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Mapping initial teacher education program courses with professional standards of teachers: implications for professional learning

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Abstract

Purpose – This study aims to investigate the alignment of initial teacher education (ITE) courses with the Australian Professional Standards for Teachers (APSTs), drawing on Shulman's (1986) categories of teacher competencies for teaching and Grossman's (1990) model for sources of teacher competencies.

Design/methodology/approach – The study was conducted at a School of Education at a regional university in Australia. Data were collected from relevant accreditation documents and course specifications, comprising 96 course specifications and three accreditation documents.

Findings – The findings revealed that the ITE courses primarily focused on "Professional Knowledge" while placing less emphasis on "Professional Engagement". The courses strongly emphasised planning for and implementing effective teaching and learning competencies. Additionally, the study found no significant difference in the preference for the APSTs across different programs or within a program.

Originality/value – This study highlights the importance of evaluating the alignment of ITE courses with APSTs and suggests the need for additional professional learning opportunities for graduate teachers to enhance their professional engagement competencies.

Keywords Competencies, Initial teacher education, Professional learning, Australian institute for teaching and school leadership, Graduate teachers, Teacher professional standards

Paper type Research paper

Introduction

Internationally, governments and regulatory bodies seek to ensure the consistent preparation of teachers through accreditation and implementation of professional standards to improve teachers' competencies. As a result, professional standards for teachers have been used as indicators of teacher competencies in various countries worldwide, such as Australia, the USA and England (Adoniou and Gallagher, 2017; Murray, 2008) to build a quality profession and continuous improvement (Goodwin, 2021). Several countries, including the USA and England, have used professional standards for teachers to guide teachers'

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competencies for a few decades, reshaping different aspects of teachers' work (Mockler, 2022). For example, the National Council for Accreditation of Teacher Education was founded in 1954 to accredit teacher certification programs in colleges and universities in the USA. The accreditation history in Australian initial teacher education (ITE) is relatively new compared to other countries like the USA and England (Bourke *et al.*, 2018; Murray, 2008). The Australian Institute for Teaching and School Leadership (AITSL) is the accrediting body in Australia. In 2011, after consultation with stakeholders across all regional jurisdictions in Australia, AITSL introduced the Australian Professional Standards for Teachers (APST) to raise teacher competencies and student outcomes (Call, 2018). They aimed to provide Australian teachers with standards that would serve as a quality assurance mechanism to improve Australian teaching quality and impact teachers' competencies and student learning. Under the professional standards for teachers, Australian Institute for Teaching and School Leadership (AITSL) (2017a, 2017b, 2017c) identified three graduate teacher competency indicators *domains*, further categorised into seven *standards*. Each standard is streamed into 37 focus areas or Australian Professional Standards for Teachers (*APSTs*) that teachers expect to achieve across a career continuum of Graduate, Proficient, Highly Accomplished, and Lead teachers. The Graduate stage, on which this study focused, refers to completing a teaching qualification that meets the requirements of a nationally accredited program of ITE [Australian Institute for Teaching and School Leadership (AITSL), 2017a, 2017b, 2017c]. These standards are highly linked to Shulman's (1986) seven categories of teacher knowledge that influence teachers' competencies in teaching – content, pedagogy, curriculum, learners and learning, contexts of schooling, educational philosophies, goals, and objectives, and pedagogical content knowledge (PCK). According to Grossman (1990), teachers build these competencies for teaching from various sources such as ITEs and teaching experiences. Although there are other recent discussions and scholarship about aspects of competencies that teachers require, such as cultural competencies (e.g. Bustamante *et al.*, 2016; He and Cooper, 2009), the current study is informed by the seminal work of the framework for teacher competencies established by Shulman (1986) and the model proposed by Grossman (1990) which are highly relevant to this study for two key reasons. Firstly, the professional standards discussed in this research closely align with Shulman's (1986) categories of subject matter knowledge and pedagogical knowledge. Secondly, this study emphasises teacher education, which Grossman (1990) identifies as a crucial source of teacher competencies.

The APSTs (also referred to in this study as professional standards) have been used for various purposes in schools and ITE programs in Australia. Professional standards are important for teachers' accreditation and competency indicators in schools and ITE programs (Bourke *et al.*, 2018). Sachs (2003) listed three areas where schools use professional standards to improve teachers' performance and standing and contribute to teachers' ongoing PL. ITE programs are required to address the professional standards in their program course as graduate standards. APSTs are mapped with each course objective, which can be linked to the domains and standards. This means universities offering ITE programs must identify where each APST is taught, practised and assessed, and graduates must demonstrate all the standards before graduation. In addition, the number and type of APSTs mapped to each course objective were determined by the course designers. This approach could establish variations of professional standards across programs and courses and the need for newly graduated teachers to design ongoing professional learning (PL) in their early years. Therefore, in addition to checking whether there is a significant difference and relationship between early childhood, primary, and secondary programs regarding

preferences for domains, standards, and APSTs in their courses, this study answers the following questions:

Q1. Which professional domains, standards and APSTs are emphasised?

Q2. What are the implications of APSTs mapping trends for teachers' competencies and PL?

Despite the established frameworks and standards, there remains a significant research gap in understanding how these standards are implemented and their impact on teacher competencies and PL in the context of ITE programs. Addressing this gap is crucial because it will provide deeper insights into the effectiveness of the APSTs in enhancing teacher competencies and improving student outcomes. This study aims to provide insights into PL program design by systematically assessing teachers' professional knowledge and skills and identifying their current teaching competencies. This approach not only supports graduate teachers' ongoing professional development but also offers valuable guidance for developing data-driven PL programs tailored specifically for graduate teachers.

Hence, this study, which was conducted at a regional university in Australia (see the detailed context in the method section), illustrates that systematically assessing teachers' professional knowledge and skills and identifying their current teaching competencies can significantly enhance PL program design. It also provides valuable insights into approaches for supporting graduate teachers' ongoing professional development. Moreover, the findings and methodologies from this study offer valuable guidance for developing a data-driven PL program specifically tailored for graduate teachers.

Literature review

This study is informed by four key areas related to the research questions. As a result, the literature is organised into two main sections. Section 1 focuses on professional standards and teachers' competencies, with a particular emphasis on the Australian Professional Standards for Teachers and their role in shaping teachers' skills and practices. Section 2 examines the relationship between PL and professional standards, as well as the various sources from which teachers acquire their knowledge. Together, these sections explore how professional standards guide teacher competencies and how PL supports the development of these competencies.

Professional standards and teachers' competencies

Teacher standards are key to improving teachers' competencies by providing a policy standards mechanism for making explicit features of quality teaching (Call, 2018). A comparative study by Pont (2013) provided an overview of using teaching standards to make explicit features of teachers' competencies for teaching in various countries. New Zealand adopted a set of teaching standards in 2006, which teachers must use and evidence when gaining and maintaining full registration to "protect the quality of teaching in New Zealand" (Education Council of New Zealand, 2017). Canada has a set of performance standards set at the provincial level (Call, 2018). Similarly, in the USA, standards are used to develop teacher education programs and measure teachers' competencies linked to accreditation requirements (Beyer, 2010; Pont, 2013).

In Australia, Australian Institute for Teaching and School Leadership (AITSL) (2018) suggested that professional standards for teaching make teachers' knowledge and competencies explicit and provide how good teaching can be identified, rewarded, and celebrated. Furthermore, professional standards in Australia are considered to ensure

and extend the quality of the teaching profession. However, relating competencies to professional standards has attracted considerable debate, particularly concerning their potential to render teaching a technical activity with little contextual meaning. Lambert and Bouchamma (2019) defined competencies as the bridge between individual characteristics and the qualities necessary to complete specific profession-related tasks. On the other hand, Reynolds (1999) suggested that standards are broader in conception than competencies. Reynolds argued that professional standards can be used to focus on teachers' processes, purposes, and efforts rather than outcomes alone. In the UK, national teacher standards have been adopted that address teachers, skills, attitudes, and pedagogical practices (Department for Education, 2013) and applied across various sectors such as ITE to assess teacher competencies (Department for Education, 2013). In Australia, teacher standards are used as the basis for a professional accountability model, ensuring that teachers can demonstrate appropriate levels of teaching competencies, including "Professional Knowledge", "Professional Practice", and "Professional Engagement" [Australian Institute for Teaching and School Leadership (AITSL), 2018].

Thus, standards are tools that underpin and enhance quality and are critical to ascertaining competencies. As a result, teachers' professional standards can be related to teachers' competencies. This relationship can be described and related to Shulman's (1986) categories of teachers' competencies for teaching.

Shulman (1986) introduced a comprehensive framework of seven categories of teacher knowledge that significantly influence teaching competencies. These categories include (a) subject matter knowledge, (b) general pedagogical knowledge, (c) curriculum knowledge, (d) knowledge of learners and their characteristics, (e) knowledge of educational contexts, (f) knowledge of educational ends, purposes, and values, and their philosophical and historical foundations, and (g) pedagogical content knowledge.

Shulman (1986) defined subject matter (content) knowledge as the breadth and organisation of knowledge within a teacher's mind, encompassing the facts and concepts of a domain and understanding its structural framework. According to Shulman, general pedagogical knowledge refers to the broad principles and strategies of classroom management and organisation that transcend specific subject matters. Pedagogical content knowledge, a unique form of content knowledge, integrates content and pedagogy, emphasising the content's teachability and representing a distinctive body of knowledge for teaching.

Shulman (1987) further elaborated on curriculum knowledge, describing it as a comprehensive understanding of the materials and programs that serve as essential tools for teachers. This knowledge encompasses the full range of programs designed for teaching various subjects and topics at specific levels, the diversity of instructional materials available for these programs, and the criteria that indicate the appropriate use of these materials in particular contexts.

Graduate teachers from ITE programs in Australia are expected to enter the teaching profession equipped with the necessary skills and confidence to meet key quality indicators: professional knowledge, professional practice, and professional engagement. These indicators align with the seven teaching competencies outlined by Shulman (1986). The relationship between these competencies and the quality indicators is depicted in Table 1.

The following section describes each AITSL standard indicator and links to Shulman's (1987) elements of teachers" competencies.

Professional knowledge

Under the Professional Knowledge competency domain, graduate teachers are expected to draw on a body of professional knowledge and research to address the needs of their students

Table 1. Relating professional standards and competencies

Domain	Standard	Shulman's competencies
Professional knowledge	1. Know students and how they learn	Learners and learning
	2. Know the content and how to teach it	Subject matter knowledge, pedagogical knowledge
Professional practice	3. Plan for and implement effective teaching and learning	Educational philosophies, goals, and objectives
	4. Create and maintain supportive and safe learning environments	Pedagogical knowledge
	5. Assess, provide feedback and report on student learning	Pedagogical knowledge
Professional engagement	6. Engage in professional learning	Contexts of schooling, educational philosophies
	7. Engage professionally with colleagues, parents/carers and the community	Contexts of schooling, educational philosophies

Source: Authors' own work

within their educational contexts [Australian Institute for Teaching and School Leadership (AITSL), 2017a, 2017b, 2017c]. They must understand their students, including their diverse linguistic, cultural, and religious backgrounds, and how these experiences influence their learning (Savage and Lingard, 2018). The competency of understanding students and learning is one of the seven categories identified by Shulman (1986) as 'learners and learning.'

The Professional Knowledge domain, particularly the aspect of knowing learners and learning, equips graduates to design lessons catering to students' physical, social, and intellectual development and characteristics [Australian Institute for Teaching and School Leadership (AITSL), 2018]. Additionally, this domain ensures that graduate teachers understand the fundamental concepts, structure, and inquiry processes relevant to their teaching content, making it meaningful for their students. Shulman (1986) emphasised that content knowledge involves more than just knowing facts or concepts; it includes understanding the structures of the subject matter. The Professional Knowledge domain is further divided into three standards and 19 APSTs [see Australian Institute for Teaching and School Leadership (AITSL), 2017a, 2017b, 2017c], which are closely linked to Shulman's (1986) categories of subject matter and pedagogical knowledge.

Professional practice

The Professional Practice standard is closely linked to teachers' competencies within the school context and the categories of educational philosophies, goals, and objectives identified by Shulman (1986). According to Australian Institute for Teaching and School Leadership (AITSL) (2017a, 2017b, 2017c), the "Professional Practice" domain encompasses teachers' abilities to make learning engaging, create and maintain inclusive and challenging learning environments, and implement fair and equitable behaviour management plans through effective communication techniques. This competency is supported by the ability to design and use effective teaching strategies to implement well-designed lessons.

The "Professional Practice" domain is structured to equip graduates to regularly evaluate all aspects of their teaching practice. This includes strategies such as interpreting and using student assessment data to diagnose barriers to learning and improve their performance,

ensuring they meet the learning needs of their students (Savage and Lingard, 2018). AITSL expects the "Professional Practice" domain to be applied at all teaching and learning cycle stages, including planning for learning and assessment, developing learning programs, teaching, assessing, providing feedback on student learning, and reporting to parents and carers. This domain consists of two standards and 10 APSTs.

Professional engagement

The "Professional Engagement" domain emphasises teachers' professional interactions with students, colleagues, parents/carers, and the community [Australian Institute for Teaching and School Leadership (AITSL), 2018]. Graduate teachers' engagement with parents/carers supports effective communication about their children's learning. Their involvement with school communities allows them to engage with and enrich the educational context for future teachers (Green, 2016). Additionally, it enhances their ability to connect with the school and community to support their student's social and intellectual development.

The Professional Engagement domain includes two standards and eight Australian Professional Standards for Teachers (APSTs). These aspects of engagement are linked to Shulman's (1986) competencies, which focus on understanding the contexts of schooling and educational philosophies, goals, and objectives.

AITSL outlines seven standards and specifies teachers' expectations within the three domains. Teachers demonstrate these three domains and seven standards within their specific teaching contexts, reflecting their stage of expertise and their students' learning requirements. Table 2 summarises the domains, standards, and APSTs. It summarises the domains, standards, and the number of APSTs (n) along with their percentages (%).

The qualification awarded to graduate teachers indicates that they have met all the graduate professional standards. This means that ITE programs need to thoroughly address all the required professional standards (APSTs) in their courses. This requirement also affects the accreditation of ITE programs. In Australia, ITE programs are accredited by state and territory teacher regulatory authorities based on these nationally agreed APSTs.

In summary, the "Professional Knowledge" domain includes standards for knowing students and how they learn (16.22%) and knowing the content and how to teach it (16.22%). The "Professional Practice" domain covers planning and implementing effective teaching and learning (18.92%), creating and maintaining supportive and safe learning environments (13.50%), and assessing, providing feedback, and reporting on student learning (13.50%).

Table 2. The domains, standards, and the number of APSTs (n) and percentage (%)

Domain	Standard	APST(n)	%
Professional knowledge	Know students and how they learn	6 (1.1–1.6)	16.22
	Know the content and how to teach it	6 (2.1–2.6)	16.22
Professional practice	Plan for and implement effective teaching and learning	7 (3.1–3.7)	18.92
	Create and maintain supportive and safe learning environments	5 (4.1–4.5)	13.50
	Assess, provide feedback and report on student learning	5 (5.1–5.5)	13.50
Professional engagement	Engage in professional learning	4 (6.1–6.4)	10.80
	Engage professionally with colleagues, parents/carers, and the community	4 (7.1–7.4)	10.80

Source: Authors' own work

The "Professional Engagement" domain involves engaging in PL (10.80%) and engaging professionally with colleagues, parents/carers, and the community (10.80%).

Teachers' standards, competencies and professional learning

In line with international trends, the Australian government aims to ensure that teachers are consistently prepared, ready, and performing well through the accreditation process and the implementation of professional standards [Australian Institute for Teaching and School Leadership (AITSL), 2017a, 2017b, 2017c]. Consequently, state and territory jurisdictions and Initial Teacher Education (ITE) institutions have integrated these standards into their teacher registration and promotion processes, tailored to each jurisdiction's context (Adoniou and Gallagher, 2017).

AITSL posits that the domains, standards, and Australian Professional Standards for Teachers (APSTs) can form the foundation for a professional accountability model, ensuring that teachers and graduate teachers demonstrate "Professional Knowledge", "Professional Practice" and "Professional Engagement" [Australian Institute for Teaching and School Leadership (AITSL), 2018]. These standards also guide PL, enhance teacher competencies, and positively impact the profession's public standing (Adoniou and Gallagher, 2017). Notably, ITE programs in Australia use these professional standards to meet accreditation requirements and ensure that graduate teachers meet competency requirements. The APSTs for graduates support the accreditation of programs, ensuring that graduates from accredited programs qualify for registration or accreditation across all states and territories [Australian Institute for Teaching and School Leadership (AITSL), 2017a, 2017b, 2017c]. Accreditation serves as the mechanism through which teachers are recognised as meeting these standards.

Various studies have argued that standards can be a powerful framework for planning PL goals to enhance teacher competencies (Adoniou and Gallagher, 2017; Forde *et al.*, 2016; Mockler, 2022; Sachs, 2003). Adoniou and Gallagher (2017) and Sachs (2003) emphasised that teachers' professional standards could be used as PL guides to identify prior knowledge and design relevant PL programs to improve classroom practices and competencies. Analysing teachers' prior knowledge is a crucial feature of effective PL program design (e.g. Carter and Richmond, 2019; Kopcha, 2012). Carter and Richmond (2019) suggested that analysing teachers' prior competencies is essential for designing a context-driven PL program, helping to identify competency gaps and determine what teachers need to learn.

The Organisation for Economic Co-operation and Development (OECD) suggested that professional standards ensure quality in ITE programs and guide continuous PL throughout teachers' careers (The Organisation for Economic Cooperation and Development [OECD], 2013). In Australia, there is a long-standing tradition at the national level of attempting to professionalise pre-service teachers according to professional standards (Call, 2018). The continuous development of teachers should primarily be based on these standards (Getenet *et al.*, 2013; Sachs, 2003). Getenet *et al.* (2013), Mockler (2022) demonstrated that the introduction of Professional Standards for Australian graduate teachers provided a valuable opportunity to construct PL and development around these standards, establishing an explicit link between PL and professional standards (Adie *et al.*, 2019). This link can enable professional standards to act as a catalyst for authentic PL, reducing the tendency to use them solely for compliance and accountability (Sachs, 2016).

The Australian Standards framework recommends engagement with professional standards as a strategy for ongoing PL (National Reference Group for Standards, Quality and Professionalism, 2003). One significant policy element in Australia for professional standards-based PL is the Australian Charter for Teachers' PL (The Charter) [Australian Institute for Teaching and School Leadership (AITSL), 2017a, 2017b, 2017c]. The Charter

affirms the importance of PL for graduate teachers based on professional standards [Australian Institute for Teaching and School Leadership (AITSL), 2017a, 2017b, 2017c]. Others also suggest that professional standards guide PL to improve teachers' practice and contribute positively to the profession [Australian Institute for Teaching and School Leadership (AITSL), 2018; O'Meara, 2011].

Sources of teachers' competencies

Teachers acquire knowledge and teaching competencies from various sources (Grossman, 1990). Building on Grossman's research, Friedrichsen *et al.* (2009) identified three primary sources of teachers' knowledge that contribute to their teaching competencies: (a) their own K-12 learning experiences, (b) initial teacher education (ITE) and professional development programs, and (c) their teaching experiences. Grossman's theory provides a foundational understanding of the sources of teachers' competencies, which is essential for analysing the emphasis on professional domains and standards (*RQ1*) and understanding the implications for teachers' competencies and PL (*RQ2*). This study specifically considers ITE as a critical source of knowledge, focusing on pre-service teachers. By examining the professional domains, standards, and APSTs emphasised within ITE courses, this research aims to identify the prioritised teaching competencies (Shulman, 1986). Furthermore, it explores the implications of APSTs mapping trends for teachers' competencies and PL, proposing opportunities to enhance these competencies through targeted professional development.

The study method

This study was conducted at the School of Education of a regional university in Australia. The school offers programs for preparing early childhood, primary, and secondary school teachers. The research focused on these three distinct teacher education programs.

The early childhood program prepares educators for teaching in pre-school settings as well as in Foundation to Year 2 classrooms. The primary education program equips teachers to instruct children from Foundation (around five years old) to Year 6 (approximately 11 years old) across various subjects, including science, mathematics, English, and art. The secondary education program aims to prepare graduates to effectively teach diverse students from Years 7 to 12 in various contexts and subject areas such as English, mathematics, economics and visual art. This University was selected for this study because the author is familiar with and involved in these activities.

Context

While this study was conducted, pre-service teachers enrolled in early childhood and primary programs were required to complete 29 main courses and three special interest courses, including a minimum of 95 days of professional experience in each program. Pre-service teachers enrolled in the secondary program were required to complete 18 main courses, 14 major courses, 80 days of supervised placement or professional experience at schools and 20 days of unsupervised placement. In this study, the main courses from each program were considered for analysis. These courses were selected for analysis because they were mapped with the APSTs for accreditation purposes to fulfil the regulatory body's requirements – AITSL. Teacher education institutions must align their program courses with teaching standards (APSTs). Universities must ensure that their graduate teachers meet the APSTs to graduate and that their programmes are registered for accreditation purposes.

Data source and analysis

The data was collected from the course specifications of each program course and accreditation documents. A total of 96 course specifications and three accreditation documents were the data sources. The relevant university and the school authority provided ethical protocols to collect data from course specifications and accreditation documents (with ethics application number H20REA268). Each program's course specifications and accreditation documents were used to identify the type and number of APSTs in each course. The APSTs were related to the seven categories of teachers' competencies for teaching identified by Shulman (1986). A course specification (also known as a unit description) provides an overview of a course. It includes objectives (mapped with APSTs), assessment details, whether the subject has any primary or secondary hurdles, textbooks required, and other important information about the course. For example, suppose a course has an objective that states, "apply professional ethics and responsibilities while completing their studies and transitioning to employment". In that case, this objective can be mapped to focus areas or APSTs 7.1 and 7.2 (where the number seven before the decimal point indicates the standard and the number one or two after the decimal point indicates the APST's order in the standard). This means a graduate teacher who attended a course mapped to 7.1 is expected to understand and apply the fundamental principles described in the codes of ethics and conduct for the teaching profession. Addressing 7.2 implies that a graduate teacher can understand the relevant legislative, administrative, and organisational policies and processes required for teachers according to the school stage [Australian Institute for Teaching and School Leadership (AITSL), 2017a, 2017b, 2017c]. Accreditation documents were used to validate the APSTs identified from each course specification.

The data were analysed based on the frequency (n) and percentage (%) of APSTs mapped with the courses. The results were categorised based on the domains, standards and APSTs and linked to the teacher's competencies for teaching (Shulman, 1986). This method was chosen to provide a clear and quantifiable measure of how extensively each APST is mapped to each course. By analysing the frequency and percentage of APSTs mapped with the courses, it is possible to identify patterns and trends in aligning teacher education programs with professional standards. This approach allows for a comparison across different courses and programs, highlighting areas of strength and potential gaps in identifying PL needs. Additionally, a chi-square inference test was used to determine the difference between the programs (early childhood, primary, and secondary) and within a program regarding the preference of domains, standards and APSTs in their program courses. Furthermore, the chi-square test of independence was used to determine the relationship between the three programs' preferences for the standards and domains. This test is appropriate for comparing categories' observed frequencies (Ho, 2006). The result is obtained by comparing the observed values against the expected values for each category and examining their differences.

Results

This study results are organised into three sections. Section 1 details the mapping of each APST within the program courses, aimed at answering the first research question (Which professional domains, standards and APSTs are emphasised?). The second and the third sections are aligned to research the second question: What are the implications of APSTs mapping trends for teachers' competencies and PL?). Section 2 presents the alignment of standards with teachers' competencies across the three programs. The final section analyses the trends in course mapping with each APST, including domains, standards, and categories of teachers' competencies throughout the three programs.

Mapping Australian Professional Standards for Teachers in the program courses

This study aimed to identify how frequently the APSTs were represented in relation to teacher competencies across different programs. Table 3 presents the number of APSTs mapped to each program.

The most frequently mapped APST was 4.1, with 41 instances, which aims to support graduate teachers in developing their skills related to student participation. Among the three programs, the primary program mapped APST 4.1 the most, with 20 instances. The least frequently mapped APSTs were 5.3 and 5.5, each with ten instances. APST 5.3 helps graduate teachers make consistent and comparable judgments, while APST 5.5 supports them in developing the skill of reporting on student achievement. These APSTs were mapped the least in the early childhood program, with only two instances each. Addressing these gaps could enhance the overall effectiveness of teacher education programs by ensuring a more balanced development of competencies across all teaching programs.

Mapping the standards and the domains of teachers' competencies

The author identified how each APST was mapped to the domains and standards across the three programs. The results are presented in Tables 4 and 5.

As shown in Table 4, the three programs focused more on the "professional knowledge" domain and less on the "professional engagement" domain. Among the three programs, the primary program had the highest number of APSTs mapped in its courses (n = 277), compared to the early childhood program (n = 208) and the secondary program (n = 226).

The mapping of the APSTs with the standards was further analysed across the three programs. The results are presented in Table 5.

As shown in Table 5, the results highlighted that each program primarily focused on the standard "plan for and implement effective teaching and learning." However, there were differences across the programs. This standard was the least observed in early childhood programs (n = 42 [20.2%]), primary (n = 50 [18.1%]) and secondary (n = 45 [19.9%]). The second most prevalent standard was "know the content and how to teach it", with early childhood (n = 41 [19.7%]), primary (n = 42 [15.2%]), and secondary (n = 37 [16.8%]) programs. Conversely, the programs placed less emphasis on the standard "engaging in professional learning" compared to the other standards, with early childhood (n = 13 [6.3%]), primary (n = 25 [9.0%]), and secondary (n = 20 [8.8%]).

The emphasis on the "professional knowledge" domain over the "professional engagement" domain suggests that teacher education programs prioritise theoretical and content knowledge more than ongoing professional development and engagement. The focus on the standard "plan for and implement effective teaching and learning" across all programs highlights its perceived importance in teacher preparation. However, the relatively lower emphasis on "engaging in professional learning" suggests a potential area for improvement, as ongoing professional development is crucial for maintaining and enhancing teaching competencies. Addressing this imbalance could lead to more well-rounded teacher education programs that prepare teachers for continuous professional growth.

Trends of the course mapping with Australian Professional Standards for Teachers, domains, standards and teachers' competencies

In this study, the author used the Chi-Square test to examine trends and statistical differences in the number of APSTs. The results indicated that the early childhood program tends to focus more on the "Professional Knowledge" domain (n = 123; 59.1%) compared to the "Professional Practice" domain (n = 49; 23.6%) and the "Professional Engagement" domain (n = 36; 17.3%). Similar trends were observed in the primary and secondary programs. While

Table 3. The number of APSTs across the programs

*APST	Program			
	Early childhood	Primary	Secondary	Total
1.1 Physical, social and intellectual development and characteristics of students	8	10	9	27
1.2 Understand how students learn	12	8	5	25
1.3 Students with diverse linguistic, cultural, religious and socioeconomic backgrounds	5	6	6	17
1.4 Strategies for teaching Aboriginal and Torres Strait Islander students	3	6	4	13
1.5 Differentiate teaching to meet the specific learning needs of students across the full range of abilities	8	9	7	24
1.6 Strategies to support full participation of students with disability	4	8	5	17
2.1 Content and teaching strategies of the teaching area	11	11	8	30
2.2 Content selection and organisation	5	7	7	19
2.3 Curriculum, assessment and reporting	5	8	6	19
2.4 Understand and respect Aboriginal and Torres Strait Islander people to promote reconciliation	4	4	3	11
2.5 Literacy and numeracy strategies	11	5	7	23
2.6 Information and Communication Technology (ICT)	5	7	6	18
3.1 Establish challenging learning goals	5	7	9	21
3.2 Plan, structure and sequence learning programs	7	8	6	21
3.3 Use teaching strategies	8	11	7	26
3.4 Select and use resources	6	7	6	19
3.5 Use effective classroom communication	5	6	6	17
3.6 Evaluate and improve teaching programs	3	4	6	13
3.7 Engage parents/carers in the educative process	8	7	5	20
4.1 Support student participation	11	20	10	41
4.2 Manage classroom activities	6	7	8	21
4.3 Manage challenging behaviour	5	5	8	18
4.4 Maintain student safety	5	11	6	22
4.5 Use ICT safely, responsibly and ethically	3	6	7	16
5.1 Assess student learning	4	11	6	21
5.2 Provide feedback to students on their learning	4	5	5	14
5.3 Make consistent and comparable judgements	2	5	3	10
5.4 Interpret student data	7	7	6	20
5.5 Report on student achievement	2	4	4	10
6.1 Identify and plan professional learning needs	4	6	3	13

(*continued*)

Table 3. Continued

*APST	Program			
	Early childhood	Primary	Secondary	Total
6.2 Engage in professional learning and improve practice	4	8	5	17
6.3 Engage with colleagues and improve practice	3	6	7	16
6.4 Apply professional learning and improve student learning	2	5	5	12
7.1 Meet professional ethics and responsibilities	4	7	6	17
7.2 Comply with legislative, administrative and organisational requirements	6	8	10	24
7.3 Engage with the parents/carers	7	11	4	22
7.4 Engage with professional teaching networks and broader communities	6	6	5	17
Total	*208*	*277*	*226*	*711*

Notes: *Details about each APST, refer to www.aitsl.edu.au/teach/standards#create-and-maintain-supportive-and-safe-learning-environments
Source: Authors' own work

Table 4. The number (n) and percentage (%) of APSTs in each domain across programs

Domain	Program		
	Early childhood	Primary	Secondary
Professional knowledge	123 (59.1%)	139 (52.2%)	118 (52.2%)
Professional practice	49 (23.6%)	81 (27.9%)	63 (27.9%)
Professional engagement	36 (17.3%)	57 (20.6%)	45 (19.9%)
Total	208 (100%)	277 (100%)	226 (100%)

Source: Authors' own work

Table 5. The number (n) and percentage (%) of APSTs in each standard across programs

Standard	Program			
	Early childhood	Primary	Secondary	Total
Know students and how they learn	40 (19.2)	47 (17.0)	36 (15.9)	123
Know the content and how to teach it	41 (19.7)	42 (15.2)	37 (16.4)	120
Plan for and implement effective teaching and learning	42 (20.2)	50 (18.1)	45 (19.9)	137
Create and maintain supportive and safe learning environments	30 (14.4)	49 (17.7)	39 (17.3)	118
Assess, provide feedback and report on student learning	19 (9.1%)	32 (11.6)	24 (10.6)	75
Engage in professional learning	13 (6.3)	25 (9.0)	20 (8.8)	58
Engage professionally with colleagues, parents/carers, and the community	23 (11.1)	32 (11.6)	25 (11.1)	80

Source: Authors' own work

the primary program covered more APSTs than the early childhood and secondary programs, the Chi-Square test showed no statistically significant differences [χ^2(df = 4) = 4.053, p = 0.399]. This indicates no preference for specific domains and standards across the three programs or within a single program. This uniformity might indicate a need for a more tailored approach to address the unique needs of each program and ensure a balanced development of competencies across all domains.

Discussion

This discussion explores the key findings of the study, emphasising their implications in relation to the research questions. The results show that the most frequently mapped APSTs across the three programs focused on supporting student participation, including strategies for inclusive engagement in classroom activities, with the primary program placing the greatest emphasis on these standards (see Table 4). These competencies align with Shulman's (1986, 1987) framework, highlighting the importance of understanding learners' backgrounds to tailor teaching to their interests and abilities. This focus underscores the significance of equipping pre-service teachers with the knowledge and skills to foster inclusive classrooms and effectively support diverse learners.

In contrast, APSTs 5.3 and 5.5, which pertain to assessment moderation and strategies for reporting student achievement, were mapped the least frequently, particularly in the early childhood program (see Tables 3 and 5). These APSTs emphasise ensuring consistency in assessment judgments and developing strategies for effectively communicating student

progress to stakeholders. The limited attention to these areas suggests a need for targeted PL opportunities to address this gap. As noted by Forde *et al.* (2016), Mockler (2022), professional standards can serve as a framework for teachers to identify and plan their PL needs, particularly in areas where their competencies are underdeveloped.

The study also revealed that across all programs, there was a stronger emphasis on the "Professional Knowledge" domain compared to the "Professional Engagement" domain (see Table 4). This is consistent with Australian Institute for Teaching and School Leadership (AITSL) (2017a, 2017b, 2017c) mapping of the standards, where a higher number of APSTS in professional practices and knowledge can be observed while placing less emphasis on engagement. The primary program demonstrated the highest number of mapped APSTs, indicating a more comprehensive integration of standards compared to the early childhood and secondary programs. However, the findings suggest that while ITE programs equip graduates with foundational knowledge, further time and experience in schools are necessary to fully develop competencies related to professional engagement. This aligns with Call's (2018) and Grossman's (1990) findings, which highlight the role of practical teaching experiences in enhancing teachers' competencies.

The three programs emphasised the standards "plan for and implement effective teaching and learning" and "know the content and how to teach it," with comparatively less focus on "engaging in professional learning". This may reflect an assumption that professional engagement competencies, such as collaborating with teaching networks and broader communities, are best developed through practical teaching experiences rather than being a central focus of ITE course content. Green (2016) similarly found that professional engagement is often enhanced more effectively through professional experience placements than university-based learning.

Although differences in the number of standards and domains addressed across the three programs were observed, a Chi-Square test revealed no statistically significant differences in domain and standard preferences (see Table 4). This finding suggests that graduates of all three programs may enter the profession with similar strengths and areas for development, particularly in their professional engagement competencies. These results highlight the importance of aligning teacher education programs with the comprehensive requirements of the APSTs while ensuring sufficient opportunities for pre-service teachers to develop both professional knowledge and engagement competencies through targeted support and PL initiatives.

Implications for professional learning

This paper highlights the importance of professional standards-based PL in Australian education by examining ITE program courses to enhance teachers' competencies. The findings contribute to existing theoretical knowledge by demonstrating how professional standards can be used to analyse teachers' knowledge and competencies, thereby aiding in designing effective PL programs. This study results demonstrated that focusing on professional domains, standards, or APSTs in ITE programs can highlight graduate teachers' PL needs by analysing their teaching competencies. This aligns with established theoretical frameworks, such as those proposed by Carter and Richmond (2019), which emphasise the importance of linking PL programs to professional standards. By doing so, a comprehensive network is formed to support improvements in schooling and student outcomes (Adie *et al.*, 2019; Call, 2018). For example, the standard "assess, provide feedback and report on student learning" (see Table 5) is one of the least addressed standards in the three programs. This standard requires teachers to move beyond classroom performance to demonstrate expertise through involvement in school and systemic practices, including administrative

responsibilities. Addressing this gap through mentoring roles can enhance teachers' competencies in these areas (Adie *et al.*, 2019).

Sachs (2016) argued that teachers' professional standards vary across countries and fit into regulatory or developmental categories. This study findings suggest that professional standards can be used not only as regulatory tools to measure the effectiveness of ITEs but also to identify teachers' PL needs (The Organisation for Economic Cooperation and Development [OECD], 2013). This dual use of professional standards aligns with and expands upon current theoretical perspectives by highlighting their potential to support compliance and authentic PL. The study provides theoretical insights by suggesting a shift in professional standards from mere compliance and accountability to opportunities for authentic PL. This approach allows for richer discussions on pedagogy and classroom practice, contributing to a deeper understanding of how professional standards can be leveraged to enhance teacher education. The study advances the theoretical discourse on teacher competencies and professional development by emphasising the practical application of these standards in PL programs.

In conclusion, the study's findings contribute to existing theoretical knowledge by demonstrating the practical implications of professional standards in PL. They highlight the importance of a balanced approach that integrates regulatory compliance with opportunities for meaningful professional growth, ultimately enhancing the quality of teacher education and student outcomes. Additionally, the findings have economic implications, as improving teacher education and PL can lead to better-prepared pre-service teachers, reduced turnover costs, and more efficient allocation of resources within ITEs, ultimately contributing to long-term economic growth through improved student achievement.

Limitations and future directions

This study has limitations. Firstly, it is a case study of a regional university ITE program, which limits the generalisability of the results. This particular university was selected based on its unique regional context, the author's experiences and the specific characteristics of its ITE programs, which provide valuable insights into the PL needs of PSTs in similar settings. Future research could include samples from a broader range of universities to compare and generalise the findings more effectively. Secondly, the data sources were limited to course specifications and accreditation documents, and the courses considered in this study have been updated and changed over time. Additionally, while this study does not focus on how schools use professional standards, incorporating school practice data, such as interviewing principals about using APSTs to support graduate teachers, could provide a more comprehensive approach. Despite these limitations, the study's findings and procedures offer valuable insights. They suggest a data-driven PL program for graduate teachers that could be relevant to other similar contexts or institutions, thereby enhancing the applicability and impact of the research. The methodology used in this study can also be applied in future research on similar topics and other contexts.

Conclusion

The professional standards agenda in education continues to dominate teacher preparation through accreditation processes internationally. There is an ongoing debate about whether professional standards serve as practical tools for clarifying expectations and competencies or merely tightening regulations. However, professional standards for teachers can also provide a powerful framework for linking teaching competencies with planning PL goals.

This study shows that ITE programs use APSTs to meet accreditation requirements in course design. Beyond serving as quality assurance measures, APSTs should become

integral to the culture guiding the design of relevant PL. The author recommends more productive uses of professional standards to enhance the quality of ITE practices by identifying gaps and providing targeted PL.

This study systematically evaluated teachers' professional knowledge, competencies, and skills, identifying their current teaching competencies to design and envision new ways of supporting graduate teachers with additional PL for effective classroom practices. Additionally, the study's results suggest a new line of inquiry into how theories of teachers' competencies (e.g. Shulman, 1986) relate to professional standards, informing pedagogical judgments about curricular development and teachers' PL.

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