Humanities & Social Sciences Communications

ARTICLE

https://doi.org/10.1057/s41599-021-00705-0 OPEN

Primary and secondary school teachers' perceptions of their social science training needs

Raquel Sánchez-Ibáñez [1]✉, Catalina Guerrero-Romera[1] & Pedro Miralles-Martínez [1]

Competency-based education is one of the challenges currently faced by social science teachers. At present, there is an abundance of research on competencies relating to the social sciences which favour the development of historical thinking among learners. The ongoing training of teachers is of vital importance when it comes to shifting the method of teaching towards approaches which focus more on the learner, which favour the teaching of historical contents and competences aimed at forming a critical citizenship. For this reason, the two objectives of this study are to discover which disciplinary contents are considered by teachers to be most relevant for the teaching of history and what training is required by teachers who give social science classes in primary and secondary education in Spain. The research is a non-experimental mixed-methods study. In order to achieve the first objective, a quantitative analysis has been carried out of the data obtained from a questionnaire with a Likert-type scale administered to 332 primary and secondary teachers in Spain. To achieve the second objective, the information obtained from 12 interviews with primary and secondary school teachers in Spain has been analysed in a qualitative way. The results obtained indicate that teachers update their disciplinary knowledge via scientific journals and that they are interested in receiving training in historical thinking skills, active learning methods and ICT resources. Based on these training needs, it is concluded that teachers currently envisage a teaching model in the social sciences which is more competency-based and focused on the active participation of the learner.

[1] Universidad de Murcia, Murcia, Spain. ✉email: raqueledu@um.es

Introduction

In recent years, ongoing teacher training has been, perhaps, one of the most burning issues associated with the demand for the updating of knowledge due to constant reforms and the continuous evolution of society (Barnes et al., 2017; Cochran and Zeichner, 2005; Darling and Bransford, 2005; Miralles et al., 2019). Such training is essential in order to be able to carry out the teaching and learning process of history as a social science, as the teacher must be trained in the knowledge, he/she transmits, the way in which he/she does this and the resources to be used. This also requires the carrying out of activities of scientific, educational and professional updating.

Therefore, it is important to reflect on the knowledge possessed by teachers in relation to the successful mastery of the tasks of their trade (Berliner, 2001; Bromme, 2001). As long ago as 1987, Shulman proposed the classification of the components of teaching knowledge and Gudmundsdóttir and Shulman (2005) proved that this knowledge is essential for the effective use of curricular materials, the design of classroom activities and the achievement of the effective learning of the subject matter. One of the integrated training models regarding disciplinary, pedagogical and technological competences, which has also been studied in relation with the social sciences is the *Technological Pedagogical Content Knowledge* (TPACK) model designed by Mishra and Koehler (2006). This model, although originating from the field of technology, has contributed towards determining the level of competence of teachers in order to integrate a set of knowledge and skills into their teaching activity (Koehler et al., 2015). The model consists of seven dimensions resulting from the three basic competences expected of a teacher: disciplinary (CK), pedagogical (PK) and technological (TK) and the intersections among them (PCK, TCK, PTK and TPACK).

Research on teacher training via the TPACK model has been abundant in recent years to the point of becoming a leading line of research on an international level (Akturk and Ozturk, 2019; Cabero, 2014; Colomer et al., 2018; Reyes et al., 2017; Roig and Flores, 2014). The most recent studies have been aimed at completing the theoretical design of the TPACK model (Koh and Chai, 2014; Herring et al., 2016; Olofson et al., 2016) and of teacher training courses which include the conceptual elements of this model (Cózar et al., 2015; Gómez, 2016; Mouza et al., 2014; Niess and Gillow, 2013). These training actions propose improvements in the level of competency of teachers while taking into account the integration of content, pedagogical and technological knowledge which the TPACK model advocates.

Teacher training must seek a balance between knowledge, skills and expertise and, as a result, it is necessary to combine strategies which promote disciplinary and teaching knowledge within the teaching and learning process of the social sciences in primary and secondary education, paying particular attention to methods, activities and resources (Gómez and Rodríguez, 2014; Zahonero and Martín, 2012). In this context, it is necessary to be aware of teachers' perspectives of the disciplinary dimension of the content (CK), the topics which they prioritise in their teaching and their teaching knowledge (PK), which converts their teaching into teachable and comprehensible knowledge (Bolívar, 2005). Therefore, the challenge which is posed today is to be able to train teachers who are competent when integrating their content, pedagogical and technological knowledge in order to improve their students' learning (Bolívar, 2012; Perrenoud, 2007). In the current context, we must also take into account The European Framework for the Digital Competence of Educators (DigCompEdu), which is a scientifically sound framework describing what it means for educators to be digitally competent. It provides a general reference frame to support the development of educator-specific digital competences in Europe (Redecker and Punie, 2017).

The in-service training of social science teachers is also a research line with a long history due to the fact that the updating of content knowledge, providing teachers with the necessary training for a good development of their teaching practice, is fundamental in the teaching profession (Barnes et al., 2017; González and Skultety, 2018; König et al., 2017; Yeşilpınar and Karakus, 2017). In-service teacher training has become even more important lately, if that is even possible, due to the appearance in recent decades of the competences in the educational sphere and advancements in the field of historiography and the teaching of the social sciences. This process of change implies a preoccupation with the ongoing disciplinary, pedagogical and educational training of teachers, which is gradually gaining ground against training of an academic, technocratic and traditional nature, only concerned with improving disciplinary knowledge. This trend, via the European impetus, is what makes it possible to think with optimism that progress is being made towards an improvement in the training of social science teachers (Maldonado, 2004; Miralles et al., 2018). In the specific case of Spain, there has been much specific research on the in-service training of social science teachers over the past two decades (Benejam Arquimbau, 2002; Domínguez, 2006; Miralles et al., 2019; Pagès et al., 2000; Sobejano, 1997; Trigueros et al., 2010). The same is true in the case of Latin America, in countries such as Chile (Vásquez, 2005), Venezuela (Zamudio, 2003) and Brazil (Oliveira, 2015).

In order to clearly define the design and planning of a useful in-service training programme for teachers, it is necessary to perform a diagnosis to discover, among other aspects, what knowledge is possessed by teachers and what training needs they have. This is the aim of this study, which attempts to define what knowledge social science teachers consider to be most relevant, whether that knowledge is related to significant historical characters and events of a political and institutional nature, or whether it concerns explaining historical processes or social and cultural contents. Based on these findings, the teachers were asked whether they consider that their disciplinary knowledge is up-to-date, how they update themselves and what training needs they consider they have in this regard. Therefore, the research question of this study is: What are the disciplinary and educational training needs of history teachers in primary and secondary education in Spain? Based on this question, the research is structured around two specific objectives:

- SO1. To discover which disciplinary contents teachers consider to be most appropriate for the teaching of history and to discover whether there are significant differences depending on the stage of education.

H_0: There are no statistically significant differences in the evaluations made regarding the relevance of the disciplinary contents according to the stage of education in which history is taught.

H_1: There are statistically significant differences in the evaluations made regarding the relevance of the disciplinary contents according to the stage of education in which history is taught.

- SO2. To analyse the opinions of primary and secondary teachers regarding the degree to which their knowledge of disciplinary contents is up-to-date and their training needs.

Methods

This research is a non-experimental mixed-methods study. The application of a mixed methodology in this research is appropriate in order to achieve a degree of complementarity in the results obtained according to the specific objectives which have

been defined (Nunez, 2018). In order to achieve the first specific objective, a quantitative analysis of the data obtained via a questionnaire with a Likert-type scale (1–5) has been carried out. Designs employing questionnaires are extremely commonplace in the field of education as they can be applied to a multitude of problems and make it possible to collect data on a high number of variables and to measure the results (Sapsford and Jupp, 2006). In order to achieve the second specific objective, the decision was taken to apply a qualitative exploratory method via interviews with practicing teachers (see Supplementary Information). Interviews are of use when it is desired that the subjects describe complex phenomena and facts which are the object of study (Pérez-Juste et al., 2012). The informed consent of the participants was obtained for this purpose. In addition, a favourable report was received from the Research Ethics Committee of the University of Murcia.

Participants. In the case of the survey conducted during the 2019–2020 academic year among practising teachers, the sample consisted of 332 teachers. Of these, 170 (51.2%) taught history in primary education (6–12 years of age), 157 (47.3%) taught in compulsory secondary education (13–16 years of age) while 1.5% did not indicate the educational stage in which they taught. In spite of the fact that this is not a probabilistic study, the participants came from 10 of the 17 Autonomous Communities which make up the state of Spain (Andalusia, Asturias, the Canary Islands, Castile and León, the Valencian Community, Extremadura, Galicia, Madrid, Murcia and the Basque Country). According to the official data of the Spanish Ministry of Education, there were 712,181 teachers in non-university education in the 2019–2020 academic year. Therefore, the sample size is situated in a margin of error of 5% and a confidence level of 95%. This lies within the advisable limits in research in the fields of education and the social sciences (3–5%). Thus, the conclusions drawn from the research are useful (López-Roldán and Fachelli, 2015). Of the 332 participants, 175 (52.7%) were women and 156 (47%) were men, with one person (0.3%) marking the box for "Other option". Finally, the age ranges of the participants in the survey can be observed in Table 1.

Twelve teachers participated in the interviews, conducted between March and April 2020, six of whom taught history in primary education while the other six taught in compulsory secondary education. Although the sample is not probabilistic, due to questions of convenience, the interviews focused on history teachers from schools in the Anonymous. However, it was ensured that the teachers selected had different socio-demographic profiles. Thus, the variables taken into consideration are as follows: the level of education in which they taught (primary, secondary-baccalaureate, university), sex (women and men), academic training (graduate degree/master's degree/doctoral studies related with education and humanities), years of teaching experience (more than 2 years) and type of school (state/state-subsidised) (Table 2).

Table 1 Age ranges of the participants.

Age	*n*	Percentage
20–29	26	7.83
30–39	83	25
40–49	104	31.32
50–59	94	28.31
60 and over	24	7.22
N/A	1	0.30
Total	332	100

Data collection tool. The questionnaire, designed within the framework of a national research project coordinated by three research groups in the field of the teaching of the social sciences from Spanish universities, was entitled "A questionnaire on ways of approaching the teaching of history" and consisted of a Likert-type response scale of five values. It was an additive scale with an ordinal level (Namakforoosh, 2000), which can also be called a summative scale given that the scoring of the surveyed subject constitutes the sum of the scores obtained for each item (Guil, 2006). In this case, the decision was taken to use five response options according to the recommendations of authors such as Bisquerra and Pérez-Escoda (2015) and Matas (2018).

The first part of the questionnaire related to identification with 10 fields for gathering data of a socio-demographic nature (sex, age, academic training in higher education, the stage of education, administrative situation and type of school, the province where the school is located, years of teaching experience, other stages of education in which the subject has taught, participation in teaching innovation projects and their scope). The second part consisted of two blocks. The first, entitled "On teaching approaches", consisted of 20 items which characterised three teaching models. This block corresponds to the questionnaire "Approaches to Teaching Inventory (ATI)" published by Prosser and Trigwell (2006). Specifically, for the purposes of this study, the Spanish version of the ATI questionnaire proposed by Monroy et al. (2015) was employed, which limits to 20 the items and their statements have been adapted in order to make reference to the subject of history.

The second block of the questionnaire was designed ad hoc for this research and is entitled "Opinions and conceptions on the teaching of history and teaching competencies". It consisted of 58 items grouped into five dimensions with a Likert-type five-point scale ranging from "not very relevant" to "extremely relevant". In the first dimension, those surveyed were asked about the relevance of certain historical topics when teaching the subject. In the second dimension, they were asked about the development of historical competences in the classroom. The third dimension inquired about the appropriacy of certain educational resources for teaching history while the fourth concerned the tools employed for the assessment of history. The last dimension was concerned with how the teachers taught conflictive historical topics in the classroom. This second block was based, on a theoretical level, on the "Beliefs About History Questionnaire", designed by Maggioni et al. (2009) and that has been translated to Spanish and used in the Spanish context with pre-service teachers (Miguel-Revilla et al., 2017, 2020a). In addition, for the identification of historical competences, the studies of Wineburg (1991) and Seixas and Morton (2013) have been followed and those developed in Spain by Carretero (2019a), Domínguez (2015), Gómez and Sáiz (2017), Gómez and Miralles (2016), González et al. (2011), López-Facal et al. (2011) and Sáiz and López-Facal (2015). In this specific study, from the socio-demographic data obtained, the independent variable of the educational stage in which history is taught will be employed, along with the results of the items from the first dimension of the second block, relating to the teachers' opinions on the relevance of certain contents in the teaching of history, as contrast variables (Table 3).

The first block of the survey was validated by the authors of the proposal on which it is based (Monroy et al., 2015) and its validity was contrasted in the successive studies published by its authors Trigwell and Prosser (2004) and Prosser and Trigwell (2006). The second block of the survey was validated in terms of clarity and relevance by a panel made up of seven expert researchers in the teaching of the social sciences from different Spanish universities (four researchers from the area of Didactics of Social Sciences,

Table 2 Socio-demographic characteristics of the teachers interviewed.

Code	Educational level	Sex	Academic training	Years of experience	Type of school
I1	Primary	Woman	Degree/Master's/PhD student	25	Public
I2	Primary	Man	Degree/Master's/ PhD student	2	Public
I3	Primary	Man	Diploma/Degree	35	Public
I4	Primary	Man	Diploma/Degree	18	Public
I5	Primary	Woman	Degree/Master's/ PhD student	3	Public
I6	Primary	Man	Diploma/ PhD student	3	State-subsidised
I7	Secondary	Man	Diploma/Degree/ PhD student	23	Public
I8	Secondary	Man	Diploma/Degree/PhD	34	Public
I9	Secondary	Man	Degree	13	Public
I10	Secondary	Woman	Diploma/Degree/Master's/PhD student	13	State-subsidised
I11	Secondary	Man	Degree/Master's/PhD	3	Public
I12	Secondary	Woman	Degree/PhD	27	Public

Table 3 Items from the first dimension of the questionnaire.

No.	Items
1	Main historical events which make it possible to understand the origin of the nation
2	Main political characters and military leaders
3	Economic issues: the development of agriculture, trade and industry
4	The great processes of humanity (the Neolithic Revolution, the Industrial Revolution, etc.)
5	History of transversal issues which may motivate pupils: the history of housing, the history of food, the history of transport, etc.
6	The history, culture and heritage of your local area and your region
7	The history, culture and heritage of our country
8	The history, culture and heritage of other, more distant, countries
9	The history of interesting characters: conquerors, inventors, artists etc.
10	The everyday life of ordinary people
11	The history of women: writers, scientists, etc.
12	Genocide and dictatorships
13	The disappeared, mass graves and political and social repression
14	The development of democracy and political participation
15	The development of human rights, social demands and struggles for equality
16	Migratory and religious conflicts
17	Feminism, sexism, gender identities
18	Environmental issues, landscape and the exploitation of natural resources
19	Identities, social representations and cultural practices

one from the area of Research Methods and Educational Diagnosis and one from the area of Didactics and School Organisation and one from the area of Educational Psychology). The information from a validation guide with Likert-type responses (1–4) was analysed via descriptive statistics and interjudge agreement. All of the items of the second block obtained scores higher than 3. Therefore, following the interpretation of the results of the validation, the statements of the items of the questionnaire were not modified. One of the limitations of the instrument used is the convenience of a confirmatory factor analysis to check the validity of the construct and measure the internal consistency of the questionnaire using the Cronbach´s alpha coefficient.

In order to achieve the second objective carried out via qualitative analysis, a structured written interview was administered to practicing teachers entitled "The training needs of teachers" (NEFOPRO, in its Spanish acronym) (see Supplementary instrument). This interview consisted of 10 questions with open responses which aimed to reveal whether the teacher has received updated training in terms of his/her disciplinary knowledge of the social sciences, active methodologies for the teaching of the social sciences, in what way and how often this knowledge is updated, what degree of satisfaction the subject has regarding the training received, what necessities he/she has with regard to the subject matter in general and in relation to geographical and historical thinking in particular, and, last of all, in what way he/she would like to receive training (courses, workshops, innovation projects, seminars) and how (in-person, distance learning or mixed). The interview concluded with an open question so that the person interviewed could express any other consideration related with the training needs of teachers in the social sciences.

Procedure and data analysis. In order to collect the data from the questionnaire, members of the research teams of the project from different Spanish universities were contacted and the questionnaires were distributed on paper and online. The protocols for the collection and handling of the data received a favourable report from the research ethics committees of the coordinating universities. The descriptive and inferential analyses were carried out using Mplus 7.0 (Muthén and Muthén, 2015). In particular, in the descriptive analyses, central tendency measures were calculated (mean, typical deviation and median). Secondly, inferential analyses were carried out by way of the Mann–Whitney *U* test in order to seek and identify the statistically significant differences between the independent groups. Non-parametric tests were employed due to the fact that the variables were ordinal (Espinoza, 2018).

The interviews were administered in written form in order to facilitate their mechanisation and later qualitative analysis via the ATLAS.ti 8 programme. In order to carry out the systematisation of the data, after repeated readings of the data units, and via a consensus among the authors responsible for this study, a prior system of categories and subcategories was drawn up, which was then validated by two external researchers, obtaining a Kappa coefficient of 0.83. Following the final agreement among the authors of the study, two subcategories proposed by the validators were added, thereby making 5 categories and 12 subcategories, to which codes were added with the aim of facilitating the analyses with the ATLAS.ti programme. Last of all, using this programme, codes were assigned to the subcategories employing an open coding system (Strauss and Corbin, 2002). The codes were obtained via a detailed reading in which the most relevant concepts contained in the responses of those interviewed were identified. These concepts were analysed and compared to observe similarities and differences and their degree of

Table 4 Categories, subcategories and code of the interview.

Category	Subcategory	Codes
Updating (U)	Disciplinary updating (DIS.U)	Reasons/Difficulties
	Educational updating (EDU.U)	Reasons/Difficulties
	Procedure (PR)	Courses/Workshops/Mass media/Digital platforms/Social networks/ Scientific meetings/Innovation projects
Training needs (TN)	Disciplinary training (DIS.T)	Competencies/Geographical thinking/Historical thinking
	Educational training (EDU.T)	ICT resources/Gamification/Flipped classroom/Role playing
Teacher training (TT)	When (TT.W)	
	By whom (TT.BW)	CPR/University of Anonymous
	Satisfaction (TT.S)	Positive/Negative
	Type (TT.T)	Courses/Workshops/Mass media/Digital platforms/Social networks/ Scientific meetings/Innovation projects
	Format (TT.F)	In-person/Distance learning/Mixed
Considerations (CO)	Disciplinary field (DIS.F)	Difficulties/Expectations
	Educational field (EDU.F)	Difficulties/Expectations

significance so as to be identified as codes (Charmaz, 2007). The final results are shown in Table 4.

The results obtained are presented below according to one method or another, which shall later be interpreted in terms of complementarity in order to answer the main objective of the research.

Results

The results obtained are presented below according to the specific objectives proposed in this study.

- SO1. To discover which disciplinary contents teachers consider to be most appropriate for the teaching of history and to discover whether there are significant differences depending on the stage of education.

The results of the descriptive analysis indicate that the disciplinary contents considered most relevant for the teaching of history are the development of human rights, social demands and struggles for equality (item 15) and the development of democracy and political participation (item 14). Both items obtained average values of around 4.5 points out of a maximum of 5 ("Extremely relevant") on the response scale. On the other hand, the disciplinary contents considered least relevant by the teachers surveyed are those relating to the main political characters and military leaders (item 2) and the history, culture and heritage of other, more distant countries (item 8). In these two cases, the teachers surveyed gave these contents an intermediate score ("Neither relevant nor irrelevant") concerning the teaching of history (Table 5).

The comparison between primary and secondary education teachers, via the inferential analysis, reveals that there are significant differences ($p < 0.05$) as far as the evaluations given of the relevance of the disciplinary contents highlighted for the teaching of history are concerned. In particular, in 12 of them, the null hypothesis regarding the evaluation of the disciplinary contents is rejected, depending on the stage of education in which history is taught (Table 5). The greatest differences occur in the contents relating to the history of interesting characters (item 9), the disappeared, mass graves and political and social repressions (item 13) and the main historical events which make it possible to understand the origin of the nation (item 1). Items 9 and 1 were valued more highly by primary teachers of history, whereas item 13 was valued more highly by secondary history teachers (Table 6).

On the other hand, the contents in which no significant differences have been found according to the answers given by the primary and secondary teachers are the history, culture and heritage of other, more distant, countries (item 8) and economic issues: the development of agriculture, trade and industry (item 3) (Table 7).

Table 5 Measures of central tendency on the relevance of contents.

Disciplinary contents	*n*	Mean	SD	Median
Item 1	332	3.76	1.125	4
Item 2	332	3.11	1.057	3
Item 3	332	4.06	0.799	4
Item 4	332	4.45	0.691	5
Item 5	332	3.98	0.871	4
Item 6	332	4.34	0.737	5
Item 7	332	4.39	0.698	5
Item 8	332	3.69	0.843	4
Item 9	332	3.80	0.947	4
Item 10	332	3.97	0.871	4
Item 11	332	4.19	0.843	5
Item 12	332	3.99	0.866	4
Item 13	332	3.70	1.052	4
Item 14	332	4.47	0.659	5
Item 15	332	4.58	0.615	5
Item 16	332	4.12	0.783	4
Item 17	332	4.02	1.050	5
Item 18	332	4.38	0.778	5
Item 19	332	4.16	0.802	4

Table 6 Contents for which the null hypothesis is rejected and mean values.

Contents	*Z*	*p*-value	Mean primary	Mean secondary
Item 1	−3.635	0.000	3.96	3.52
Item 2	−2.243	0.025	3.24	2.97
Item 4	−2.216	0.027	4.36	4.55
Item 5	−2.087	0.037	4.08	3.87
Item 9	−5.198	0.000	4.07	3.50
Item 10	−2.092	0.036	3.87	4.09
Item 12	−3.211	0.001	3.85	4.17
Item 13	−4.845	0.000	3.43	4.01
Item 14	−3.356	0.001	4.35	4.61
Item 15	−2.212	0.027	4.52	4.67
Item 16	−3.532	0.000	3.97	4.30
Item 18	−2.154	0.031	4.48	4.30

- SO2. To analyse the opinions of primary and secondary teachers regarding the degree to which their knowledge of disciplinary contents are updated and their training needs.

Table 7 Contents for which the null hypothesis is maintained and mean values.

Contents	Z	p-value	Mean primary	Mean secondary
Item 3	−0.022	0.982	4.07	4.06
Item 6	−1.683	0.092	4.41	4.27
Item 7	−0.152	0.879	4.38	4.40
Item 8	−0.011	0.991	3.70	3.68
Item 11	−1.651	0.099	4.29	4.12
Item 17	−0.167	0.867	4.05	4.01
Item 19	−0.099	0.921	4.17	4.16

Fig. 1 Word cloud for the subcategory procedure. Source: figure generated by the ATLAS.ti software. This figure is covered by the Creative Commons Attribution 4.0 International License. Reproduced with permission of ATLAS.ti; copyright © ATLAS.ti Scientific Software Development, all rights reserved.

The qualitative analysis carried out in relation to the "Disciplinary updating" (DIS.U) subcategory reveals that the primary school teachers have answered in an uneven manner as three of those interviewed (I1, I3 and I4) stated that their disciplinary knowledge is up-to-date, but two of them (I2 and I6) claimed that theirs was not and another (I5) responded "to some extent", recognising that her teaching knowledge was superior to her disciplinary knowledge. The reasons of those responding affirmatively are diverse. Two of the interviewees stated that the reason was related with the area or department to which they belong.

> "I am quite interested in the area and because I work directly in this field" (I1).

> "In the department I work in, knowledge is updated progressively" (I4).

On the other hand, those stating that they are not updated in terms of the disciplinary contents associated to the social sciences (geography and history) claim as the reason the speed at which knowledge advances in the present day, thereby making it difficult for them to be up-to-date or they recognise, as is the case of I2, that they have not updated their disciplinary knowledge since finishing their initial teacher training.

In the case of secondary school teachers, all of those interviewed have responded affirmatively to the question of whether they are updated in terms of disciplinary knowledge. However, the verb most used among the interviewees was "to attempt", which indicates that they have an interest in such updating, but that it is below the level that they would like it to be. If attention is focused on the analysis of the "reasons" code, it has also shown the existence of two key concepts when delving deeper into this updating of teachers' knowledge. These concepts are "professionality" and "pupils". First of all, the interviewees understand that the updating of their scientific and educational knowledge is part of their profession.

> "To be a good teacher, it is necessary to have your scientific and educational knowledge up-to-date" (I8).

> "I attempt to be up-to-date in all the field of knowledge required by my profession, reading and studying new research, findings and studies which are published, and which are related with the knowledge of the subjects I teach" (I9).

> "A teacher should always have the vocation to continue learning in order to give of the best of him/herself to his/her pupils" (I12).

This interviewee mentioned something that others pointed out as another of the specific reasons for justifying the updating of their knowledge, namely the lack of motivation among pupils with regard to the subject of social sciences and low academic achievement.

> "I have always been concerned with finding a method which can adequately cater for diversity in the classroom. I do not avoid my responsibility when pupils are lost along the way in apathy and demotivation" (I12).

> "Countering the truancy and poor results of my pupils has forced me to retrain day by day" (I10).

As far as the subcategory of procedure (PR) is concerned, the method of updating mentioned by all of the interviewees from primary education is via articles in specialised journals and bibliography. In addition, four of them (I7, I9, I11 and I12) stated that they update themselves via digital platforms such as social networks. Only two of them stated that they do so via training courses. In the case of secondary school teachers, all of those interviewed declared that they update their knowledge through articles in specialised journals, followed by courses in the Teacher Training Centre of the Anonymous. In third place is the use of the Internet and social networks and, last of all, participation in scientific meetings and congresses, research groups and consulting the mass media (press and television) and popular magazines (Fig. 1).

In the second category on training needs (TN), the subjects interviewed focused on needs of an educational nature. In particular, the primary teachers, with the exception of I3, mentioned that they have training needs. In half of the cases (I1, I2 and I6), these needs are focused on the use of ICT resources for the teaching of the social sciences. In two cases (I4 and I5) they are centred on other, non-disciplinary, aspects and are related to individualised attention, conflict management, planning skills and attention to diversity. In the case of the secondary school teachers interviewed, all of them stated that their training needs are related to methodological aspects regarding the subject of the social sciences. Specifically, with the exception of I9, all of the interviewees pointed towards the necessity of training in the use of ICT resources in the classroom for the teaching of the social sciences. Furthermore, two of them (I9 and I11) also mentioned training needs relating to the use of educational strategies focusing on the pupil (Fig. 2).

When asked about their interest in receiving training in disciplinary aspects relating to the social sciences, the interviewees responded favourably to being trained in issues relating to competencies, geographical thinking and historical thinking. The majority of the primary teachers, with the exception of I3, who had recently retired, also responded affirmatively to training in these issues. I1 even stated that "there is a lot of progress to be made in this question". All of the secondary teachers, with the exception of one case who stated that he is not interested at the moment (I11), responded that they are indeed interested in receiving training in the contents mentioned.

Fig. 2 Word cloud for the subcategory educational training. Source: figure generated by the ATLAS.ti software. This figure is covered by the Creative Commons Attribution 4.0 International License. Reproduced with permission of ATLAS.ti; copyright © ATLAS.ti Scientific Software Development, all rights reserved.

The analysis of the third category "Teacher training" serves to define the in-service training received recently (TT) and by whom it was given (TT.BW). In this regard, five of the primary teachers interviewed had received recent training (2019–2020) by way of courses given in two cases by the University of Anonymous and, in another two cases, organised by the Teacher Training Centre (CPR, in its Spanish acronym) of the Anonymous. The answers provided by the secondary school teachers are extremely similar, with all of them, with the exception of I8, stating that they had received recent training. In three cases, the training was received via courses from the CPR while another two teachers had taken courses organised by the University of Anonymous and by a banking institution.

As regards the level of satisfaction with the training received (TT.S), the primary teachers interviewed claimed to be satisfied in one case (4) and extremely satisfied in another case (E1). The rest stated that their level of satisfaction was intermediate. In the case of the secondary teachers, four were satisfied with the training received while two (I9 and I10) were not. Both the primary and secondary teachers coincided in evaluating their level of satisfaction with regard to the training received according to whether it proved "applicable" to their teaching. This concept appears as the reason put forward explicitly by half of those interviewed.

As far as the type of training (TT.T) that the teachers interviewed would like to receive is concerned, four of the primary school teachers (I1, I2, I5 and I6) were in agreement in mentioning educational innovation projects relating to the teaching of the social sciences, with only two of them mentioning doing courses (I4 and I5). As for the secondary teachers, all of those interviewed mentioned educational innovation projects, with only two of them mentioning doing courses (I7 and I9).

As for the format of the training (TT.F), on the whole, the primary teachers surveyed (4 out of 6) preferred that it be online and, in second place, mixed. On the other hand, half of the secondary teachers surveyed preferred the training to be online and the other half mixed. Only 3 (I8, I9 and I12) of the 12 teachers surveyed mentioned training in person.

As far as the last category regarding the "Considerations" (CO) of the interviewees about their training needs is concerned, these focus, again, on training in the use of innovative resources for the teaching of the social sciences. Specifically, the most repeated concept is that of "resource", followed by "transversality". With regard to teaching resources, several of those interviewed pointed out the necessity of using resources which favour the active participation of the pupils. Via the analysis of the "interests" and "difficulties" codes, it is possible to perceive the educational reality of teachers when teaching the social sciences, specifically in relation to the difficulties expressed in the following statements:

> "I detect an abusive use of the textbook and a lack of current texts which reflect on events close to the pupils" (I4).

> "The intense daily activity we have to bear makes it difficult to change educational models and we tend to use existing resources, which traditionally transmit concepts and are not very active" (I5).

> "Primary teachers, in addition to an ever-greater lack of knowledge of these sciences, still use a methodology fundamentally based on masterclasses and on the synchronous explanation of historical events" (I9).

> "In the end, the teacher ends up making basic use of what he/she finds on the Internet, without corroborating its suitability, basing themselves on what has been done by others and their opinions, without the capacity of generating their own material and without knowing how to access the appropriate tools due to a lack of personal training and a lack of facilities offered by schools, who are too attached to the publishers" (I12).

Another of the difficulties mentioned by several of those interviewed is the lack of transversality between the contents of different subjects and, therefore, between the teachers of different areas of knowledge.

> "I observe an extremely scarce interrelationship of our subject with other areas, which makes it difficult to establish an overall learning project" (I4).

> "One of the aspects which, in my opinion, can be improved in secondary and baccalaureate education is the practice of active methodologies in an interdisciplinary manner" (I6).

Finally, with regard to the "expectations" code, two of the teachers interviewed mentioned training in competencies as one of the fundamental aspects for change in the teaching of the social sciences.

> "A more in-depth training in this area is necessary in order to reinforce the competencies of the pupils via a more personalised teaching method which is adapted to the needs of the pupils" (I4).

> "PBL methods must be employed in an integral and transversal manner in both primary and secondary schools. I believe that the methodology of the future will go in this direction" (I2).

> "The development of the specific competencies of the social sciences in pupils via active learning methods may be the way to achieve this transformation" (I1).

Discussion and conclusions

As far as the first objective relating to the evaluation made by the teachers surveyed of the most relevant topics for the teaching of history is concerned, a change in teachers' traditional conception of the teaching of the social sciences can be noted, as the least valued contents are those relating to significant political figures and military leaders. In Spain (Carretero, 2019b; Sáiz and López-Facal, 2012; Valls, 2012) and other European countries (Armas et al., 2019; Barton, 2010), these contents have for decades sustained a historical narrative which fulfilled the function of creating a national identity among pupils. On the other hand, the contents which the teachers surveyed considered to be extremely relevant are those which encourage ideals of active citizenship and democracy among pupils, in other words, the development of human rights, struggles for equality, the development of democracy and political participation. One of the reasons for this

change may be motivated by the context of social demands which have arisen in many countries in recent years (the anti-austerity movement in Spain, the Arab Spring, Occupy Wall Street, Black Lives Matter). Another significant reason for a preference for these contents among teachers may be related with the progressive implementation in the Spanish curriculum in the compulsory stages of education (primary and secondary) of the key competences (Bolívar, 2010; Meroño et al., 2018), particularly the so-called "social and civic competence" which seeks to promote pupils' skills to relate with other people in a diverse and globalised social and cultural medium, putting into practice tolerant and democratic attitudes (Fuentes et al., 2019; Marina and Bernabeu, 2007; Martínez-Rodríguez and Sánchez-Agustí, 2018; Pineda, 2013).

This influence of the curriculum on teachers' opinions also explains the reason why primary teachers attribute greater relevance to the teaching of significant historical characters and events when teaching the subject of social sciences as the curriculum of this stage of education stresses precisely these contents as an initial approach to history (Parra et al., 2015). Indeed, history is a subject which the Spanish state, despite many educational reforms, has traditionally conceived of as an academic field of knowledge based on the teaching of facts, events and characters from the field of politics (Trepat, 2015). Indeed, the design of a history curriculum focused on the fate of Spanish territory, with only brief brushstrokes of events on a European and worldwide scale, has led secondary teachers to consider as significant issues relating to disappeared people, mass graves and political and social repression. In other words, the social consequences of conflicts, which, in the case of Spain, can be related, above all, with the Spanish Civil War (1936–1939) and the subsequent dictatorship (1939–1975). Furthermore, the reduction of the teaching of history to a subject fundamentally based on the history of Spain has an influence on the low value attributed by both primary and secondary teachers to contents related with distant countries. This is in spite of the fact that these contents focus on relevant issues for the understanding of societies, such as heritage (Cuenca et al., 2020; Fontal, 2016; Fontal and Ibáñez, 2017).

On the other hand, in relation to the second objective regarding the updating of disciplinary contents, the majority of the teachers interviewed claimed to be up-to-date, stating that to be so forms part of their professionality. The fact that there are differences between the primary and secondary teachers coincides with the results obtained in other studies in which the TPACK model has been applied in order to reveal teachers' knowledge. In particular, in the study by Roig et al. (2015) on primary school teachers, the highest valued dimension was that relating to pedagogical knowledge, followed by disciplinary knowledge and, last of all, technological knowledge. These results were similar to those obtained by Koh and Chai (2014), Nordin et al. (2013) and Schmidt et al. (2009). Similar results have also been obtained in research carried out with university students receiving their initial teacher training. In the study by Colomer et al. (2018), students of a primary education teaching degree obtained better scores in items relating to pedagogical knowledge than in content knowledge, as has also been found in other studies (García-Valcárcel and Martín del Pozo, 2016; Gómez-Trigueros, 2015). However, in a recent study carried out by Miguel-Revilla et al. (2020a), on students of the Master's Degree in Teacher Training in Secondary Schools, the levels of content knowledge and pedagogical knowledge of content are higher. This is due to the fact that in the study plans of initial teacher training for primary education subjects relating to pedagogy and specific didactics are predominant, whereas in the study plans of university courses geared towards secondary education teaching, the subjects are disciplinary (geography, history, the history of art) with pedagogical and didactical training being taught in postgraduate courses (master's degrees). Therefore, this fact may justify that teachers of social sciences in primary education may need more updating and, as a consequence, may have training needs in relation to disciplinary knowledge.

Furthermore, teachers from both primary and secondary education expressed an interest in updating relating to historical thinking, which shows the interest of the teachers interviewed in a model of teaching for the social sciences which works with the pupil, going beyond theoretical knowledge, employing a series of geographical and historical skills and competencies oriented towards a more competency-based education. These results are in line with the findings of Gómez et al. (2016) and Sáiz and Gómez (2014) in their research on the epistemological conception of history and the teaching methodology of future primary school teachers.

As for the means of updating mentioned by all of the interviewees from both stages of education, it is possible to observe the predominance of traditional means, such as reading specialised scientific journals and doing courses, followed by the media and digital platforms in both stages. This use of digital media by teachers coincides with that mentioned by Mur (2016), Moya (2013) and Marquès (2013) regarding teachers' use of new technologies. The digital environment is also preferred for receiving training oriented towards the learning of competencies related with historical and geographical thinking, active learning methods and, particularly, the use of ICT resources in the classroom. New information and communication technologies, which are practically omnipresent in today's society are of interest to teachers both as a means for training and as a resource for teaching. Indeed, this interest of teachers in training in ICT resources for the teaching of the social sciences coincides with the needs detected regarding the digital competence of teachers published in recent research, which has shown that both primary and secondary teachers show a low to moderate level of digital literacy (Cabero, 2014; Miguel-Revilla et al., 2020b; Ramírez and González, 2016; Roig and Flores, 2014; Jang and Tsai, 2013).

When referring to the format of training actions, both the primary and secondary teachers surveyed coincided in mentioning a greater interest in educational innovation projects (Apaolaza and Etxeberria, 2019). This demonstrates teachers' interest in their training being particularly oriented towards teaching and methodological issues. In fact, when they expressed their dissatisfaction with the training they had received, it was when it could not be applied to their teaching practice. Consequently, this research may provide guidance regarding the way forward as far as in-service teacher training is concerned, as it has to be redirected not towards teaching theoretical knowledge of the subject, methods and technological tools, but rather practical training activities in the style of workshops, innovation projects and working groups with the participation of specialists in educational technology and the teaching of the social sciences and teachers in which innovative proposals are made in order to respond to the reality in the classroom (Almerich, 2011; Cabero, 2014; Colomer et al., 2018; De la Calle et al., 2015; Felini, 2014; Miralles et al., 2019; Ramírez and González, 2016).

In essence, the teachers of the social sciences in primary and secondary education who participated in this study expressed needs, primarily in methodological and educational aspects, and stressed the necessity of promoting a new approach to history which is more linked to the development of competencies and in line with the educational demands of today. The results show the high degree of interest of teachers in the updating of their disciplinary knowledge relating to the social sciences and the importance which they attach to their educational and

methodological training in order to achieve a more competency-based approach to the social sciences which is in line with pupil-centred learning. The results reflect that, from the teachers' perspective, a conception of traditional teaching centred on the teacher and focusing on the transmission of conceptual knowledge to pupils via expositional strategies such as the masterclass and memory-based learning, is being left behind (Feliu and Hernández, 2011; Santisteban, 2010).

These teachers' opinions regarding their training needs for the teaching of the social sciences will enable us to establish courses of action for the improvement of in-service primary and secondary teacher training. If it is taken into account that this is one of the pillars of the European strategy for the improvement of education quality, it is essential for a coherent teacher training model to be configured with the new demands and requirements in relation to the new disciplinary and teaching contexts.

Finally, this study faced a series of limitations. On one hand, the necessary carrying out of a confirmatory factorial analysis to check the validity of the designed construct, in order to know the historical themes that the teachers consider more relevant for teaching history in Primary Education. On the other hand, not having done a probabilistic study limits the generalisation of the results. In addition, it would be useful if the interviews could be extended to teachers from other Spanish regions. Finally, the conclusions derived from this research could be contrasted on the basis of studies which observe the teaching practice of teachers in the History classroom or on the basis of interviews with students in Primary Education.

Data availability

The materials from this research are available on request from the corresponding author.

Received: 28 September 2020; Accepted: 14 December 2020;
Published online: 25 January 2021

References

Akturk AO, Ozturk HS (2019) Teachers 'TPACK levels and students' self-efficacy as predictors of students' academic achievement. Int J Res Educ Sci 5 (1):283–294. https://doi.org/10.1177/1365480217704263

Almerich G (2011) Las competencias y el uso de las Tecnologías de la Información y Comunicación por el profesorado: estructura dimensional. Rev Elec Inv Educ 36:5–28

Apaolaza D, Etxeberria B (2019) Haciendo Historia: fuentes primarias y metodologías activas para trabajar el pensamiento histórico en Secundaria. ENS Rev Fac Alb 34(1):29–40

Armas XA, Moreira AI, Maia C, Conde J (2019) ¿Formar patriotas o educar ciudadanos? Rev Elec For Prof 22(2):67–80

Barnes N, Fives H, Dacey C (2017) U.S. teachers' conceptions of the purposes of assessment. Tea Tea Educ 65:107–116. https://doi.org/10.1016/j.tate.2017.02.017

Barton KC (2010) Historia e identidad: el reto de los investigadores pedagógicos. In: Ávila RM, Rivero MP, Domínguez PL (eds) Metodología de la investigación en Didáctica de las Ciencias Sociales. Institución Fernando el Católico, Zaragoza, pp. 13–28

Benejam Arquimbau P (2002) La didáctica de las ciencias sociales y la formación inicial y permanente del profesorado. Ens Cie Soc Rev Inv 1:91–96

Berliner DC (2001) Learning about and learning from expert teachers. Int J Educ Res 35(5):473–482. https://doi.org/10.1016/S0883-0355(02)00004-6

Bisquerra R, Pérez-Escoda N (2015) ¿Pueden las escalas Likert aumentar en sensibilidad? REI Rev Inn Rec Edu 8(2):129–147. https://doi.org/10.1344/reire2015.8.2.828

Bolívar A (2005) Conocimiento didáctico del contenido y didácticas específicas. Prof Rev Curr For Prof 9(2). https://cutt.ly/wf0xU7h

Bolívar A (2010) Competencias básicas y currículo. Síntesis, Madrid

Bolívar A (2012) Políticas actuales de mejora y liderazgo educativo. Ediciones Aljibe, Málaga

Bromme R (2001) Teacher expertise. In: Smelser NJ, Baltes PB, Weinert FE (eds) International Encyclopedia of the Behavioral Sciences: education. Pergamon, Oxford, pp. 15459–15465

Cabero J (ed) (2014) La formación del profesorado en TIC: Modelo TPACK. Secretariado de Recursos Audiovisuales y Nuevas Tecnologías de la Universidad de Sevilla, Sevilla

Carretero M (2019a) Pensamiento histórico e historia global como nuevos desafíos para la enseñanza. Cua Ped 495:59–63

Carretero M (2019b) Historia y conmemoraciones. Iber Did Cien Soc Geo His 97:4–7

Charmaz K (2007) Constructing grounded theory. A practical guide through qualitative analysis. Sage, Thousand Oaks

Cochran Smith M, Zeichner KM (2005) Studying teacher education: the report of the AERA panel on research and teacher education. Routledge, New York

Colomer Rubio JC, Sáiz Serrano J, Bel, Martínez JC (2018) Competencia digital en futuros docentes de Educación Primaria: análisis desde el modelo TPACK. Edu Sig XXI 36(1):107–128. https://doi.org/10.6018/j/324191

Cózar R, Zagalaz J, Sáez JM (2015) Creando contenidos curriculares digitales de Ciencias Sociales para Educación Primaria. Una experiencia TPACK para futuros docentes. Edu Sig XXI 33(3):147–168. https://doi.org/10.6018/j/240921

Cuenca JM, Martín MJ, Estepa J (2020) Buenas prácticas en educación patrimonial: análisis de las conexiones entre emociones, territorio y ciudadanía. Aul Abi 49(1):45–54

Darling Hammond L, Bransford JD (2005) Preparing teachers for a changing world: what teachers should learn and be able to do. Jossey-Bass, San Francisco

De la Calle M (2015) Tendencias innovadoras en la enseñanza de las Ciencias Sociales. Hacer visible lo invisible. In: Hernández AM, García CR, De la Montaña JL (eds) Una enseñanza de las Ciencias Sociales para el futuro: recursos para trabajar la invisibilidad de personas, lugares y temáticas. Universidad de Extremadura. Servicio de publicaciones, Cáceres, pp. 67–80

Domínguez J (2015) Pensamiento histórico y evaluación de competências, 1st edn. Graó, Barcelona

Dom¡nguez MC (2006) Formación del profesorado de ciencias sociales en educación secundaria ante el reto de la interculturalidad Ens Cien Soc Rev Inv 5:95–106. https://cutt.ly/Jf0LvdD

Espinoza Freire EE (2018) Las variables y su operacionalización en la investigación educativa Parte I Rev Ped Uni Cie 14(65):36–46

Felini D (2014) Quality media literay education. A tool for teachers educators of Italian Elementary Schools. J Med Lit Edu 6(1):28–43

Feliu M, Hernández FX (2011) 12 Ideas Clave. Enseñar y aprender historia. Graó, Barcelona

Fontal O (2016) Educación patrimonial: restrospectiva y prospectivas para la próxima década. Est Ped 42:415–436

Fontal O, Ibáñez A (2017) Presentación. Educación y patrimonio: innovación y reflexión. Pul Rev Edu 40:9–12

Fuentes C, Sabido J, Albert JM (2019) El desarrollo de la competencia social y ciudadana y la utilización de metodologías didácticas activas en las aulas de secundaria. Rev Elec For Prof 22(2):199–210

García-Valcárcel A, Martín del Pozo M (2016) Análisis de las competencias digitales de los graduados en titulaciones de maestro. REL Rev Lat Tec Edu 15 (2):116. https://doi.org/10.17398/1695-288X.15.2.155

Gómez IM (2016) La inclusión de las tecnologías en la formación inicial del profesorado: una intervención de aula a través del modelo TPACK Ten Ped 28:133–152. https://goo.gl/kZELVe

Gómez CJ, Miralles P (2016) Développement et évaluation des compétences historiques dans les manuales scolaires. Une étude comparative France-Spagne. Spi 68:55–66. https://doi.org/10.3917/spir.058.0053

Gómez CJ, Rodríguez RA (2014) Aprender a enseñar ciencias sociales con métodos de indagación. Los estudios de caso en la formación del profesorado. Rev Doc Uni 12(2):307. https://doi.org/10.4995/redu.2014.5651

Gómez CJ, Rodríguez RA, Mirete AB (2016) Percepción de la enseñanza de la historia y concepciones epistemológicas. Una investigación con futuros maestros. Rev Com Edu 29(1):237–250

Gómez CJ, Sáiz J (2017) Narrative inquiry and historical skills. A study in Teacher Training. Rev Elec Inv Edu 19(4):19–32

Gómez-Trigueros IM (2015) El modelo TPACK en los estudios de Grado para la formación inicial del profesorado en TIC. Did Geo 16:185–201

González N, Pagès J, Santisteban A (2011) ¿Cómo evaluar el pensamiento histórico del alumnado? In: Miralles P, Molina S, Santisteban A (eds) La evaluación en el proceso de enseñanza y aprendizaje de las Ciencias Sociales. Asociación Universitaria de Profesores de Didáctica de las Ciencias Sociales, Murcia, pp. 221–232

González G, Skultety L (2018) Teacher learning in a combined professional development intervention. Tea Tea Edu 71:341–354. https://doi.org/10.1016/j.tate.2018.02.003

Gudmundsdóttir S, Shulman L (2005) Conocimiento didáctico del contenido en ciencias sociales. Prof Rev Curr For Prof 9(2). https://cutt.ly/bf0lQ2J
Guil M (2006) Escala mixta Likert–Thurstone. And Rev And Cien Soc 5:81–95
Herring MC, Koehler MJ, Mishra P (eds) (2016) Handbook of technological pedagogical content knowledge (TPACK) for educators, 2nd edn. Routledge, New York
Koehler MJ, Mishra P, Cain W (2015) What is Technological Pedagogical Content Knowledge (TPACK)? Vir Edu Cie 10(6):9–23
Koh JHL, Chai CS (2014) Teacher clusters and their perceptions of Technological Pedagogical Content Knowledge (TPACK). Development throught ICT lesson design. Com Educ 70:222–232. https://doi.org/10.1016/j.compedu.2013.08.017
König J, Ligtvoet R, Klemenz S, Rothlandb M (2017) Effects of opportunities to learn in teacher preparation on future teachers' general pedagogical knowledge: analyzing program characteristics and outcomes. Stu Edu Eva 53:122–133. https://doi.org/10.1016/j.stueduc.2017.03.001
López Facal R, Velasco Martínez L, Santidrián Arias VM, Armas Castro XA (eds) (2011) Pensar históricamente en tiempos de globalización: actas del I Congreso Internacional sobre enseñanza de la historia. Universidade de Santiago de Compostela, Santiago de Compostela
López-Roldán P, Fachelli S (2015) Metodología de la investigación social cuantitativa. Universitat Autònoma de Barcelona, Barcelona
Maggioni L, VanSledright BA, Alexander PA (2009) Walking on the borders: a measure of epistemic cognition in history. Trans J Exp Educ 77(3):187–214. https://doi.org/10.3200/JEXE.77.3.187-214
Maldonado A (ed) (2004) Libro Blanco: título de Grado en Magisterio, vol. 1. Agencia Nacional de Evaluación de la Calidad y Acreditación, Madrid
Marina JA, Bernabeu R (2007) Competencia social y ciudadana. Alianza, Madrid
Marquès P (2013) Impacto de las TIC en Educación: Funciones y limitaciones. 3 c TIC Cua des apli TIC 2(1). https://cutt.ly/nf0vT1E
Martínez Rodríguez R, Sánchez Agustí M (2018) La enseñanza de la historia reciente en la adquisición de competencias para una ciudadanía democrática. In: Gómez CJ, Miralles P (eds) La educación histórica ante el reto de las competencias: métodos, recursos y enfoques de enseñanza. Octaedro, Barcelona, pp. 139–148
Matas A (2018) Diseño del formato de escalas tipo Likert: un estado de la cuestión. Rev Elec Inv Educ 20(1):38–47. https://doi.org/10.24320/redie.2018.20.1.1347
Meroño L, Calderón A, Arias JL, Méndez A (2018) Percepción del alumnado y profesorado de Educación Primaria sobre el aprendizaje de los estudiantes basado en competencias. Cult Educ 30(1):18–37
Miguel-Revilla D, Carril-Merino T, Sánchez-Agustí M (2017) Accediendo al pasado: creencias epistémicas acerca de la Historia en futuros profesores de Ciencias Sociales. REIDICS. Rev Inv Did Cie Soc 1:86–101. https://doi.org/10.17398/2531-0968.01.86
Miguel-Revilla D, Carril-Merino T, Sánchez-Agustí M (2020a) An examination of epistemic beliefs about history in initial teacher training: a comparative analysis between primary and secondary education prospective teachers. Trans J Exp Educ. https://doi.org/10.1080/00220973.2020.1718059
Miguel-Revilla D, Martínez-Ferreira JM, Sánchez-Agustí M (2020b) Assessing the digital competence of educators in social studies: an analysis in initial teacher training using the TPACK-21 model. Austral J Educ Technol 36 (2):1–12
Miralles P, Gómez CJ, Arias VB, Fontal O (2019) Recursos digitales y metodología didáctica en la formación inicial de docentes de historia. Com 61:45–56. https://doi.org/10.3916/C61-2019-04
Miralles P, Gómez CJ, Monteagudo J(2019) Perceptions on the use of ICT resources and mass-media for the teaching of History. A comparative study among future teachers of Spain–England Edu XX1 22(2):187–211. https://doi.org/10.5944/educXX1.21377
Miralles P, Sánchez R, Vivas V (2018) La formación en competencias del profesorado de ciencias sociales en educación infantil y primaria. In: Miralles P, Gómez CJ (eds) La educación histórica ante el reto de las competencias: métodos, recursos y enfoques de enseñanza. Octaedro, Barcelona, pp. 51–62
Mishra P, Koehler MJ (2006) Technological pedagogical content knowledge: a framework for teacher knowledge. Tea Coll Rec 108(6):1017–1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x
Monroy F, González-Geraldo JL, Hernández-Pina F (2015) A psychometric analysis of the Approaches to Teaching Inventory (ATI) and a proposal for a Spanish version (S-ATI-20). Anal Psic 31:172–183. https://doi.org/10.6018/analesps.31.1.190261
Mouza C, Karchmer R, Nandakumar R, Ozden S, Hu L (2014) Investigating the impact of an integrated approach to the development of preservice teachers' technological pedagogical content knowledge (TPACK). Com Edu 71:206–221. https://doi.org/10.1016/j.compedu.2013.09.020
Moya M (2013) De las TICs a las TACs: la importancia de crear contenidos educativos digitales. DIM Rev cien opi div 27. https://cutt.ly/qf0vMRn
Mur Sangrá L (2016) La nueva brecha digital. El futuro de las nuevas tecnologías en Primaria desde la formación del profesorado. Rev Elec Inter For Prof 19 (2):301–313. https://doi.org/10.6018/reifop.19.2.189561
Muthén Linda K, Muthén BO (2015) Mplus user's guide, 7th edn. Muthén & Muthén, Los Ángeles
Namakforoosh MN (2000) Metodología de la investigación, 2nd edn. Limusa, México
Niess M, Gillow Wilson H(2013) Advancing K–8 teachers' STEM education for teaching interdisciplinary science and mathematics with technologies J Com Math Sci Teach 32(2):219–245. https://www.learntechlib.org/primary/p/39518/
Nordin H, Davis N, Tengku TF (2013) A case study of secondary pre-service teacher' technological pedagogical and content knowledge mastery level. Proc Soc Behav Sci 103:1–9. https://doi.org/10.1016/j.sbspro.2013.10.300
Nunez Moscoso J (2018) Los métodos mixtos en la investigación en educación. Hacia un uso reflexivo. Cad Pes 47(164):632–649
Oliveira A (2015) Cenários, tendências e desafios na formação de professores de Ciências Sociais no Brasil. Capa 14(31):39–62. https://doi.org/10.5007/2175-7984.2015v14n31p39
Olofson MW, Swallow MJC, Neumann MD (2016) TPACKing: a constructivist framing of TPACK to analyze teachers' construction of knowledge. Com Edu 95:188–201. https://doi.org/10.1016/j.compedu.2015.12.010
Pagès J, Estepa J, Travé G (2000) Modelos, contenidos y experiencias en la formación del profesorado de ciencias sociales. Universidad de Huelva, Huelva
Parra D, Colomer JC, Sáiz J (2015) Las finalidades socioeducativas de las ciencias sociales en el marco de la LOMCE. Iber Did Cien Soc Geo His 79:8–14
Pérez-Juste R, Galán González A, Quintanal Díaz J (2012) Métodos y diseños de investigación en educación. UNED, Madrid
Perrenoud PH (2007) Desarrollar la práctica reflexiva en el oficio de enseñar. Profesionalización y razón pedagógica. Graó, Barcelona
Pineda Alfonso JA (2013) Desarrollo de la competencia social y ciudadana. Iber Did Cien Soc Geo His 74:29–36
Prosser M, Trigwell K (2006) Confirmatory factor analysis of the approaches to teaching inventory. Br J Educ Psychol 76:405–419
Ramírez González A, González Fernández N (2016) Competencia mediática del profesorado y del alumnado de educación obligatoria en España. Com 49 (XXIV):49–58
Redecker C, Punie Y (eds) (2017) European framework for the digital competence of educators: DigCompEdu. Publications Office of the European Union. https://doi.org/10.2760/159770
Reyes VC, Reading C, Doyle H, Gregory S (2017) Integrating ICT into teacher education programs from a TPACK perspective: exploring perceptions of university lecturers. Com Edu 115:1–19. https://doi.org/10.1016/j.compedu.2017.07.009
Roig R, Flores C (2014) Conocimiento tecnológico, pedagógico y disciplinario del profesorado: el caso de un centro educativo inteligente. EDU Rev Ele Tec Edu 47. https://doi.org/10.21556/edutec.2014.47.93
Roig R, Mengual S, Quinto P (2015) Conocimientos tecnológicos, pedagógicos y disciplinares del profesorado de Primaria. Com 45(XXIII):151–159. https://doi.org/10.3916/C45-2015-16
Sáiz J, Gómez CJ (2014) Investigar el pensamiento histórico y narrativo en la formación del profesorado: fundamentos teóricos y metodológicos. Rev Ele Int For Prof 19(1):175–190. https://doi.org/10.6018/reifop.19.1.206701
Sáiz J, López Facal R (2012) Aprender a argumentar España. La visión de la identidad española al terminar el bachillerato. Did Cien Exp Soc 26:95–120
Sáiz J, López Facal R (2015) Competencias y narrativas históricas: el pensamiento histórico de estudiantes y futuros profesores españoles de educación secundaria. Rev Est Soc 52:87–101. https://doi.org/10.7440/res52.2015.06
Santisteban A (2010) La formación de competencias de pensamiento histórico. Clío Aso 14:34–56
Sapsford R, Jupp V (2006) Data collection and analysis, 2nd edn. Sage and The Open University, London
Schmidt DA, Baran E, Thompson AD, Mishra P, Koehler MJ, Shin TS (2009) Technological Pedagogical Content Knowledge (TPACK): the development and validation of an assessment instrument for Preservice Teachers. J Res Comp Educ 42(2):123–149. https://doi.org/10.1080/15391523.2009.10782544
Seixas P, Morton T (2013) The big six historical concepts. Nelson College Indigenous, Toronto
Sobejano MJ (1997) Formación permanente del profesorado: un reto y un soporte para la construcción de la didáctica de las Ciencias Sociales. In: Santisteban A (ed) La formación del profesorado y la didáctica de las Ciencias Sociales. Díada, Sevilla, pp. 95–100
Strauss A, Corbin J (2002) Bases de la investigación cualitativa. Técnicas y procedimientos para desarrollar la Teoría Fundamentada. Universidad de Antioquia, Medellín
Trepat CA (2015) La historia en la LOMCE. Iber Did Cien Soc Geo His 79:49–59
Trigueros FJ, Molina S, Sánchez R, Valverde I, Agulló S (2010) La competencia digital y la didáctica de las ciencias sociales en la formación permanente del profesorado de Infantil y Primaria. In: Ávila RM, Rivero P, Domínguez PL (eds) Metodología de investigación en Didáctica de las Ciencias Sociales. Institución Fernando El Católico, Zaragoza, pp. 553–564

Trigwell K, Prosser M (2004) Development and use of the approaches to teaching inventory. Educ Psychol Rev 16:409–424. https://doi.org/10.1007/s10648-004-0007-9

Jang SJ, Tsai MF (2013) Exploring the TPACK of Taiwanese secondary school science teachers using a new contextualized TPACK model. Aust J Educ Technol 29(4). https://doi.org/10.14742/ajet.282

Valls R (2012) La enseñanza española de la historia y su dimensión iberoamericana. Did Cienc Exp Soc 26:121–143

Vásquez Lara N (2005) La formación del profesorado de Historia en Chile. La formación inicial y permanente de los educadores de la V región en el marco de la reforma educacional. Tesis doctoral defendida en la Universitat de Barcelona

Wineburg SS (1991) Historical problem solving: a study of the cognitive processes used in the evaluation of documentary and pictorial evidence. J Educ Psychol 83:73–87. https://doi.org/10.1037/0022-0663.83.1.73

Yeşilpınar M, Karakus F (2017) Social studies teachers' in-service training needs towards project tasks: a comparative case study. Univ J Educ Res 5 (12):2137–2148. https://doi.org/10.13189/ujer.2017.051203

Zahonero A, Martín M (2012) Formación integral del profesorado: hacia el desarrollo de competencias personales y de valores en los docentes. Ten Ped 20:51–70

Zamudio Franco JI (2003) El conocimiento profesional del profesor de Ciencias Sociales. Rev Teo Did Cienc Soc 8:87–103

Acknowledgements

This project was carried out through the funding of two ongoing projects and to whose teams the authors belong. The first entitled "Methodological concepts and active learning methods for the improvement of teaching skills of teachers (PGC2018-094491-B-C33) (MCI/AEI/FEDER, UE) is funded by the Ministry of Science, Innovation and Universities, co-financed with FEDER (UE) funds and directed by Pedro Miralles Martínez and Cosme Jesús Gómez Carrasco. Participating entities are the University of Murcia, University of Valencia and University of Santiago de Compostela. The second is funded by the Seneca Foundation for Science and Technology in the Region of Murcia and is entitled "Geographic and historical thinking of primary school students in the Region of Murcia: an innovative methodological proposal for quality education (20874/PI/18)", under the direction of Pedro Miralles Martínez (University of Murcia).

Competing interests

The authors declare no competing interests.

Additional information

Supplementary information is available for this paper at https://doi.org/10.1057/s41599-021-00705-0.

Correspondence and requests for materials should be addressed to R.S.-I.

Reprints and permission information is available at http://www.nature.com/reprints

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.