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Teacher professional identity: How to develop and support it in times of change

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Abstract

Promoting and supporting the development of strong professional identities in teachers is relevant to teachers, policy makers and the research community. The benefits of examining Teacher Professional Identity (TPI) relate to success for students in their learning, long-term empowerment of teachers in their professional work, and support for effective policy development. This paper provides a scan and examination of the research and the OECD international data sets to propose a TPI development and outcome model and consider implications for practice, policy and research. Increased attention to understanding and developing individual and collective TPI provides a positive and feasible approach in a time of change.

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1. Introduction

Teachers play a crucial role in the lives of students and, as empirical evidence has shown, effective teaching is at the core of successful educational systems (Darling-Hammond, 2000^[1]; Burroughs et al., 2019^[2]). The great importance of teachers in student learning has led society and educational systems to hold high and varied expectations for teachers' work in a time of flux and change (Nias, 2014^[3]; Ramirez and Wilkinson, 2016^[4]). The world is in a time of turbulence and uncertainty, adding to the complexities of educational systems. It is a period where strategic and policy planning can explore solutions that require novelty and ambiguity rather than seeking more traditional responses.

The professional reality of teachers is more than ever set in a fast-paced and changing context, with the pandemic being an extreme example of the disruption of business as normal. A well-developed teacher professional identity, which is made up of their beliefs and perceptions about themselves and their role as teachers, is important for managing these varied expectations and changes (Alspup, 2004^[5]) and for high-quality teaching (Trent, 2019^[6]; Özer et al., 2021^[7]; Korthagen, 2004^[8]). Thus, it is important to value and support the development of teachers' professional identity (TPI).

Research on the professional identity of teachers is relevant to teachers, policy makers and the research community. Having more research and information that can spark reflections on their identity and teaching approaches can contribute to teacher introspection, reflection and their educational practice. In this paper we argue to strengthen and complement the existing theoretical and qualitative research, in particular with ways that quantitative and cross-country analysis could assist in understanding how identity is formed within different contexts. Likewise, it is important for policy makers to have empirical evidence on teachers' professional identity to promote policies and strategies that contribute to the development of the teaching workforce.

This article, based on the evidence collected from a review of the literature and secondary analysis of OECD data, proposes the "Teacher professional identity development and outcome model" as a basis for undertaking future research and understanding and assessing teacher professional identity. This model looks at influencing and contextual factors, as well as the expected outcomes of the development of teacher professional identity.

The OECD Teaching and Learning International Survey (TALIS) and the Programme for International Student Assessment (PISA) questionnaires already collect information on several dimensions of the TPI Development and Outcome model. This paper maps existing information to support a reframing of policy discussions and strengthened focus on teacher professional identity. This paper argues that there would be tangible benefits for practitioners, policy makers and researchers in extending the available international evidence. It identifies ways to incorporate additional questions in future OECD studies to address the dimensions that have not yet been measured. This would better support a stronger focus on the importance of teacher professional identity in OECD policy work and the sharing of policies and best practices to strengthen teachers' professional identity.

2. Why is teacher professional identity important?

Teaching Professional Identity (TPI) has the potential to play a fundamental role for quality of teaching, professional development and a successful long-term career in the teaching profession (Rots et al., 2010^[9]; Agee, 2004^[10]; Korthagen, 2004^[8]). Likewise, teachers' commitment to teaching and their self-efficacy, or their confidence about their own abilities to carry out their work, are an important part of their professional identity and have considerable influence on students' performance and attitudes (Day, Elliot and Kington, 2005^[11]; Galman, 2009^[12]). Thus, policy makers must take an interest in promoting and supporting the development of strong professional identities in teachers.

According to a study on TPI (Karousiou, Hajisoteriou and Angelides, 2019^[13]) teachers' professional identities influence not only their classroom practices, but also the way they interpret and implement educational policies. Their study reveals that when teachers see their identity, values and experience threatened by an educational policy, they will resist change and obstruct its implementation. Therefore, teachers should be seen as autonomous professionals and not as simple executors of imposed agendas. This means that the voice of teachers as well as their needs and expectations must be taken into account in the planning and implementation of teacher policies. Policy makers who seek the successful restructuring of education systems will unavoidably have to respect and support teachers' professional identity (Karousiou, Hajisoteriou and Angelides, 2019^[13]).

However, developing a strong TPI also intersects with the diverse expectations from stakeholder groups, along with conflicting demands related to the changing context in which teachers carry out their work. On the one hand, the roles of stakeholders have changed and diversified over time: parents, students, policy makers and other key actors from the community in general, such as the labour market and the research community, differ in the expectations they have towards schools (OECD, 2020^[14]). Teachers are confronted with these wide-ranging expectations, including increased roles, and have to establish priorities if sustainable solutions are to be found.

On the other hand, the context in which teachers operate is also changing. Some of the new expectations about school systems are the growing demands for equity and inclusion, in the face of increasingly diverse and heterogeneous student populations (Banks, 2006^[15]; Karousiou, Hajisoteriou and Angelides, 2019^[13]). Moreover, in the last decades there has been a shift towards personalised and student-centred pedagogies (Schleicher, 2018^[16]). The challenges of technology also fall on teachers: social networks and digital platforms promote new content and new pedagogical styles, and artificial intelligence is becoming increasingly important as an educational agent (Lanas and Kelchtermans, 2015^[17]; Minea-Pic, 2020^[18]). In addition, the shift towards greater accountability and control in some education systems, often restricted to a small set of success criteria (e.g. student outcomes), leave little room for defining the roles and values that teachers themselves consider the heart of their identity.

Such circumstances present a challenge in defining the roles of teachers by teachers and by others which can impact on the development of their professional identity or be aided by the development of a strong identity. A narrow perspective that does not consider the current challenges of the teaching profession can prevent the development of a rich and multi-faceted identity that comprises the various roles and tasks that teachers fulfil today (Sachs, 2016^[19]; Murray, 2020^[20]). Thus, it is of utmost importance that teachers have the necessary support to develop strong professional identities, which allow them to respond flexibly and act on change (Sachs, 2016^[19]).

3. What do we understand by teacher professional identity?

3.1. How is teacher professional identity defined?

The work on teacher professional identity emerged from various disciplines (see Box 3.1). The professional identity of teachers is a complex and multidimensional concept. It is not a fixed or static construct, but changes over time through personal and professional experiences and, at the same time, varies between individuals and cultures (Cordingley et al., 2019^[21]; Karousiou, Hajisoteriou and Angelides, 2019^[13]; Hanna et al., 2019^[22]).

Box 3.1. Identity development from other disciplines perspective

Conceptual discussions place professional identity at the intersection of various disciplines such as Philosophy, Psychology, Sociology, and Education (Davey, 2013^[23]; Day et al., 2006^[24]; Rodrigues and Mogarro, 2019^[25]). According to Davey (2013^[23]), contemporary conceptions of professional identity, coming from different perspectives and disciplines, share certain common assumptions: (i) professional identity is constituted in multiple contexts, considering personal, social and cultural aspects; (ii) professional identity is in constant transformation, is multifarious, and is subject to renegotiation throughout working life; (iii) professional identity is built through interpersonal relationships; and (iv) professional identity involves emotions and judgments.

Definitions of teacher professional identity vary to a certain extent. Yet, authors commonly refer to the perceptions, views, beliefs, emotions, motivations, and attitudes that teachers have about their own role (Cordingley et al., 2019^[21]; Karousiou, Hajisoteriou and Angelides, 2019^[13]; Zhao and Zhang, 2017^[26]; Day et al., 2006^[24]). For some authors, teacher professional identity comprises the mission and central qualities of the individual teacher, and is framed in the knowledge of the subject, competence, performance, life stories, professional development, and context (Mockler, 2020^[27]; Korthagen, 2004^[8]; Rodrigues and Mogarro, 2019^[25]).

Sachs (2005^[28]) refers to the professional identity of teachers as follows:

Teacher professional identity then stands at the core of the teaching profession. It provides a framework for teachers to construct their own ideas of 'how to be', 'how to act' and 'how to understand' their work and their place in society. Importantly, teacher identity is not something that is fixed nor is it imposed; rather it is negotiated through experience and the sense that is made of that experience.
(p. 15^[28])

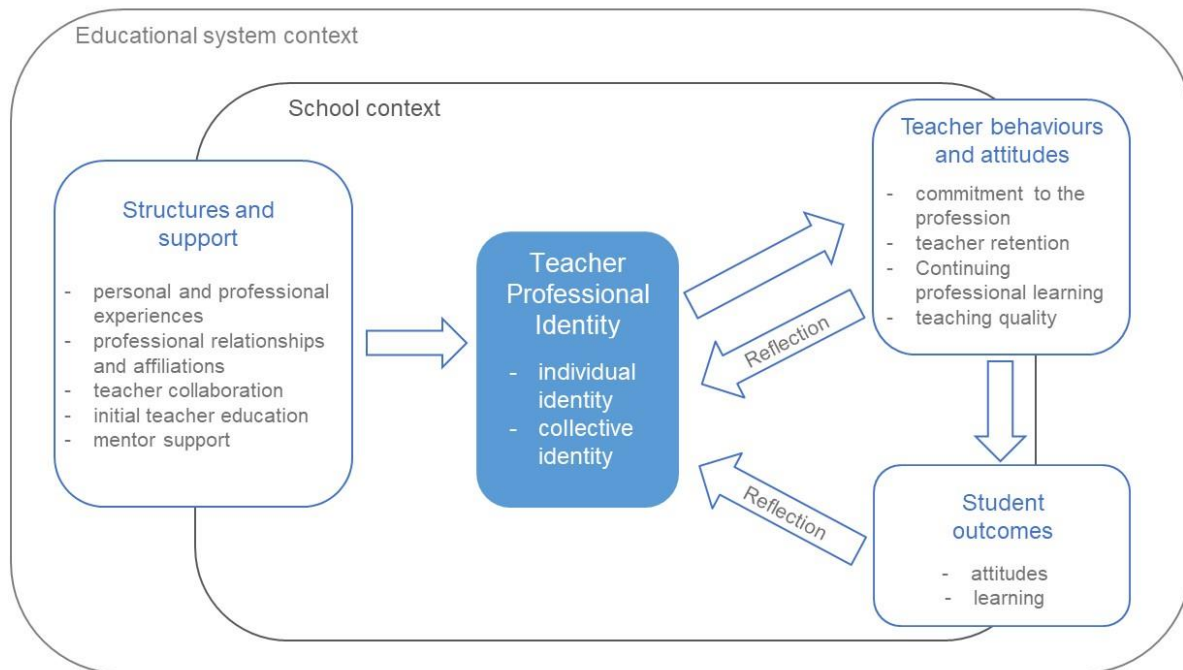
Developing a strong understanding of TPI can empower teacher practice by aligning “who I am” with “what I do” (Mockler, 2020^[29]). This provides a mechanism and agency for teachers to shape their ongoing professional work.

3.2. A development and outcome model for teacher professional identity

In accordance with the research described above, this paper defines the professional identity of teachers as a collection of beliefs, emotions and perspectives of themselves and their role as teachers, which is in constant development, depends on the context and varies

between individuals. Figure 3.1 displays a model to capture these elements and dynamics, which was developed based on a review of research on the constituent elements of teacher professional identity as well as factors influencing its development and the outcomes of a strong identity.

Figure 3.1. Teacher professional identity (TPI) development and outcome model



The model shows the interaction of teacher professional identity with (1) the *educational system and school context*, (2) *structures and support*, (3) *teacher behaviours and attitudes*, and (4) *student outcomes*. Both the institutional and sociocultural context of the educational system and schools affect the perception that teachers have of themselves and influence their behaviours and student results (Sachs, 2005^[28]; Mockler, 2020^[29]). The structures and support provided by the school and the education system as a whole greatly influence the professional identities of teachers. Thus, the personal and professional experiences of teachers, mediated by the context and the support that teachers receive, shape the beliefs they have about their own teaching role (Nias, 1998^[30]; Bailey, 2006^[31]). In addition, teachers' professional relationships, group affinities, and collaboration with their colleagues influence the constitution of their professional identities (Davey, 2013^[23]). Initial education and the subsequent support from mentors or supervisors further shape teachers' beliefs and views about themselves and the profession (Zhao and Zhang, 2017^[26]; Rodrigues and Mogarro, 2019^[25]). The professional identity of teachers, in turn, has an effect on their behaviours and actions, such as their commitment to the profession and the decision to remain in it (Agee, 2004^[10]; Day, Elliot and Kington, 2005^[11]; Korthagen, 2004^[8]), and their participation in professional development and the quality of their teaching. These teacher behaviours are linked to student outcomes (Day, Elliot and Kington, 2005^[11]; Galman, 2009^[12]). At the same time, both the actions of teachers and obtained results and responses of students evoke personal and collective reflections of teachers, thereby modifying and reconfiguring their professional identity (Flores and Day, 2006^[32]). In this sense, teacher professional identity is a dynamic and constantly evolving construct.

The presented model is complex as the relationships between the different elements are not linear. Thus, the TPI development and outcome model shows through the arrows that it is a process of continuous transformation and reconstruction. The fact that professional identity is constantly developing presents an opportunity for education systems to actively shape and support a well-developed professional identity among the teaching profession to strengthen teaching quality and teacher commitment.

3.3. Do teachers have an identity as a professional community?

Teachers' professional identity can be defined from individual attributes, which imply a personal identity, and from social attributes, which imply a collective identity (Knez, 2016^[33]; Nordhall and Knez, 2018^[34]) (see Box 3.2). Teachers' collective identity refers to the shared understanding of a professional community of teachers about themselves and their position within the school or the broader society (Beijaard, Meijer and Verloop, 2004^[35]). Like teachers' individual identity, the collective identity of teachers incorporates values, attitudes and cognitions about a community of teachers as a group (Ybarra and Trafimow, 1998^[36]; Nordhall et al., 2020^[37]; Zhao and Zhang, 2017^[26]). At a broader level, this includes how people perceive what it means to be a teacher and how to act and react as a professional (Murray, 2020^[20]).

Box 3.2. Collective identity as a sub-identity

Research on identity agrees that a persons' identity is made up of multiple dimensions or sub-identities that depend on the context. Different authors mention, among other sub-identities, an identity that is forged in shared experiences with affinity groups to which one belongs (Graven and Lerman, 2003^[38]; Gee, 2000^[39]; Davey, 2013^[23]). Thus, when referring to professional identity, Davey (2013^[23]) mentions that this necessarily implies a feeling of belonging and identification with a group towards which there are commitments and calls it collective professional identity.

Some authors mention that teachers coexist in multiple professional identities from different contexts and professional relationships (Cordingley et al., 2019^[21]; Sachs, 2001^[40]), where there must be a more central identity overall (Desimone, 2009^[41]). Depending on the affinities and identification forces, people may feel greater belonging to their workgroup compared to the organisation, or vice versa (Knez, 2016^[33]). Moreover, compared to other professions, the sense of belonging is especially important for the professional identity of educators (Davey, 2013^[23]). Thus, loyalty priorities and generated affiliations describe how teachers identify themselves. There are different groups to which educators can feel they belong, such as the community of teachers within society, groups of teachers of different subjects within the school, or the collective of teachers at a school compared to the rest of the educational system.

In this sense, the collective identity of teachers and the various groups where they feel identification form part of their professional identity. These groups could include within and across a school, local context or be expanded to the notion of being part of the teaching profession and how the role is perceived by communities and society. Accordingly, the way educators define and value themselves is influenced by where they feel they belong and the alliances and work affiliations they form. However, despite agreeing that collective identity is an important part of teachers' professional identity (Murray, 2020^[20]), research is scarce on what constitutes the collective identity of teachers (Burke and Stets, 2009^[42]) and how

it can be developed and strengthened (Day, Elliot and Kington, 2005^[11]; Hanna et al., 2019^[22]).

3.4. What factors are related to development of teacher professional identity?

As displayed in the TPI development and outcome model (see Figure 3.1) the educational system and school context added to several factors of the structures and support systems for teachers shape teacher professional identity, including:

- the previous experiences of the teachers
- their professional relationships and collaboration among colleagues
- their initial teacher education
- the support they receive from their supervisors or mentors, and
- the personal and collective reflections they have on their practice and beliefs.

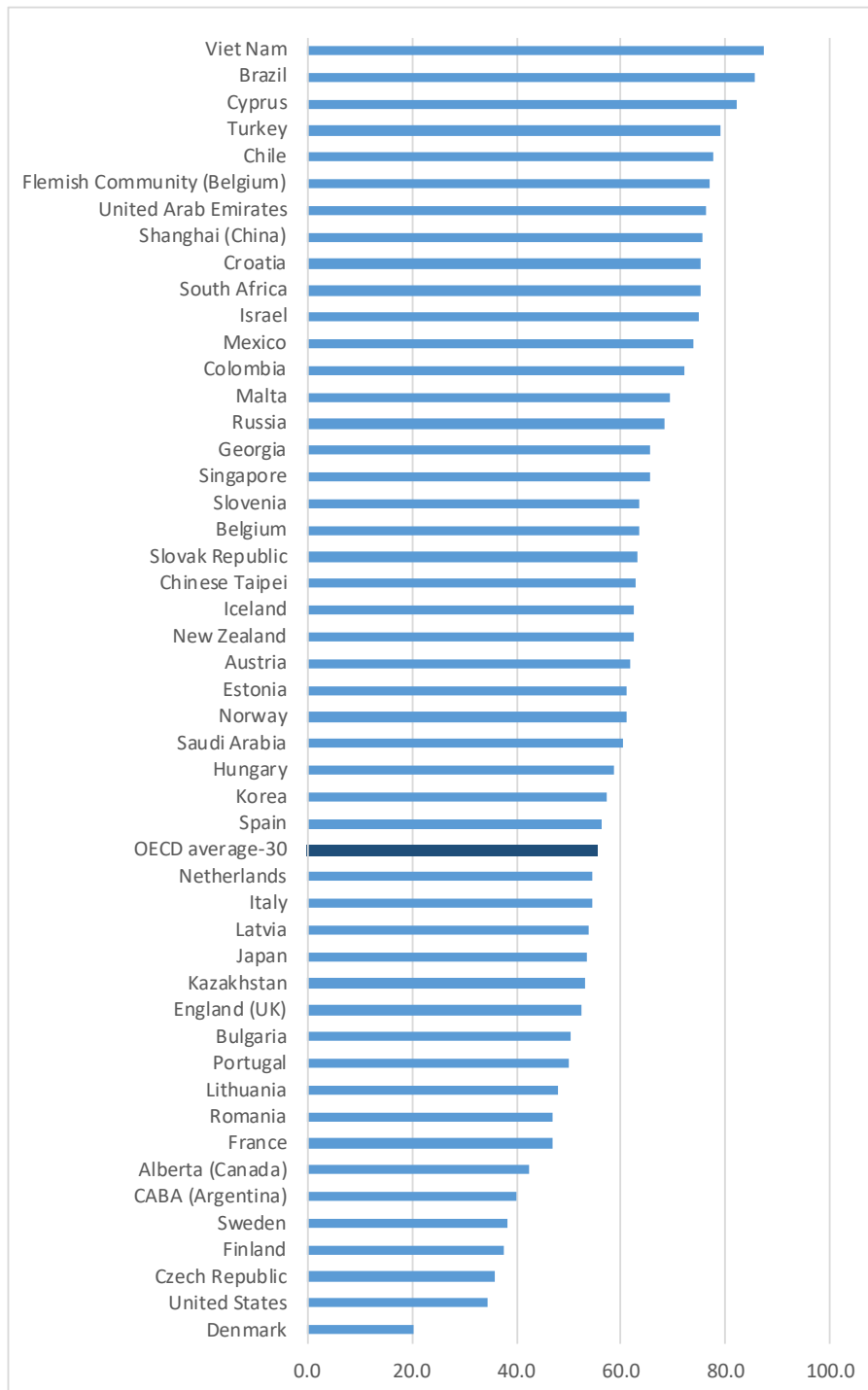
Thus, research refers to various aspects that are related to TPI, generally highlighting contextual and cultural factors as well as personal and professional experiences, especially experiences in the classroom. These factors can play a role in how teachers configure their identity, developing an image of the profession and the role they fulfil (Desimone, 2009^[41]; Kaya and Dikilitaş, 2019^[43]; Cordingley et al., 2019^[21]; Sachs, 2001^[40]; Karousiou, Hajisoteriou and Angelides, 2019^[13]; Rodrigues and Mogarro, 2019^[25]).

The aspects that shape TPI include professional relationships and collaboration between colleagues (OECD, 2019^[44]; Day et al., 2006^[24]; Rodrigues and Mogarro, 2019^[25]). Flores and Day (2006^[32]) found that collaborative educational cultures influence the development of positive attitudes towards teaching, modifying the way in which teachers understand their teaching role. This is in tune with what is proposed by different authors who refer to identity as a relational concept, which is socially constructed through interactions with others (OECD, 2019^[44]; Galman, 2009^[12]; Korthagen, 2004^[8]). In fact, findings from the 2018 Teaching and Learning International Survey (TALIS) suggest that teacher collaboration is an important element that influences job satisfaction and self-efficacy (OECD, 2020^[14]), components of the professional identity of teachers.

These aspects are also reflected and influence the development of teacher professional identity during initial teacher education (ITE) and through the support of mentors. During their initial education, student teachers further shape their own beliefs about their role and the vision they have of themselves as teachers. In this way, ITE can develop student teachers' self-efficacy and commitment to the profession, affecting their professional identity (Rodrigues and Mogarro, 2019^[25]). Moreover, the support of supervisors or mentors has an effect on teachers' commitment to their work and on their understanding of the profession (Zhao and Zhang, 2017^[26]; Rodrigues and Mogarro, 2019^[25]). According to TALIS 2018, school principals attach great importance to mentoring, in fact, across the OECD, 56% of the principals in whose schools mentoring is offered consider this practice of great importance to strengthen the professional identity of teachers (see Figure 3.2). Despite this, on average across the OECD, only 22% of novice teachers have an assigned mentor (OECD, 2019^[44]).

Figure 3.2. Importance of mentoring to strengthen teacher professional

Percentage of lower secondary principals reporting that mentoring is of “high importance” to strengthen teachers’ professional identity



Note: The sample is restricted to principals reporting that teachers have access to mentoring programme at the school.

Source: OECD, TALIS Database, Table 1.4.63, <https://doi.org/10.1787/888933933083> (accessed 8 November 2021).

Personal and collaborative reflections also play an important role in the development of professional identity. Reflection on educational practice configures the personal identity of teachers and contributes to a better understanding of themselves, giving meaning to classroom practices, and exploring what works and what does not work (Kaya and Dikilitaş, 2019^[43]; Karousiou, Hajisoteriou and Angelides, 2019^[13]). For a well-developed identity, the reflection of student teachers around their beliefs of the profession during the ITE is especially important, and teacher educators play a highly relevant role in it (Lim, 2011^[45]; Opfer, 2016^[46]; Rodrigues and Mogarro, 2019^[25]). Some authors argue that, introspection and self-reflection are some of the practices that contribute the most to the formation of the professional identity of teachers (Day et al., 2006^[24]).

It is interesting to note that, within the existing teacher support structures from the educational system and schools, there are experiences that modify teacher professional identity at the school level, such as collaborative practices and the support of supervisors. On the other hand, there are other practices at the system level, common to all or most of the teachers, such as initial education. In addition, there are other variables that may happen at different levels, such as professional experiences, relationships and affiliations.

3.5. What are the expected outcomes of a well-developed teacher professional identity?

The TPI development and outcome model (see Figure 3.1) refers to the following outcomes of teacher professional identity on teacher behaviours and attitudes:

- participation of teachers in continuing professional learning
- their teaching practices, and
- teachers' commitment to the profession and the decision to remain in it.

These teacher behaviours and attitudes, in turn, are linked to student outcomes such as the learning and attitudes of students.

In this sense, teacher professional identity affects teaching behaviour. By developing their professional identity and reflecting on their beliefs and previous experiences, teachers make more conscious decisions about their teaching practices and continuing professional learning (Zhao and Zhang, 2017^[26]; Korthagen, 2004^[8]). Most of the research community agrees that the professional identity of teachers comprises the notion of agency, defined as the active search for professional development, considering knowledge and skills, for individual and collaborative learning according to a teacher's goals (Coldron and Smith, 1999^[47]; Beijaard, Meijer and Verloop, 2004^[35]; Cordingley et al., 2019^[21]), which is

¹ Note by Turkey:

The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

Note by all the European Union Member States of the OECD and the European Union:

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

crucial for the quality of teaching and student learning (Johnson, Selenta and Lord, 2006_[48]; Fischer et al., 2018_[49]).

The existing international evidence shows that these positive outcomes of TPI persist across different countries and economies. Evidence from TALIS 2013, for example, indicates that teachers who had positive beliefs in their self-efficacy and job satisfaction are more likely to participate in school-embedded professional development activities (Opfer, 2016_[46]). Moreover, TALIS 2018 showed that, in most countries, the participation of teachers in professional development instances is associated with effective instructional practices (OECD, 2020_[14]). In addition, other studies have findings on the association between training, self-efficacy and quality of teaching (Fischer et al., 2018_[49]; Fischer et al., 2018_[49]; Beauchamp and Thomas, 2009_[50]).

Furthermore, a well-developed professional identity is positively associated with teachers' teaching practices and the quality of teaching (Hanna et al., 2019_[22]). Indeed, results from TALIS 2018 suggests that the stronger teachers' confidence in their classroom management skills, one identity facet, the less time they spend keeping order (OECD, 2019_[44]). Taking class time dedicated to teaching and learning as an indicator of quality, this finding shows that there is an association between teachers who have a better perception of themselves and their professional identity, and the quality of their teaching.

Also, a strong professional identity can enhance teachers' confidence in their decision to work as teachers and their commitment to the profession (Rots et al., 2010_[9]; Hanna et al., 2019_[22]). Furthermore, teachers' commitment to teaching and their self-efficacy considerably influence students' performance and attitudes (Day, Elliot and Kington, 2005_[11]; Galman, 2009_[12]).

4. Why should teacher professional identity be researched?

The importance of the professional identity of teachers is clear: the effects it can have on teaching behaviours, student results and the implementation of policies are of great relevance. The following discussion addresses the question of why it should be investigated, especially in an international study, and how it is relevant to practice, policy and research.

First, for educational practice and for teachers it is important to investigate and gather information about their beliefs and perceptions. As reviewed before, teachers' knowledge and reflection on their actions and feelings can modify their identity, which could later have an effect in their teaching practice. Furthermore, research about teachers' professional identity may provoke individual and collective reflections for teachers.

Second, research on the identity of teachers is relevant for policy because it may help understand what strategies and experiences enhance teachers' professional identity. Thus, policies can be created based on evidence with the aim of improving teachers' commitment to the profession and the quality of their teaching.

Third, for the research community it is important to verify that the existing relationships in theory occur in practice, that is, to test the causal effect that a well-developed teacher professional identity can have. It is important to generate knowledge about the collective professional identity of teachers and how this can be supported to strengthen the teaching profession. In addition, there is a lack of quantitative research at the international level that uses representative samples to draw conclusions about cross-country educational systems.

4.1. How is teacher professional identity covered in existing research?

Most of the studies reviewed for this article focus on a single country, stemming from different regions. The study by Cordingley et al. (2019^[21]) with a focus on seven countries: Canada, Chile, Germany, Kenya, Scotland, Singapore and Sweden. Also, the study by Day, Elliot and Kington (2005^[11]) has an international scope, collecting information from Australian and English teachers.

Furthermore, the studies reviewed for this article are for the most part qualitative in-depth studies using methodologies such as case studies, interviews, observations, and essay analysis. Another large part is literature reviews, a small part is quantitative studies, all of which offer relational and not causal conclusions, and very few articles use mixed methodologies.

Table 4.1 shows an overview of the research reviewed on teacher professional identity, the countries considered in the studies and the methodologies used.

Table 4.1. Methodologies of the studies reviewed on teacher professional identity

Country	Literature review	Qualitative study	Quantitative study	Mixed methods	Total
No specific country	12				12
Australia				1	1
Canada		1			1
Chile		1			1
China				1	1
Cyprus		1		1	2
Finland		3			3
Flanders (Belgium)			1		1
Israel		1			1
Konya			1		1
Netherlands			1		1
New Zealand		1			1
Singapore			1		1
Spain		1			1
Sweden			1	1	2
Turkey		1	2		3
United Kingdom		1			1
United States		3	1		4
Portugal		1			1
Korea		1			1
International Studies		1		2	3
Total	12	17	8	6	43

Note: See Table A B.1 for details of the reviewed studies. International studies include at least two countries.

A first answer to the challenging question of how to measure TPI across countries and between different educational systems is provided by Hanna et al. (2019^[22]) who reviewed twenty quantitative studies published between 2000 and 2018 from fourteen different countries. After categorising the components, they defined six main domains to measure teacher professional identity:

1. **Self-image:** how individuals view and feel as teachers.
2. **Motivation:** drive to be or become a teacher.
3. **Commitment:** dedication to being a teacher.
4. **Self-efficacy:** belief in their capability to perform their teaching activities effectively.
5. **Task perception:** beliefs about what a teacher considers to be good teaching.
6. **Job satisfaction:** how teachers feel about the institution they work for.

4.2. What are possible directions for future research?

Throughout this paper we have identified three important knowledge gaps for the research community: international studies that span several countries, quantitative studies from which causal conclusions can be drawn, and research on the collective identity of teachers.

There is little research on the professional identity of teachers that has been carried out across different countries. Since the identity of teachers depends on the context, it can be difficult to do a comparative study. However, international evidence with representative

samples can be very beneficial by allowing the comparison of different countries and learning about the strategies used by other educational systems in the world.

Similarly, quantitative research on the identity of teachers is underdeveloped (Erdem, 2020^[51]; Hanna et al., 2020^[52]). Although the accumulated evidence shows the complex relationships between the professional identity of teachers, the educational system and school context, teacher supporting structures, the behaviours of the teachers and the results of the students, the empirical data that allow the outlining of causal arguments is still scarce. Studies allowing causal inferences can better support the development of educational policies, by providing evidence on whether or to what extent those practices that are believed to strengthen the professional identity of teachers are effective.

Moreover, research on the collective professional identity of teachers is lacking. So far, beyond agreeing that collective identity is part of teachers' professional identity, there is a knowledge gap on how collective professional identity can be developed and strengthened. It remains to understand what aspects influence certain communities to generate greater identification and feelings of belonging, in addition to understanding how to enhance collective professional identity.

4.3. Could we learn more about teacher professional identity from international studies?

The absence of international comparative studies no doubt reflects the challenges of capturing the complexity of teachers' professional identity. However, contributing to a better understanding of what the professional identity of teachers looks like, how reflective practices, initial teacher education and continuing professional learning opportunities contribute to that identity is an important step in supporting and strengthening the identity of the teaching profession.

However, there is opportunity in learning from and building on existing international evidence collected through the OECD's TALIS and PISA, which capture certain aspects of teacher professional identity. Table 4.2 provides an overview of the available OECD indicators and questionnaire elements related to three of the TPI framework components: (1) teacher professional identity, (2) structures and support from the educational system and schools, and (3) teacher behaviours and attitudes. Since student outcomes have been studied in depth and there are various indicators and measurements, especially from PISA, this article does not focus on such information.

Table 4.2. Facets from the TPI development and outcome model included in OECD teachers questionnaires 2018

	TALIS 2018	PISA 2018
Teacher professional identity		
Self-efficacy	Included	Included
Job satisfaction	Included	Included
Beliefs		Included
Motivation and perceptions	Included	
Structures and support		
Initial education or training	Included	Included
Professional development	Included	Included
Induction activities	Included	
Mentoring and feedback	Included	
Teacher collaboration	Included	
School climate	Included	
Teacher behaviours		
Teaching practices	Included	
Equity and diversity promotion	Included	Included
Discussion of global challenges		Included
Reading encouragement		Included
Teaching tools usage	Included	Included
Methods for assessing student learning	Included	Included
Feedback to students	Included	Included

Note: See Annex A for details of the review of the TALIS and PISA questionnaires.

Annex A presents in detail the questions of the questionnaires for teachers of PISA 2018 and TALIS 2018 and their relationship with each dimension of the TPI development and outcome model.

In the TALIS 2018 questionnaire for teachers, there is information on teachers' motivations and perceptions, on teachers' self-efficacy and their job satisfaction, covering almost all components of teacher professional identity. In addition, there are measures of the structures and support for teachers, such as items related to the support of schools to participate in professional development activities and the feedback given to teachers, as well as information on mentoring and induction activities, along with information on teachers' formal education and training. Moreover, TALIS includes scales on teacher collaboration. Furthermore, TALIS 2018 incorporates questions about the school climate, including team innovativeness, workplace well-being and stress, and support of schools for teachers on equity and diversity. Finally, TALIS 2018 also includes a scale on teaching practices and questions on methods for assessing student learning which assess teacher behaviours.

The PISA 2018 questionnaire for teachers collects information on teachers' self-efficacy, job satisfaction, their personal beliefs on their own role and collective multicultural and egalitarian beliefs. Moreover, there are indicators for teachers' supporting structures, such as questions related to initial teacher education and continuing professional learning opportunities. Additionally, there is an important set of questions dedicated to gathering information on teacher behaviours, including the promotion of equity and diversity and discussing global challenges during classes. PISA 2018 also includes questions about strategies for reading encouragement, the use of teaching tools, methods for assessing

student learning, and the type and frequency with which teachers provide feedback to their students.

An interesting point to take into account is that when the questions on instruments are related to the professional development opportunities provided by the school or the educational system or the supporting conditions they provide for teachers to attend those instances, professional development is considered as part of the educational system and school support for teachers. On the other hand, when the items of the questionnaires refer to the teacher's choice to participate in instances of professional development, they are classified as part of teacher behaviours and attitudes within the TPI framework. Both in TALIS 2018 and in PISA 2018, all items related to professional development refer to the resources and supporting conditions that the system delivers (or fails to deliver) to teachers. There are no questions included on the willingness of teachers to participate in professional development activities. The inclusion of such questions in future surveys would strengthen analysis on the status of teacher professional identity.

The information that both TALIS and PISA collect about teachers, their beliefs, motivations, perceptions and behaviours is extensive. However, it seems important to incorporate more questions about the instances of introspection and reflection that teachers have (Day et al., 2006^[24]), since according to the literature review these have an important relationship with the strengthening and proper development of teachers' identity. Another aspect for further exploration would be teacher self-image (Burke and Stets, 2009^[42]).

The next step for international research could be to develop and test a scale or indicator, using the foundation that already exists with the PISA and TALIS questionnaires, to contribute to the empirical evidence base on teachers' identity. Future studies could explore the strength of the professional identity of teachers and how it relates to their intention to stay in the profession and to the learning outcomes of students. Studies could also investigate the relationship between the educational system and schools support for teachers and their identity. The collection and analysis of evidence on teachers' professional identity can complement the broader OECD work on teacher policy and provide an environment in which governments can seek answers to common problems, share good practices and learn from each other.

5. What are some of the implications for practice, policy and research?

Understanding TPI provides insights that can support teacher professionalism. The potential benefits relate to key areas of policy and practice including retention and professional growth of teachers. These benefits extend to support for responding to the demands of a changing world and as a catalyst to enhance outcomes for students.

Aspects of TPI are evident within current research, policy and practice but consideration of TPI provides an opportunity to build synergies through a holistic focus. This includes the opportunity to create a focus across countries to share and build practice, policy and innovative approaches to teacher professionalism.

An emphasis on TPI has the potential to grow a virtuous cycle. This would involve evaluating current practices and strategic approaches to nurture individual TPI. Further work would examine ways to strengthen collective TPI as part of a new professionalism. Finally, effective policy implementation can consider alignment between change ideas and TPI.

5.1. What insights does teacher professional identity offer for practice?

The TPI development and outcome model provides insights for practice by providing a holistic image of the interaction of teachers' professional identity with (1) the educational system and school context, (2) structures and support, (3) teacher behaviours and attitudes, and (4) student outcomes. It is valuable to consider how the various parts interact as a system to impact positively and negatively on teacher practice. This provides opportunity to consider levers for change that will enhance the work of individual teachers and schools.

Strengthening teachers' understanding of TPI as it relates to their practice can support growth. Teachers can become more aware of how their context impacts on their growth. Teachers' capacity to connect "who I am" with "what I do" (Mockler, 2020_[29]) can empower teachers to construct their identity as an ongoing experience and part of their professional work. This can be achieved through work in initial teacher education (ITE), continuing professional learning (CPL) and by harnessing opportunities to enhance ongoing collaborative practice.

For example, the prevalence and quality of supports from supervisors or mentors is an important aspect for schools to develop to support the growth of teacher practice at the beginning of a teacher's transition into the profession and as part of their ongoing growth. Through the lens of TPI, there is opportunity to refocus supervisory support away from the concept of being the expert to one which "encourages teachers to practice reflection" (Bailey, 2006, p. 271_[31]). This approach values developing the skills of teachers to be introspective, reflective and collaborative as much as it focuses on the issue that the teacher is exploring at the time.

Understanding what makes effective CPL remains a complex area of examination across the evidence base. The latest research identifies the need to move beyond one-off events and finds benefits when CPL is teacher-led, collaborative, school-based and emerges directly from teachers and their students' needs (Boeskens, Nusche and Yurita, 2020_[53]). By evaluating CPL opportunities through the lens of TPI there is opportunity to enhance CPL that extends some of the research already conducted in this area (Mockler, 2020_[27]; Avraamidou, 2014_[54]). This has potential to enhance teacher professionalism through practical ways to support professional autonomy and teacher responsibility for their own

CPL and growth throughout their whole career. This could include exploring new types of rich collaboration between teachers to support reflection on the actual work they are undertaking as part of developing their individual and collective TPI.

5.2. What insights does teacher professional identity offer for policy?

TPI provides an additional frame to support strategic planning at a systems level. This includes enhancing the effectiveness of policy development and implementation, increased professional growth and satisfaction of teachers' work that support retention of teachers within the profession. TPI can also strengthen the connections between initial teacher education and professional practice throughout a teacher's career.

Implementation of policy goals are likely to be more successful when it aligns with TPI (Karousiou, Hajisoteriou and Angelides, 2019_[13]). This means policy implementation is likely to be more effective if proposals are considered through the lens of TPI during their development. There are also benefits to be gained through a focus on broader aspects of policy and practice that support TPI which can then positively impact on the achievement of narrower accountability measures such as student outcomes.

Reframing teacher professionalism remains an important policy challenge to recognise and enhance teacher practice and status (Ulferts, 2021_[55]). Some view teaching as a semi-profession and others assert that teaching should be considered the "mother of all professions" (McDonald, 1956_[56]; Guerriero, 2017_[57]; Ulferts, 2021_[55]; Korthagen, 2004_[8]). Teacher professionalism requires a multi-faceted approach such as those outlined in the five pillars through TALIS (OECD, 2019_[44]) which are (1) knowledge and skills base, (2) the status and standing of the profession, (3) peer control, (4) responsibility and autonomy, and (5) the societal value of the profession. TPI can support a number of aspects of the TALIS framework for describing teaching as a profession, especially pillar three which seeks "self-regulated and collegial professional communities that provide opportunities for collaboration and peer feedback to strengthen professional practices and the collective identity of the profession" (OECD, 2019, p. 26_[44]). TPI values teacher introspection and collective reflection as an embedded process for the continued understanding and development of practice over the career of teachers through an interdependent approach with their colleagues, and as members of the teaching profession.

Many countries have introduced Professional Standards as a way to promote teacher professionalism (Révai, 2018_[58]). While there is debate whether standards might promote (Cordingley et al., 2019_[21]) or restrict teacher autonomy and related CPL practices (Flores and Day, 2006_[32]), a focus on developing TPI facilitates introspection and reflection as part of core practice that can deepen engagement with teaching standards as an act of "doing" (Mulcahy, 2011, p. 108_[59]). This form of collaboration, linked to a common knowledge base (Révai, 2018_[58]; Ulferts, 2021_[55]), has a clear focus on actual experiences and expands ways teachers can be supported in their professional growth as part of CPL approaches that are specific to the emerging needs of each teacher at a point in time.

Teacher retention and attraction of high-quality graduates is an important area of policy achievement (Viac and Fraser, 2020_[60]) that can be considered through the frame of the TPI development and outcome model to evaluate current practice, share practice across countries and to innovate new solutions. TPI provides opportunities to expand and focus current approaches to mentoring, coaching and CPL as forms of support for teachers, by demonstrating gains that can be made through rich collaborations between teachers to mediate their understanding of the actual work they are undertaking. This can provide benefits through enhanced satisfaction of professional practice and growth with related benefits to retaining and attracting teachers to the profession.

A focus on explicit teaching of TPI in initial teacher education provides opportunity to establish understandings which can be central to the practice of teachers and their ongoing growth as they move into the profession and develop throughout their career. This might involve ensuring ways to skill new teachers in how and why introspection and reflection on their teacher professional identity support them to grow their professional practice. This includes nurturing self-image, motivation, commitment, self-efficacy, task perception and job satisfaction. Teachers should understand how their personal and collective reflections can shape their practice and beliefs as an ongoing process across their career, beginning with initial teacher education.

5.3. What insights does teacher professional identity offer for researchers?

A number of aspects about further research are addressed in Section 4. There is also opportunity for increased focus on the topic through multiple lenses. While some elements of TPI have been explored as individual components there appears to be opportunity to examine the overall concept and its benefits.

This could include looking at elements of TPI highlighted in the TPI development and outcome model to evaluate overall practice and create ideas for further innovations. A related challenge is to consider effective ways to measure TPI.

The literature highlights the multi-faceted elements that creates an individual TPI. However, a focus for further research would seek to better understand the impacts of collective professional identity on an individual teacher, school and system. Examining ways to strengthen collective TPI is an area to be further examined through the lens of practice, policy and research to open up thinking that can strengthen teacher professionalism across the full length of a teacher's career.

There is opportunity to scale up research about TPI at an international level to examine the potential benefits to be gained for teachers, students and education systems. This could include broadening the number of participants in studies, the cross-section of participants to strengthen comparative elements, and adding to the longitudinal nature of studies to focus on longer-term outcomes.

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Annex A. OECD scales and survey items related to the TPI framework

Table A A.1. OECD TALIS scales and survey items related to the TPI framework

Question No.	Question	Scale	Sub-scale
Motivations and perceptions			
TT3G07A	Teaching as a steady career path	T3PERUT: Personal utility motivation to teach	
TT3G07B	Teaching associated to a reliable income		
TT3G07C	Teaching as a secure job		
TT3G07D	Teaching schedule fit with teachers' responsibilities in their personal life		
TT3G07E	Teaching allowed teachers to influence the development of children and young people	T3SOCUT: Social utility motivation to teach	
TT3G07F	Teaching allowed teachers to benefit the socially disadvantaged		
TT3G07G	Teaching allowed teachers to provide a contribution to society		
TT3G54C	Teachers' view are valued by policymakers in this country/region	T3VALP: Perceptions of value and policy influence	
TT3G54D	Teachers can influence educational policy in this country/region		
TT3G54E	Teachers are valued by the media in this country/region		
Teacher self-efficacy			
TT3G34D	Teachers control disruptive behaviour in the classroom	T3SELF: Teacher self-efficacy	T3SECLS: Self-efficacy in classroom management
TT3G34F	Teachers make expectations clear about student behaviour		
TT3G34H	Teachers get students to follow classroom rules		
TT3G34I	Teachers calm a student who is disruptive or noisy		
TT3G34C	Teachers craft good questions for students		
TT3G34J	Teachers use a variety of assessment strategies		
TT3G34K	Teachers provide an alternative explanation		
TT3G34L	Teachers vary instructional strategies		T3SEINS: Self-efficacy in instruction
TT3G34A	Teachers get students to believe they can do well in school work		
TT3G34B	Teachers help students value learning		
TT3G34E	Teachers motivate students who show low interest in school work		
TT3G34G	Teachers help students think critically		
TT3G45A	Teachers can cope with the challenges of a multicultural classroom		
TT3G45B	Teachers can adapt teaching to the cultural diversity of students		
TT3G45C	Teachers can ensure students with and without a migrant background work together		
TT3G45D	Teachers can raise awareness for cultural differences amongst students		

Question No.	Question	Scale	Sub-scale	
TT3G45E	Teachers can reduce ethnic stereotyping amongst students			
Job satisfaction				
TT3G53C	Teachers would like to change to another school if possible	T3JOBSA: Job satisfaction	T3JSENV: Job satisfaction with work environment	
TT3G53E	Teachers enjoy working at this school			
TT3G53G	Teachers would recommend this school as a good place to work			
TT3G53J	Teachers are satisfied with their job			
TT3G53A	The advantages of being a teacher clearly outweigh the disadvantages			T3JSPRO: Job satisfaction with profession
TT3G53B	Teachers would choose again to work as a teacher			
TT3G53D	Teachers regret the decision to become a teacher			
TT3G53F	Teachers wonder whether it would have been better to choose another profession			T3SATAT: Satisfaction with target class autonomy
TT3G40A	Teachers' amount of control over determining course content			
TT3G40B	Teachers' amount of control over selecting teaching methods			
TT3G40C	Teachers' amount of control over assessing students' learning			
TT3G40D	Teachers' amount of control over disciplining students			
TT3G40E	Teachers' amount of control over determining the amount of homework to be assigned			
Teacher collaboration				
TT3G33D	Teachers exchange or develop teaching materials with colleagues	T3COOP: Teacher co-operation	T3EXCH: Exchange and co-ordination among teachers	
TT3G33E	Teachers discuss the learning development of specific students			
TT3G33F	Teachers work with other teachers in this school to ensure common standards in evaluations for assessing student progress			
TT3G33G	Teachers attend team conferences			
TT3G33A	Teachers teach jointly as a team in the same class			
TT3G33B	Teachers provide feedback to other teachers about their practice		T3COLES: Professional collaboration among teachers	
TT3G33C	Teachers engage in joint activities across different classes and age groups (e.g. projects)			
TT3G33H	Teachers participate in collaborative professional learning			
Professional development				
TT3G26A	Impactful PD built on prior knowledge	T3EFFPD: Effective professional development		
TT3G26B	Impactful PD adapted to personal development needs			
TT3G26C	Impactful PD had a coherent structure			
TT3G26D	Impactful PD focused on content needed to teach their subjects			

Question No.	Question	Scale	Sub-scale
TT3G27A	Need for PD covering knowledge and understanding of teacher's subject field(s)	T3DPED: Needs for professional development in subject matter and pedagogy	
TT3G27B	Need for PD covering pedagogical competences in teacher's subject field(s)		
TT3G27C	Need for PD covering knowledge of the curriculum		
TT3G27D	Need for PD covering student assessment practices		
TT3G27F	Need for PD covering student behaviour and classroom management		
TT3G27H	Need for PD covering approaches to individualised learning		T3PDIV: Needs for professional development for teaching for diversity
TT3G27I	Need for PD covering teaching students with special needs		
TT3G27J	Need for PD covering teaching in a multicultural or multilingual setting		
TT3G28A	Lack of pre-requisites to participate in PD	T3PDBAR: Professional development barriers	
TT3G28B	Too expensive/unaffordable to participate in PD		
TT3G28C	Lack of employer support to participate in PD		
TT3G28D	Conflicts with work schedule as a barrier to participate in PD		
TT3G28E	Family responsibilities as a barrier to participate in PD		
TT3G28F	No relevant PD on offer		
TT3G28G	No incentives to take part in PD		
TT3G22A	Teachers participated in courses and workshops attended in person		
TT3G22B	Teachers participated in online courses/seminars		
TT3G22C	Teachers participated in education conferences		
TT3G22D	Teachers participated in formal qualification programme		
TT3G22E	Teachers participated in observation visits to other schools		
TT3G22F	Teachers participated in observation visits to business premises, public organisations, non-governmental organisations		
TT3G22G	Teachers participated in formal peer/self-observation and coaching as part of a formal school arrangement		
TT3G22H	Teachers participated in a PD network of teachers		
TT3G22I	Teachers participated in reading professional literature		
TT3G23A	PD covered knowledge and understanding of teacher's subject field(s)		
TT3G23B	PD covered pedagogical competences in teacher's subject field(s)		
TT3G23C	PD covered knowledge of the curriculum		
TT3G23D	PD covered student assessment practices		
TT3G23E	PD covered ICT skills for teaching		

Question No.	Question	Scale	Sub-scale
TT3G23F	PD covered student behaviour and classroom management		
TT3G23G	PD covered school management and administration		
TT3G23H	PD covered approaches to individualised learning		
TT3G23I	PD covered teaching students with special needs		
TT3G23J	PD covered teaching in a multicultural or multilingual setting		
TT3G23K	PD covered teaching cross-curricular skills		
TT3G23L	PD covered analysis and use of student assessments		
TT3G23M	PD covered teacher-parent/guardian co-operation		
TT3G23N	PD covered communicating with people from different cultures or countries		
TT3G24A	Teachers receive release from teaching duties for PD during regular working hours		
TT3G24B	Teachers receive non-monetary support for PD activities outside working hours		
TT3G24C	Teachers receive reimbursement or payment of costs for PD		
TT3G24D	Teachers receive materials needed for PD activities		
TT3G24E	Teachers receive monetary supplements for PD activities outside working hours		
TT3G24F	Teachers receive non-monetary rewards for PD activities (e.g. classroom resources/materials, book vouchers, software/apps)		
TT3G24G	Teachers receive non-monetary professional benefits for PD activities		
TT3G24H	Teachers receive increased salary for PD activities		
TT3G25	PD activities had a positive impact on teachers' practice during last 12 months		
TT3G26E	Impactful PD provided opportunities for active learning		
TT3G26F	Impactful PD provided opportunities for collaborative learning		
TT3G26G	Impactful PD provided opportunities to practise/apply new ideas and knowledge in my own classroom		
TT3G26H	Impactful PD provided follow-up activities		
TT3G26I	Impactful PD took place at the school		
TT3G26J	Impactful PD involved most colleagues of the school		
TT3G26K	Impactful PD took place over an extended period of time		
TT3G26L	Impactful PD focused on innovation in my teaching		
TT3G27D	Need for PD covering ICT skills for teaching		
TT3G27G	Need for PD covering school management and administration		

Question No.	Question	Scale	Sub-scale
TT3G27K	Need for PD covering teaching cross-curricular skills		
TT3G27L	Need for PD covering analysis and use of student assessments		
TT3G27M	Need for PD covering teacher-parent/guardian co-operation		
TT3G27N	Need for PD covering communicating with people from different cultures or countries		
School climate			
TT3G51A	Teachers experience stress at work	T3WELS: Workplace well-being and stress	
TT3G51B	Teachers' job leaves them time for their personal life		
TT3G51C	Teachers' job negatively impacts their mental health		
TT3G51D	Teachers' job negatively impacts their physical health		
TT3G52A	Having too much lesson preparation is a source of stress for teachers	T3WLOAD: Workload stress	
TT3G52B	Having too many lessons to teach is a source of stress for teachers		
TT3G52C	Having too much marking is a source of stress for teachers		
TT3G52D	Having too much administrative work to do (e.g. filling out forms) is a source of stress for teachers		
TT3G52E	Having extra duties due to absent teachers is a source of stress for teachers		
TT3G52F	Being held responsible for students' achievement is a source of stress for teachers		T3STBEH: Student behaviour stress
TT3G52G	Maintaining classroom discipline is a source of stress for teachers		
TT3G52H	Being intimidated or verbally abused by students is a source of stress for teachers		
TT3G41A	Teachers have to wait for students to quieten down when the lesson begins	T3DISC: Teachers' perceived disciplinary climate	
TT3G41B	Students take care to create a pleasant learning atmosphere		
TT3G41C	Students interrupting the lesson generate a lot of time waste		
TT3G41D	There is much disruptive noise in this classroom		
TT3G49A	Teachers and students usually get on well with each other	T3STUD: Teacher-student relations	
TT3G49B	Most teachers believe that the students' well-being is important		
TT3G49C	Most teachers are interested in what students have to say		
TT3G49D	If a student needs extra assistance, the school provides it		
TT3G48A	The school provides staff with opportunities to actively participate in school decisions	T3STAKE: Participation among stakeholders, teachers	
TT3G48B	The school provides parents or guardians with opportunities to actively participate in school decisions		

Question No.	Question	Scale	Sub-scale
TT3G48C	The school provides students with opportunities to actively participate in school decisions		
TT3G48D	The school has a culture of shared responsibility for school issues		
TT3G48E	There is a collaborative school culture which is characterised by mutual support		
TT3G32A	Most teachers in this school strive to develop new ideas for teaching and learning	T3TEAM: Team innovativeness	
TT3G32B	Most teachers in this school are open to change		
TT3G32C	Most teachers in this school search for new ways to solve problems		
TT3G32D	Most teachers in this school provide practical support to each other for the application of new ideas		
TT3G47A	The school has supporting activities or organisations that encourage students' expression of diverse ethnic and cultural identities (e.g. artistic groups)	T3DIVP: Diversity practices	
TT3G47B	The school has organised multicultural events (e.g. cultural diversity day)		
TT3G47C	Teaching students how to deal with ethnic and cultural discrimination is a school practice		
TT3G47D	Adopting teaching and learning practices that integrate global issues throughout the curriculum is a school practice		
Initial education or training			
TT3G06A	(Included in formal education/training, and extent to which teachers feel prepared) Content of some or all subject(s) they teach		
TT3G06B	(Included in formal education/training, and extent to which teachers feel prepared) Pedagogy of some or all subject(s) they teach		
TT3G06C	(Included in formal education/training, and extent to which teachers feel prepared) General pedagogy		
TT3G06D	(Included in formal education/training, and extent to which teachers feel prepared) Classroom practice in some or all subject(s) they teach		
TT3G06E	(Included in formal education/training, and extent to which teachers feel prepared) Teaching in a mixed ability setting		
TT3G06F	(Included in formal education/training, and extent to which teachers feel prepared) Teaching in a multicultural or multilingual setting		
TT3G06G	(Included in formal education/training, and extent to which teachers feel prepared) Teaching cross-curricular skills (e.g. creativity, critical thinking, problem solving)		
TT3G06H	(Included in formal education/training, and extent to which teachers feel prepared) Use of information and communication technology for teaching		

Question No.	Question	Scale	Sub-scale
TT3G06I	(Included in formal education/training, and extent to which teachers feel prepared) Student behaviour and classroom management		
TT3G06J	(Included in formal education/training, and extent to which teachers feel prepared) Monitoring students' development and learning		
TT3G06K	(Included in formal education/training, and extent to which teachers feel prepared) Facilitating students' transitions to the next level		
TT3G06L	(Included in formal education/training, and extent to which teachers feel prepared) Facilitating play		
Induction activities			
TT3G19A	Teachers participated in a formal induction programme		
TT3G19B	Teachers participated in informal induction activities		
TT3G20A	Teachers attended courses/seminars in person as part of the induction		
TT3G20B	Teachers attended online courses/seminars as part of the induction		
TT3G20C	Teachers participated in online activities as part of the induction		
TT3G20D	Teachers participated of planned meetings with principal and/or experienced teachers as part of the induction		
TT3G20E	Teachers were supervised by principal and/or experienced teachers as part of the induction		
TT3G20F	Teachers participated on networking/collaboration with other experienced teachers as part of the induction		
TT3G20G	Teacher participated in team teaching with experienced teachers as part of the induction		
TT3G20H	Teachers used portfolios/diaries/journals as part of the induction		
TT3G20I	Teachers had reduced teaching load as part of the induction		
TT3G20J	Teachers had general/administrative introduction as part of the induction		
Mentoring and feedback			
TT3G21A	Teachers have an assigned mentor as part of a formal arrangement		
TT3G21B	Teachers serve as assigned mentors for others as part of a formal arrangement		
TT3G29A	Feedback to teachers from classroom observation		
TT3G29B	Feedback to teachers on student survey responses related to teaching		
TT3G29C	Assessment of teachers content knowledge		
TT3G29D	Feedback to teachers on external results of students (e.g. national test scores)		
TT3G29E	Feedback to teachers on school-based and classroom-based results (e.g. performance results, projects results, test scores)		

Question No.	Question	Scale	Sub-scale
TT3G29F	Feedback on teachers' self-assessment		
TT3G30	Feedback received had a positive impact on teachers' practice during last 12 months		
TT3G31A	Impactful feedback lead to better knowledge and understanding of main subject field(s)		
TT3G31B	Impactful feedback lead to better pedagogical competences in teaching a specific subject		
TT3G31C	Impactful feedback lead to better use of student assessments to improve student learning		
TT3G31D	Impactful feedback lead to better classroom management		
TT3G31E	Impactful feedback lead to the use of methods for teaching students with special needs		
TT3G31F	Impactful feedback lead to use of methods for teaching in a multicultural or multilingual setting		
Teaching practices			
TT3G42A	Teachers present summary of recent learned content	T3TPRA: Teaching practices	T3CLAIN: Clarity of instruction
TT3G42B	Teachers set goals at the beginning of instruction		
TT3G42C	Teachers explain learning expectations for students		
TT3G42D	Teachers explain relationships of new and old topics		
TT3G42E	Teachers present tasks with no obvious solution		T3COGAC: Cognitive action
TT3G42F	Teachers give tasks that require students to think critically		
TT3G42G	Teachers make students work in small groups to come up with a joint solution to a problem		
TT3G42H	Teachers ask students to decide on their own procedures for solving complex tasks		
TT3G42I	Teachers tell students to follow classroom rules		T3CLASM: Classroom management
TT3G42J	Teachers tell students to listen		
TT3G42K	Teachers calm students who are disruptive		
TT3G42L	Teachers ask students to quieten down quickly at the beginning of the lesson		
Methods for assessing student learning			
TT3G43A	Teachers develop and administer their own assessment		
TT3G43B	Teachers provide written feedback on student work in addition to a mark		
TT3G43C	Teachers let students judge their own progress		
TT3G43D	Teachers observe students when working on particular tasks and provide immediate feedback		

Note: A summary is provided in Table 4.2. Definitions: Information Communication Technology (ICT); Professional Development (PD).

Source: OECD, TALIS 2018 Database, <https://www.oecd.org/education/school/talis2018questionnaires.htm> (accessed 8 November 2021).

Table A A.2. OECD PISA scales and survey items related to the TPI framework

Question No.	Question topic	Scale
TC198Q05HA	Teachers enjoy working at this school	SATJOB: Satisfaction with current job environment
TC198Q07HA	Teachers would recommend this school as a good place to work	
TC198Q09HA	Teachers are satisfied with their performance in the school	
TC198Q10HA	Teachers are satisfied with their job	
TC198Q01HA	The advantages of being a teacher clearly outweigh the disadvantages	SATTEACH: Satisfaction with the teaching profession
TC198Q02HA	Teachers would choose again to work as a teacher	
TC198Q04HA	Teachers regret the decision to become a teacher	
TC198Q06HA	Teachers wonder whether it would have been better to choose another profession	
TC198Q03HA	Teachers would like to change to another school if possible	
TC198Q08HA	Teachers think the teaching profession is valued in society	
Teacher self-efficacy		
TC199Q04HA	Teachers control disruptive behaviour in the classroom	SEFFCM: Self-efficacy in classroom management
TC199Q06HA	Teachers make expectations clear about student behaviour	
TC199Q08HA	Teachers get students to follow classroom rules	
TC199Q09HA	Teachers calm a student who is disruptive or noisy	
TC199Q03HA	Teachers craft good questions for students	SEFFINS: Self-efficacy in instruction
TC199Q10HA	Teachers use a variety of assessment strategies	
TC199Q11HA	Teachers provide an alternative explanation	
TC199Q12HA	Teachers vary instructional strategies	
TC199Q01HA	Teachers get students to believe they can do well in school work	SEFFREL: Self-efficacy in relations with students
TC199Q02HA	Teachers help students value learning	
TC199Q05HA	Teachers motivate students who show low interest in school work	
TC199Q07HA	Teachers help students think critically	
TC152Q03HA	Teachers know how to diagnose the students' reading comprehension problems	
TC152Q04HA	Teachers are confident in their capabilities to teach reading comprehension strategies	
TC209Q01HA	Teachers can cope with the challenges of a multicultural classroom	GCSELF: Teachers' self-efficacy in multicultural environments
TC209Q02HA	Teachers can adapt teaching to the cultural diversity of students	
TC209Q03HA	Teachers can ensure students with and without a migrant background work together	
TC209Q04HA	Teachers can raise awareness for cultural differences amongst students	
TC209Q05HA	Teachers can reduce ethnic stereotyping amongst students	
Teachers' beliefs		
TC152Q01HA	Every teacher should be trained to teach reading comprehension	TCMCEG: Teachers' multicultural and egalitarian beliefs
TC152Q02HA	Every teacher has a responsibility to improve students' reading comprehension skills	
TC208Q02HA	It is important for students to learn that people from other cultures can have different values	
TC208Q03HA	Respecting other cultures is something that students should learn as early as possible	
TC208Q07HA	In the classroom, it is important that students of different origins recognise the similarities that exist between them	
TC208Q08HA	Then there are conflicts between students of different origins, they should be encouraged to resolve the argument by finding common ground	
Initial education or training		
TC014	Competition of teacher education or training programme	
TC015	How were the initial teacher qualifications received	

Question No.	Question topic	Scale
TC206Q01HA	Teacher education covered intercultural communication	GCTRAIN: Teachers' training on multicultural classrooms
TC206Q02HA	Teacher education covered conflict resolution strategies	
TC206Q03HA	Teacher education covered the role education can play in confronting discrimination in all its forms	
TC206Q04HA	Teacher education covered culturally-responsive teaching approaches and techniques	
TC206Q05HA	Teacher education covered issues related to teaching in multicultural classrooms	
Professional development		
TC185Q01HA	Need for PD covering knowledge and understanding of teacher's subject field(s)	
TC185Q02HA	Need for PD covering pedagogical competences in teacher's subject field(s)	
TC185Q03HA	Need for PD covering knowledge of the curriculum	
TC185Q04HA	Need for PD covering student assessment practices	
TC185Q05HA	Need for PD covering ICT skills for teaching	
TC185Q06HA	Need for PD covering student behaviour and classroom management	
TC185Q07HA	Need for PD covering school management and administration	
TC185Q08HA	Need for PD covering approaches to individualised learning	
TC185Q09HA	Need for PD covering teaching students with special needs	
TC185Q10HA	Need for PD covering teaching in a multicultural or multilingual setting	
TC185Q11HA	Need for PD covering teaching cross-curricular skills	
TC185Q12HA	Need for PD covering student career guidance and counselling	
TC185Q13HA	Need for PD covering internal evaluation or self-evaluation of schools	
TC185Q14HA	Need for PD covering use of evaluation results	
TC185Q15HA	Need for PD covering teacher-parent co-operation	
TC185Q16HA	Need for PD covering second language teaching	
TC185Q17HA	Need for PD covering communicating with people from different cultures or countries	
TC185Q18HA	Need for PD covering teaching about equity and diversity	
TC021	Requirement to take part in PD activities	
TC193Q01HA	Participation during las 12 months in courses/workshops	
TC193Q02HA	Participation during las 12 months in education conferences or seminars	
TC193Q03HA	Participation during las 12 months in observation visits to other schools	
TC193Q04HA	Participation during las 12 months in observation visits to business premises, public organisations, non-governmental organisations	
TC193Q05HA	Participation during las 12 months in in-service training courses in business premises, public organizations, non-governmental organisations	
TC020Q01NA	Participation during las 12 months in qualification programme	
TC020Q02NA	Participation during las 12 months in a network of teacher formed specifically for the professional development of teachers	
TC020Q03NA	Participation during las 12 months in individual or collaborative research on a topic of interest to you professionally	
TC020Q04NA	Participation during las 12 months in mentoring and/or peer observation and coaching, as part of a formal school arrangement	
TC020Q05NA	Participation during las 12 months in reading professional literature	
TC020Q06NA	Participation during las 12 months in engaging in informal dialogue with your colleagues on how to improve your teaching	
Initial education or training and Professional development		
TC045Q01N	Teacher education or PD covered knowledge and understanding of teacher's subject field(s)	
TC045Q02N	Teacher education or PD covered pedagogical competences in teacher's subject field(s)	

Question No.	Question topic	Scale
TC045Q03N	Teacher education or PD covered knowledge of the curriculum	
TC045Q04N	Teacher education or PD covered student assessment practices	
TC045Q05N	Teacher education or PD covered ICT skills for teaching	
TC045Q06N	Teacher education or PD covered student behaviour and classroom management	
TC045Q07N	Teacher education or PD covered school management and administration	
TC045Q08N	Teacher education or PD covered approaches to individualised learning	
TC045Q09N	Teacher education or PD covered teaching students with special needs	
TC045Q10N	Teacher education or PD covered teaching in a multicultural or multilingual setting	
TC045Q11N	Teacher education or PD covered teaching cross-curricular skills	
TC045Q12N	Teacher education or PD covered student career guidance and counselling	
TC045Q13N	Teacher education or PD covered internal evaluation or self-evaluation of schools	
TC045Q14N	Teacher education or PD covered use of evaluation results	
TC045Q15N	Teacher education or PD covered teacher-parent co-operation	
TC045Q16H	Teacher education or PD covered second language teaching	
TC045Q17H	Teacher education or PD covered communicating with people from different cultures or countries	
TC045Q18H	Teacher education or PD covered teaching about equity and diversity	
Teacher collaboration		
TC046Q04NA	Teachers exchange teaching materials with colleagues	
TC046Q05NA	Teachers discuss the learning development of specific students	
TC046Q06NA	Teachers work with other teachers in this school to ensure common standards in evaluations for assessing student progress	
TC046Q07NA	Teachers attend team conferences	
Equity and diversity promotion		
TC207Q01HA	Teachers include opportunities to promote communicating with people from different cultures or countries	
TC207Q02HA	Teachers include opportunities to promote knowledge of different cultures	
TC207Q03HA	Teachers include opportunities to promote openness to people from other cultural backgrounds	
TC207Q04HA	Teachers include opportunities to promote respect for cultural diversity	
TC207Q05HA	Teachers include opportunities to promote foreign languages	
TC207Q06HA	Teachers include opportunities to promote critical thinking skills	
Reading encouragement		
TC155Q02HA	Frequency in which teachers teach summarizing strategies	
TC155Q03HA	Frequency in which teachers teach connecting text with prior content knowledge	
TC155Q04HA	Frequency in which teachers teach monitoring comprehension	
TC155Q05HA	Frequency in which teachers teach adapting the mode of reading depending on reading purposes	
TC155Q06HA	Frequency in which teachers teach assessing credibility in information available on the Internet	
TC155Q07HA	Frequency in which teachers teach searching and selecting relevant information on the Internet	
Discussion of global challenges		
TC178Q01HA	Teachers include in their lessons climate change and global warming	
TC178Q02HA	Teachers include in their lessons global health	

Question No.	Question topic	Scale
TC178Q04HA	Teachers include in their lessons migration	
TC178Q07HA	Teachers include in their lessons international conflicts	
TC178Q08HA	Teachers include in their lessons hunger or malnutrition in different parts of the world	
TC178Q09HA	Teachers include in their lessons causes of poverty	
TC178Q12HA	Teachers include in their lessons equality between men and women in different parts of the world	
Teaching tools usage		
TC169Q01HA	Tutorial software or practice programmes usage frequency for teaching	TCITUSE: Teacher's use of specific ICT applications
TC169Q02HA	Digital learning games usage frequency for teaching	
TC169Q03HA	Word-processors or presentation software usage frequency for teaching	
TC169Q04HA	Spreadsheets usage frequency for teaching	
TC169Q05HA	Multimedia production tools usage frequency for teaching	
TC169Q06HA	Concept mapping software usage frequency for teaching	
TC169Q07HA	Data logging and monitoring tools usage frequency for teaching	
TC169Q08HA	Simulations and modelling software usage frequency for teaching	
TC169Q09HA	Social media usage frequency for teaching	
TC169Q10HA	Communication software usage frequency for teaching	
TC169Q11HA	Computer-based information resources usage frequency for teaching	
TC169Q12HA	Interactive digital learning resources usage frequency for teaching	
TC169Q13HA	Graphing or drawing software usage frequency for teaching	
TC169Q14HA	E-portfolios usage frequency for teaching	
Methods for assessing student learning		
TC054Q01NA	Teachers develop and administer their own assessment	
TC054Q02NA	Teachers administer a standardized test	
TC054Q03NA	Teachers have individual students answer questions in front of the class	
TC054Q04NA	Teachers provide written feedback on student work in addition to a mark	
TC054Q05NA	Teachers let students judge their own progress	
TC054Q06NA	Teachers observe students when working on particular tasks and provide immediate feedback	
TC054Q07NA	Teachers collect data from classroom assignments or home work	
Feedback to students		
TC192Q01HA	Frequency in which teachers tell students how they are performing on the course	FEEDBACK: Frequency of feedback to students
TC192Q02HA	Frequency in which teachers give students feedback on their strengths on the course	
TC192Q03HA	Frequency in which teachers tell students in which areas they can still improve	
TC192Q04HA	Frequency in which teachers tell students how they can improve their performance	
TC192Q05HA	Frequency in which teachers advise students on how to reach their learning goals	

Note: A summary is provided in Table 4.2.

Source: OECD, PISA teachers' questionnaire 2018 Database, <https://www.oecd.org/pisa/data/2018database/> (accessed 8 November 2021).

Annex B. Methodologies of the studies reviewed on teacher professional identity

Table A B.1. Quality of studies reviewed

Authors	Study	Countries involved	Literature Review	Qualitative	Quantitative	Mixed methods	Methodology	Relations established (Theoretical/Correlational/Causal)	Sample size	Scales used
(Agee, 2004 ^[10])	Negotiating a Teaching Identity: An African American Teacher's Struggle to Teach in Test-Driven Contexts	United States		1			Qualitative	Theoretical	-	-
(Noi, Kwok and Goh, 2016 ^[61])	Assessing teachers' professional identity in a post-secondary institution in Singapore	Singapore			1		Quantitative	Correlational	N=352	-
(Avraamidou, 2014 ^[54])	Studying science teacher identity: current insights and future research directions	-	1				Literature Review	Theoretical	-	-
(Bandura, 1993 ^[62])	Perceived Self-Efficacy in Cognitive Development and Functioning	-	1				Literature review	Correlational	-	-
(Beauchamp and Thomas, 2009 ^[50])	Understanding teacher identity: an overview of issues in the literature and implications for teacher education	-	1				Literature review	Theoretical	-	-
(Beijaard, Meijer and Verloop, 2004 ^[35])	Reconsidering research on teachers' professional identity	-	1				Review of qualitative studies	Theoretical	-	-
(Bolívar, Domingo Segovia and Pérez-García, 2014 ^[63])	Crisis and Reconstruction of Teachers' Professional Identity: The Case of Secondary School Teachers in Spain	Spain		1			Qualitative	Theoretical	-	-
(Buchanan, 2015 ^[64])	Teachers and Teaching theory and practice Teacher identity and agency in an era of accountability	United States		1			Qualitative	Theoretical	-	-

Authors	Study	Countries involved	Literature Review	Qualitative	Quantitative	Mixed methods	Methodology	Relations established (Theoretical/Correlational/Causal)	Sample size	Scales used
(Coldron and Smith, 1999 ^[47])	Active location in teachers' construction of their professional identities	-	1				Literature review	Theoretical	-	-
(Cordingley et al., 2019 ^[21])	Constructing Teachers' Professional Identities - Case Studies	Canada Chile Germany Kenya Scotland Singapore Sweden				1	Literature Review + Qualitative + Quantitative	Correlational	-	CUREE International Teacher Professional Identity Survey
(Darragh and Radovic, 2019 ^[65])	"To Tia with love": Chilean mathematics teacher identities after professional development	Chile		1			Qualitative	Theoretical	-	-
(Davey, 2013 ^[23])	Career on the Cusp: The Professional Identity of Teacher Educators	New Zealand		1			Qualitative	Theoretical	N=39	-
(Day, Elliot and Kington, 2005 ^[11])	Reform, standards and teacher identity: Challenges of sustaining commitment	United Kingdom and Australia	1				Qualitative	Theoretical	N=12	-
(Day et al., 2006 ^[24])	The personal and professional selves of teachers: Stable and unstable identities	-	1				Literature review	Theoretical	-	-
(Erdem, 2020 ^[51])	Exploring the relationships between possible selves and early teacher identity of Turkish pre-service	Turkey			1		Quantitative	Correlational	N=350	-
(Fischer et al., 2018 ^[49])	Investigating relationships between school context, teacher professional development, teaching practices, and student achievement in response to a nationwide science reform	United States		1			Quantitative	Correlational	N=133,336 students, N=7,434 teachers	-
(Flores and Day, 2006 ^[32])	Contexts which shape and reshape new teachers' identities: A multi-perspective study	Portugal		1			Qualitative	Theoretical	N=14	-

Authors	Study	Countries involved	Literature Review	Qualitative	Quantitative	Mixed methods	Methodology	Relations established (Theoretical/Correlational/Causal)	Sample size	Scales used
(Gee, 2000 _[39])	Identity as an Analytic Lens for Research in Education	-	1				Literature Review	Theoretical	-	-
(Golzar, 2020 _[66])	Teacher identity formation through classroom practices in the post-method era: A systematic review	-	1				Review of 37 empirical studies	Correlational	-	-
(Hanna et al., 2019 _[22])	Domains of teacher identity: A review of quantitative measurement instruments Domains of teacher identity: A review of quantitative measurement instruments	-	1				Literature review	Correlational	-	-
(Hanna et al., 2020 _[52])	Assessing the professional identity of primary student teachers: Design and validation of the Teacher Identity Measurement Scale	Netherlands			1		Quantitative	Correlational	N=419	TIMS, created by the authors
(Hökkä, Vähäsantanen and Mahlakaarto, 2017 _[67])	Teacher educators' collective professional agency and identity – Transforming marginality to strength	Finland		1			Qualitative	Theoretical	N=11	-
(Karaolis and Philippou, 2019 _[68])	Teachers' Professional Identity	Cyprus				1	Quantitative + Qualitative	Correlational	N=315	Adjusted items and created a new scale
(Karousiou, Hajisoteriou and Angelides, 2019 _[13])	Teachers' professional identity in super-diverse school settings: teachers as agents of intercultural education	Cyprus		1			Qualitative	Theoretical	N=20	-
(Kaya and Dikilitaş, 2019 _[43])	Constructing, Reconstructing and Developing Teacher Identity in Supportive Contexts	Turkey		1			Qualitative (Case study)	Theoretical	N=1	-
(Kim and Asbury, 2020 _[69])	'Like a rug had been pulled from under you': The impact of COVID-19 on teachers in United Kingdom during the first six weeks of the UK lockdown	United Kingdom		1			Qualitative	Theoretical	N=24	-

Authors	Study	Countries involved	Literature Review	Qualitative	Quantitative	Mixed methods	Methodology	Relations established (Theoretical/Correlational/Causal)	Sample size	Scales used
(Krantz and Fritzen, 2021 ^[70])	Changes in the identity of the teaching profession: A study of a teacher union in Sweden from 1990 to 2017	Sweden				1	Literature review + Qualitative	Theoretical	-	-
(Lamote and Engels, 2010 ^[71])	The development of student teachers' professional identity	Flanders (Belgium)			1		Quantitative	Correlational	N=64	
(Lanas and Kelchtermans, 2015 ^[17])	This has more to do with who I am than with my skills - Student teacher subjectification in Finnish teacher education	Finland		1			Qualitative (Essays analysis)	Theoretical	N=60	-
(Lim, 2011 ^[45])	Concept maps of Korean EFL student teachers; autobiographical reflections on their professional identity formation	Korea		1			Qualitative (Essays analysis)	Theoretical	N=90	-
(Nordhall et al., 2020 ^[37])	Teachers' Personal and Collective Work-Identity Predicts Exhaustion and Work Motivation: Mediating Roles of Psychological Job Demands and Resources	Sweden			1		Quantitative	Correlational	N=768	-
(Olsen, 2008 ^[72])	How Reasons for Entry into the Profession Illuminate Teacher Identity Development	United States		1			Qualitative	Theoretical	-	-
(Özan and Şener, 2013 ^[73])	Determination of Perception Level of Primary School Teachers on Organisational Identity	Turkey			1		Quantitative	Theoretical	-	-
(Prytula and Weiman, 2012 ^[74])	Collaborative professional development changes in teacher Collaborative professional development: An examination of teacher identity through the professional learning community model	Canada		1			Qualitative (Case study)	Theoretical	N=8	-

Authors	Study	Countries involved	Literature Review	Qualitative	Quantitative	Mixed methods	Methodology	Relations established (Theoretical/Correlational/Causal)	Sample size	Scales used
(Puusa, Kuittinen and Kuusela, 2013 ^[75])	Paradoxical Change and Construction of Identity in an Educational Organisation	Finland		1			Qualitative	Theoretical	N=24	-
(Rodrigues and Mogarro, 2019 ^[25])	Student teachers' professional identity: A review of research contributions	-	1				Review of 22 articles	Theoretical	-	-
(Sachs, 2001 ^[40])	Teacher professional identity: Competing discourses, competing outcomes	Australia				1	Literature Review + Qualitative	Theoretical	-	-
(Sachs, 2005 ^[28])	Teacher Education and the Development of Professional Identity: Learning to be a Teacher	-	1				Literature review	Theoretical	-	-
(Tsybulsky and Muchnik-Rozanov, 2019 ^[76])	The development of student teachers' professional identity while team-teaching science classes using a project-based learning approach: A multi-level analysis	Israel		1			Qualitative	Theoretical	N=17	-
(Graven and Lerman, 2003 ^[38])	Communities of practice: learning, meaning, and identity	-	1				Literature Review	Theoretical	-	-
(Yilmaz and Turgut, 2016 ^[77])	A Study on Teachers' Perceptions of Organisational Identity in Terms of Learning School	Kenya			1		Quantitative	Correlational	N=370	-
(Zhao and Zhang, 2017 ^[26])	The influence of field teaching practice on pre-service teachers' professional identity: A mixed methods study	China				1	Quantitative + Qualitative	Correlational	N=98	Created by them

Note: A summary is provided in Table 4.1.