtained after applying the Kolmogorov-Smirnov (K-S) Z test to the contrast of the mean values of the items in Section C of the students in the opposing levels I and III of that sub-dimension ($p^{**} < 0.001$) in the case of all the variables analysed. It is, therefore, possible to consider that all the items included in the Section C of the questionnaire have a high level of discrimination.

Table 2
Contrast of means obtained for subjects from levels I and III

Variables	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**
Z (K-S)	4.632	4.440	3.829	3.986	4.586	5.517	5.186	5.650
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Variables	**C9**	**C10**	**C11**	**C12**	**C13**	**C14**	**C15**	**C16**
Z (K-S)	3.983	4.595	4.707	4.469	5.418	4.381	4.330	4.924
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Variables	**C17**	**C18**	**C19**	**C20**	**C21**	**C22**	**C23**	
Z (K-S)	4.648	4.913	4.257	5.111	4.913	4.134	4.968	
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

2.4. Data collection and analysis procedure

The data were collected at the beginning of the specific module of each of the ISETT Master's degree knowledge areas. These data have been codified as numerical data on an ordinal scale and various statistical treatments have been applied to them (frequencies and mean values, Mann-Witney and Kolmogorov-Smirnov tests, factorial analyses, relational analyses and cluster analyses).

3. Results

After carrying out the aforementioned analyses (K-S and M-W) we considered that all of the

subjects from the different specialties formed part of the representative sample of the population of ISETT Master's degree students at the UCO.

3.1. Educational aspects in greatest demand by ISETT Master's degree students

We carried out a relative frequency study (%) of the data provided by the 23 variables in the questionnaire (Table 3). We also carried out a complementary descriptive study of these variables (Table4). Upon grouping together those responses that had a significant level of agreement, adding up the percentages for levels 4 (agree) and 5 (completely agree), it is possible to consider the three different typologies in order to classify those aspects that are more or less in great demand at an educational level, bearing in mind the following criteria: (A) when more than 80% of the participants are in favour, (B) when between 80% and 60% of the participants are in favour and (C) when between 60% and 40% of the participants are in favour.

Table 3
Results of relative frequency analysis regarding educational requirements

Variables - items (categories à A B C)	****Degree of Agreement Level (%)***				
	1	**2**	**3**	**4**	**5**
1. Organisation and structure of education system (C)	7.5	19.1	19.7	36.8	16.9
2. Functioning of a secondary education centre (C)	3.6	18.0	20.2	36.0	22.2
3. Educational Regulations and legislation (C)	11.1	23.5	18.8	36.0	10.5
4. Educational programming and design of curriculum (B)	3.0	12.2	13.6	39.9	31.3
5. Oral communication techniques and resources (B)	3.9	8.0	11.9	38.2	38.0
6. Teaching methodology and strategies (A)	0.0	5.0	9.7	38.8	46.5
7. Design of learning activities (A)	0.0	7.5	10.2	37.7	44.6
8. Pupil motivation techniques (A)	1.9	2.5	7.2	38.2	50.1
9. Educative applications of new technologies (B)	2.5	10.0	15.8	42.7	29.1
10. Didactic use of conceptual schemas and maps (B)	2.5	14.1	17.5	41.8	24.1
11. Evaluation techniques and instruments (B)	0.0	19.9	17.7	42.9	19.4
12. Creation of didactic units (A)	0.0	7.8	11.6	40.7	39.9
13. Characteristics of learning processes (C)	3.9	22.2	15.2	38.8	19.9
14. Pupils' cognitive and intellectual development (B)	4.2	16.3	18.8	42.1	19.1
15. Psychology for adolescents (B)	2.2	15.5	15.2	39.6	27.4

16. Attention to diversity and special needs (B)	1.9	12.7	17.5	43.2	24.7
17. Pedagogy for coexistence in the classroom and centre (B)	1.1	12.7	14.4	42.1	29.6
18. Educative orientation and tutorial action (B)	3.0	17.2	15.5	40.4	23.8
19. Group dynamics techniques (B)	2.8	14.4	15.5	37.4	29.9
20. Conflict resolution techniques (B)	0.0	11.1	13.0	41.0	34.9
21. Development of academic authority (B)	3.9	15.8	16.9	40.7	22.7
22. Overcoming professionally stressful situations (B)	3.6	12.2	21.9	35.5	26.9
23. Transversal education themes: health and development, education about the Environment (C)	4.4	21.3	16.6	32.7	24.9

***Degree of agreement levels:** 1 = Completely disagree, 2 = Disagree, 3= Neither agree nor disagree, 4 = Agree, 5 = Completely agree

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Table 4
Other results derived from descriptive analysis

Variables->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Mean	3.37	3.55	3.11	3.84	4.01	4.27	4.19	4.32
Typ. Dev.	1.185	1.127	1.205	1.090	1.083	0.832	0.901	0.864
Variance	1.405	1.270	1.451	1.189	1.172	0.691	0.812	0.746
Variables->	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Mean	3.85	3.71	3.62	4.13	3.49	3.62	4.13	3.49
Typ. Dev.	1.027	1.060	1.013	0.901	1.153	1.013	0.901	1.153
Variance	1.055	1.123	1.026	0.811	1.328	1.026	0.811	1.328
Variables->	**17**	**18**	**19**	**20**	**21**	**22**	**23**	
Media	3.87	3.65	3.77	4.00	3.63	3.70	3.52	
Typ. Dev.	1.017	1.111	1.110	0.962	1.114	1.101	1.202	
Variance	1.034	1.234	1.232	0.925	1.240	1.211	1.445	

The data regarding global percentages and the mean values of the items shown in Tables 3 and 4 makes it possible to deduce that the majority of the aspects included in the this study correspond with themes that are of great interest to trainee secondary school teachers

during their initial training, with high favourable global percentages. Upon considering the classification shown above, the educational beliefs that attract most attention (over 80% of the subjects were in agreement) are related to training in curricular planning, with particular emphasis on methodological aspects and the teacher's capacity to motivate the pupils and resolve conflicts in the classroom.

In the second category of educational beliefs (in which between 60% and 80% of the subjects were in agreement) the students believed that they would benefit from training in pedagogy and psychology, varying among the programming of teaching and the use of different resources, and the acquisition of skills in order to manage work in the classroom with the pupils (group dynamics), attention to diversity, orientation, and assessing special education needs.

Finally, the last category contains aspects that are of less interest than those mentioned above (between 40% and 60% of the subjects were in agreement), and here the students believed that training in development psychology and learning, in addition to aspects related to the organisation and functioning of the education system and legislation would be beneficial.

3.2. Relation among the various educational beliefs

The table above, which contains educational beliefs that have been classified according to the relative degree of interest in them, shows that each level includes needs of a different nature. We have, therefore, used other alternative statistical analyses (similarity, correlation and conglomeration studies) with the objective of finding other criteria regarding the grouping of the variables that will allow us to interpret them in a more appropriate manner. The 23 items analysed in this study comprise educational beliefs that are very close to the sphere of educational psychology and of pedagogic and didactic aspects. We have, therefore, first carried out a multi-dimensional scaling study of the 13 variables related to the field of pedagogy or general didactics, and we have also carried out a similar analysis of the other 10 variables related to the domain of educational psychology. The first analysis allowed us to distinguish 3 groups of variables related to formative aspects of the pedagogy domain and general didactics (GEA, GD and MR) and the two groups or sets of variables related to the aspects in the sphere educational psychology and classroom management (EPs and CM).

The descriptive analysis of these sub-dimensions was carried out by grouping the five response categories for the different items into three more extreme categories, for which the following levels were defined: I = Completely disagree; II = Intermediate agreement; III = Completely agree. Once these sub-dimensions had been defined, we carried out a cluster analysis in order to discover whether or not there were groupings of subjects in the sample who collectively shared these opinions.

3.2.1. Educational Beliefs regarding pedagogy and general didactics

- *General Educational Aspects (GEA)*

The first nucleus groups together the General Educational Aspects (GEA). Table 5 shows the items included from the questionnaire (2, 23, 1 and 3) and ordered in descending value of the mean values obtained for each variable in the descriptive analysis described above and the relative frequencies of those in favour of each idea. The lower part of this table shows the results obtained after carrying out the cluster analysis, in which the global opinions of the ISETT Master's degree students are grouped together in three groups according to the highest or lowest percentage of subjects who shared the opinions contained in this sub-dimension.

The results shown in the upper part of Table 5 indicate that the educational beliefs grouped together in the GEA sub-dimension are of moderate interest to the ISETT Master's degree students. There is more interest in the themes related to the functioning of the secondary centre, transversal educational and knowledge of the education system, while there is less interest in themes related to knowledge of educational regulations and legislation

The cluster analysis indicates that a third of the students coincide as regards their high

evaluation of these aspects (cluster 3), while a fifth of them do not coincide in their opinions concerning these themes (cluster1). The remaining subjects (almost half of the sample) have an intermediate degree of interest in the set of ideas contained in this nucleus (cluster 2).

Table 5
Descriptive data concerning GEA sub-dimension

Grouped Variables	***I*** *(disagree)*		***II*** *(intermed.)*		***III*** *(agree)*	
Items (Mean)	*Frequ.*	*%*	*Frequ.*	*%*	*Frequ.*	*%*
2. Functioning of a secondary education centre (3.35)	78	21.6	73	20.2	210	58.2
23. Transversal educativion themes: health and development, education about the Environment,… (3.52)	93	25.8	60	16.6	208	57.6
1. Organisation and structure of educativion system (3.37)	96	26.6	71	19.7	194	53.7
3. Educational regulations and legislation (3.11)	125	34.6	68	18.8	168	46.5

Groupings for cluster analysis in GEA sub-dimension					
Group 1		***Group 2***		***Group 3***	
Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*
72	19.9	168	46.5	121	33.5

The result of the correlation analysis (Spearman's Rho) reveals high levels of association and all the correlations are significant (to the level of $p < 0'01$). We, therefore, consider that the ideas grouped together in this sub-dimension have a notable degree of internal consistency.

- *Diverse aspects of General Didactics*

This sub-dimension contains the educational beliefs related to pedagogic training based on the General Didactics (GD) domain, such as the programming of teaching, the development of the curriculum, the design of didactic units, communication when teaching, and evaluation. Table 6 shows, ordered in decreasing order of importance, the items from the questionnaire included in this sub-dimension (4, 12, 5 and 11) and the descriptive data corresponding to the frequencies grouped as explained above, along with the results obtained from the cluster analysis.

The results show that the subjects surveyed place great importance upon being trained in aspects of a generally pedagogic nature, such as the creation of didactic units (over 4/5 of the sample, learning oral communication techniques (over 3/4 of the sample) and the programming of teaching (over 7/10). There was also an interest in learning to use techniques and designing evaluation instruments (over 3/5).

Note that over 2/5 of the students surveyed were in global agreement as regards the set of ideas grouped in the GD sub-dimension (cluster 3), and that a similar proportion of subjects partially agreed (cluster 2), while the remaining subjects (1/6 of the set) agreed with the ideas contained in this sub-dimension to a low extent (cluster 1).

The results of the correlation analysis showed that the associations among these variables are high and significant (to the level of $p < 0.01$) in all cases, such that the ideas grouped in this sub-dimension have a high degree of interdependence and internal consistence.

Table 6
Descriptive Data for GD sub-dimension

Grouped variables	***I*** *(disagree)*		***II*** *(intermed.)*		***III*** *(agree)*	
Items (Mean)	*Frequ.*	*%*	*Frequ.*	*%*	*Frequ.*	*%*
12. Creation of didactic units (4.13)	28	7.8	42	11.6	291	80.6
5. Oral communication techniques (4.01)	42	11.6	44	12.2	275	76.2
4. Educative programming and design of curriculum (3.84)	55	15.2	49	13.6	257	71.2
11. Evaluation techniques and instruments (3.62)	72	19.9	64	17.7	225	62.3

Groupings for cluster analysis in GD sub-dimension					
Group 1		***Group 2***		***Group 3***	
Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*
60	16.6	150	41.5	151	41.8

- *Methodology and Resources (MR)*

The third sub-dimension contains aspects related to pedagogic or general didactic training, but concerns aspects closely related to the teaching methodology and the use of teaching resources, and particular interest was shown in developing active teaching and fomenting the pupil's interest.

The descriptive data and the results obtained from the cluster analysis are shown in Table 7.

Table 7
Descriptive data for the MR sub-dimension

Grouped variables	***I*** *(disagree)*		***II*** *(intermed.)*		***III*** *(agree)*	
Items (Mean)	*Frequ.*	*%*	*Frequ.*	*%*	*Frequ.*	*%*
8. Pupil motivation techniques (4.32)	16	4.4	26	7.2	319	88.4
6. Teaching methodology and strategies (4.27)	18	5.0	35	9.7	308	85.3
7. Design of learning activities (4.19)	27	7.5	37	10.2	297	82.3
9. Educative applications of new technologies (3.85)	45	12.5	57	15.8	259	71.7
10. Didactic use of conceptual schemas and maps (3.71)	60	16.6	63	17.5	238	65.9

Groupings for cluster analysis in MR sub-dimension					
Group 1		***Group 2***		***Group 3***	
Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*
31	8.5	139	38.5	191	52.9

These results reflect a great interest in all the items from the questionnaire that are grouped together in this sub-dimension. Over 80% of the ISETT Master's degree students showed an interest in learning to use educative techniques that favour the motivation of secondary

school pupils (almost 9/10), discovering new teaching methods and strategies (almost 5/6) and learning to design learning activities (over 4/5). Of the strategies and resources of interest for the future secondary school teachers' initial training, we can highlight the educative applications of new information and communication technologies (almost 3/4) and the didactic use of knowledge representation techniques, such as conceptual maps and cognitive schemas (almost 2/3).

The cluster analysis denotes a higher broad consensus of agreement as regards all the ideas grouped in this sub-dimension, since more than half the subjects are in cluster 3 and less that 10% are in cluster 1, while the remainder (over 1/3) are in an intermediate position. This result coincides with the data derived from the correlation analysis, since the Spearman's Rho coefficients obtained are fairly high and all the associations are very significant (to the level of $p < 0.01$). The ideas grouped together in this sub-dimension, therefore, have quite a high degree of internal consistency.

3.2.2. Educational beliefs regarding Educational Psychology

- *Educational beliefs regarding Educational Psychology*

This sub-dimension contains the various beliefs related to Educational Psychology (EPs): intellectual development, adolescence, the learning process, educational orientation and tutorial action. Table 8 shows the items from the questionnaire included in this sub-dimension (15, 18, 14 and 13), ordered according to their average values, along with the descriptive data of these variables corresponding to the grouping of frequencies in three levels (I, II and III). It also includes the results derived from the cluster analysis after grouping the Master's degree students' global opinions according to the highest and lowest percentages of subjects who shared opinions.

Table 8
Descriptive data for the EPs sub-dimension

Grouped variables	***I*** *(disagree)*		***II*** *(intermed.)*		***III*** *(agree)*	
Items (Mean)	*Frequ.*	*%*	*Frequ.*	*%*	*Frequ.*	*%*
C15. Psychology for adolescents (3.75)	64	17.7	55	15.2	242	67.0
C18. Educative orientation and tutorial action (3.65)	73	20.2	56	15.5	232	64.3
C14. Cognitive and intellectual development of pupils (3.56)	74	20.5	66	18.3	221	61.2
C13. Characteristics of learning processes (3.49)	94	26.0	55	15.2	212	58.7

Groupings for cluster analysis in EPs sub-dimension					
Group 1		***Group 2***		***Group 3***	
Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*
67	18.6	153	42.4	141	39.1

These results reflect that the trainee teachers have a great deal of interest in these themes, although the values obtained are not as high as those in the previous sub-dimension (methodology and resources). More specifically, there is a moderately high interest (between 2/3 and 2/5 of the subjects surveyed) in attaining knowledge related to the psychology of adolescents (over 2/3), educational orientation and tutorial action (almost 2/3), secondary

pupils' intellectual development (over 3/5) and understanding the nature of the learning process (almost 3/5).

The cluster analysis indicates that two fifths of the subjects agree to a great extent with the set of ideas grouped in EPs (cluster 3), over two fifths of the sample partially agree with them (conglomeration 2) and a little less than a fifth of the ISETT Master's degree students do not agree with the ideas in this sub-dimension to any great extent (cluster 1).

- *Classroom management*

This concerns aspects related to the themes of educational psychology that have a particular relationship with classroom management (CM) and the educational competencies or personal qualities that a teacher should have in order to favour coexistence and respect, organise a good working environment in the class, foment teamwork, resolve possible conflicts and overcome stressful situations that may occur in the classroom (Table 9).

The results shown in the upper part of Table 9 show that the themes related to psychology of the greatest interest to the students are those that have a closer connection to the real management of educational processes in the classroom. More specifically, there is quite a high amount of interest in learning techniques with which to avoid conflicts (over 3/4) and to favour coexistence (almost 3/4), discovering techniques related to group dynamics (over 2/3), knowing how to deal with the pupils' diversity and discovering who has special education needs (2/3), learning how to overcome stressful situations and maintaining intellectual and academic authority in the classroom (almost 2/3).

The cluster analysis corresponding to this sub-dimension indicates that around 2/5 of the students strongly agree with the set of ideas grouped in this category (cluster 3) and that a similar proportion of subjects partially agree (cluster 2). The remaining students, i.e. a fifth of them, are more inclined to disagree with the ideas contained in this sub-dimension (cluster 1).

Table 9

Descriptive data for the CM sub-dimension

Grouped variables	***I*** *(disagree)*		***II*** *(intermed.)*		***III*** *(agree)*	
Items (Mean)	*Frequ.*	*%*	*Frequ.*	*%*	*Frequ.*	*%*
C20. Conflict resolution techniques (4.00)	40	11.1	47	13.0	274	75.9
C17. Pedagogy for coexistence in classroom and centre (3.87)	50	13.9	52	14.4	259	71.7
C19. Group dynamics techniques (3.78)	62	17.2	54	14.9	245	67.9
C16. Attention to diversity and special needs (3.76)	53	14.7	66	18.3	243	67.3
C22. Overcoming professionally stressful situations (3.70)	57	15.8	74	20.5	229	63.4
C21. Development of academic authority (3.63)	71	19.7	65	18.0	225	62.3

Groupings for cluster analysis in the CM sub-dimension					
Group 1		***Group 2***		***Group 3***	
Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*
70	19.3	147	40.7	144	39.9

The correlation analysis of the variables grouped in this sub-dimension indicates that all the associations are high and significant (to the level of $p < 0.01$) and that the themes that are of interest to the subjects which are grouped in this sub-dimension have a high degree of interdependence and internal consistence.

4. Discussion

The setting up of the Master's degree in Secondary Education Teacher Training in Spain in the last few years has been related to the need to transform the ISETT in order to have teachers who are better prepared and qualified to provide education in the 21st Century, but this has generated a lot of expectations about the new teaching model that has still, in many respects, not been suitably developed (Cantón et al., 2015).

With regard to the first objective considered, it is possible to state that the results of the descriptive analysis indicate that the future teachers have quite a high amount of interest in certain beliefs related to ISETT (Azcarate & Cuesta, 2012) and, therefore certain expectations regarding their training that are not fulfilled, as is pointed out by Murray (2010), Hobson & Ashby, (2012) and Cameron & Grant (2017).

The intermediate level of interest includes an interest in training in pedagogy and psychology. The same interest level includes the incorporation of skills with which to manage classroom work, highlighting the use of strategies to improve group dynamics. It also includes formative requirements related to diversity, orientation and assessing special education needs. These ideas coincide with the concepts described by Beijaard, Verloop y Vermunt (2000) and their classification of the didactic and pedagogic TPI.

The last classification level as regards training requirements, in which the subjects showed relatively less interest then the two previous levels, is related to the organisation and functioning of the education system and legislation. As has already been stated in literature (Cantón et al., 2015), students have educational lacks related to the organisation and functioning of the education centre during the initial training process.

With regard to the second objective, the initial educational beliefs that are a priority for future teachers constitute a wide set of requirements that are interdependent on each other and which appear to be grouped in two principal nuclei of different natures.

The first of these nuclei, which is focused on the pedagogy and general didactics domain, has three dimensions (Beijaard, Verloop y Vermunt (2000). The first concerns aspects of general education and almost half of the population partially agreed with the set of ideas contained in this dimension. That is to say, the students surveyed are moderately interested in obtaining knowledge regarding current regulations and legislation, the functioning of secondary education centres and the structure of the education system.

The second dimension in the first nucleus contains the beliefs related to aspects of general didactics, i.e. those concerning training in psycho-pedagogical matters, the design of didactic units and the interest in learning to use evaluation techniques and instruments (Zorkovic, 2016). In our case, a third of the students coincided in their high evaluation of these aspects, and almost half of the future teachers stated an intermediate degree of interest in this set of ideas.

The third dimension is focused on educational beliefs regarding teaching methodologies and the use of educational resources, with a particular interest in developing active teaching that will foment the pupils' motivation. Of the most highly valued strategies and resources we can highlight the application of new information and communication technologies to education and the use of conceptual maps and cognitive schemas for the representation of knowledge. On this occasion, the future secondary school teachers agreed more unanimously as regards this dimension, thus justifying the need to include these aspects in ISETT.

With regard to the second nucleus, which concerns training requirements as regards psychology in education, the requirements are grouped in two dimensions. The results showed that the trainee teachers had a moderate amount of interest in the first dimension, which is related to aspects linked to educational psychology, although the values were not as

high as those obtained for the previous dimension (methodology and resources). Two thirds of the students have a moderately high interest in acquiring knowledge regarding the psychology of adolescents, while a smaller proportion highlight learning contents linked to orientation and tutoring. The second dimension contains aspects concerning the sphere of psycho-pedagogical training, which is closely related to classroom management and the educational competencies or personal qualities that the teacher should have in order to favour coexistence and respect, organise a good work atmosphere in the class, foment teamwork, resolve possible conflicts and overcome stressful situations that may arise in the classroom, all of which is very similar to what is stated by Izadina (2016). They specifically have a great interest in learning conflict-solving techniques and those that will favour coexistence. Two thirds of the population strongly agree with this set of requirements, which also includes training in attention to diversity.

4.1. Conclusions

The findings of this study may have implications when preparing the curricular design of ISETT. The need to guarantee clear links between theoretical contents and practical knowledge related to the construction of TPI is a key aspect as regards producing a quality teacher. The question that our study now poses is: how can attain this transitionIt is obvious that teacher-training programmes should review not only the content taught, but also the different stages of identity that are, and will be, present during teachers' careers. It has been shown that learning to teach is not limited to merely cognitive or technical knowledge, as is pointed out by Cantón, Cañón, Arias y Baelo (2015). Future teachers are obliged to work with the perspectives that they have of themselves, and how they project them in the workplace in order to construct and forge their own individual identities on the basis of the reflection and self-evaluation that, according to Zirkovi (2016), are the principle means to improve the TPI. These perspectives go further than technical ideas concerning work and are, in fact the equivalent to a new dynamic, professional and educational ego (Olsen, 2008). Some of the results obtained in this study are interesting from this perspective, since many of the students' educational beliefs are related to the need to improve their training in practical aspects that will make a relative contribution towards the development of their TPI. However, it should be recognised that it is still necessary to improve these teachers' training (Murray, 2010; Hobson & Ashby, 2012). It is obvious that growing globalisation is a phenomenon that will have a direct impact on teacher training, thus leading to the need to make significant changes as regards teachers' tasks and initial training programmes. The conclusions of this study pose new relevant challenges for ISETT programmes as regards the construction of the TPI. It is necessary to take formative action that will allow the students to work with their own sources of professional identity, i.e. to pay attention to the set of social, personal, scholastic and religious experiences that have, among others given rise to the way in which they view themselves. Furthermore, as is stated by Zirkovic (2016), there is a need to provide reflexive experiences, thus favouring the specification of the knowledge, beliefs and feelings implied in these conceptions of identities: formative spaces for reflection that will enable students to get to know themselves. Finally, it is necessary to point out that the results of this research should be viewed with caution owing to possible methodological limitations related to the study design. However, we consider that the information contained in it could serve as a basis on which to develop other more complex analyses and carry out more thorough research processes that will contribute to a better knowledge of the educational expectations and demands of future trainee secondary school teachers as a necessary aspect to favour the gradual improvement of ISETT.

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