Design-based research protocols to support effective PD for emerging Highly Accomplished and Lead Teachers

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Professional standards for teachers have become a near-ubiquitous policy tool in Organisation for Economic Co-operation and Development member countries in efforts to improve teacher quality and student outcomes. The Australian Professional Standards for Teachers differ from teaching standards implemented in comparable countries, with its system of voluntary higher accreditation levels for teacher-leaders. In the decade since these standards were introduced, it was hoped that 50% of teachers would achieve higher levels of accreditation. Currently, that number is lower than 1%. This protocol paper outlines the rationale and methodologies for a design-based research study that creates, tests and refines a set of design principles for effective professional development. These principles are used to inform the design and delivery of a professional development program that supports teachers through the process of gaining higher accreditation under the Australian Professional Standards for Teachers. The benefits of this study are twofold. The professional development program will remain as an artefact for the profession to address the issue of the dearth of Highly Accomplished and Lead Teachers. The design principles will also support researchers and practitioners in the development of future effective professional development programs within and beyond the teaching profession.

Background

The 'professional status' of teaching is a heavily debated topic that frames the way that the profession is regarded, remunerated and regulated around the world (Hotaman, 2010; Lagowski, 1986; Maskit & Firstater, 2016). In Australia, this topic invariably re-enters public discourse during teacher pay negotiations, the release of international standardised testing data, and during government elections.

The concept of 'a profession' is, itself, a widely-argued subject. Wise (2005) defined a profession as:

> An occupation that seeks to regulate itself by (a) developing a consensus concerning what its practitioners must know and be able to do and (b) developing an accreditation and licensing system to ensure the transmission of that knowledge and skill. An occupation becomes a profession when organizations such as universities, states, and the public accept that system. (p. 318)

By this definition, the debate around education in Australia was settled in 2018 as the final cohort of pre-2004 teachers were accredited at Proficient under the *Australian Professional Standards for Teachers* (APST) and expected to maintain this status for the remainder of their careers (NESA, 2018; Northam, 2018; NSW Department of Education, 2022).

The APST were initially introduced in Australia in 2010 with the intention that every teacher would eventually be accredited under the system. It consists of four levels of accreditation that were designed to reflect the different career stages of a teacher. Accreditation is regulated at a state level and slight variations to naming and processes exist but generally, teachers begin their career at the *Graduate level*, and it is then compulsory that they achieve the *Proficient level* within a specified amount of time in order to continue practising. Once proficient, teachers may then choose to undertake a voluntary process to apply for *Highly Accomplished* or *Lead Teacher* accreditation.

Literature review

Professional teaching standards

The contents of the APST are regularly debated and slight variations exist to the standards implemented across state jurisdictions. This study, however, accepts the APST as an effective, if imperfect, means of improving teacher quality at a national level. The purpose of this study is, therefore, to utilise professional development in supporting teacher understanding and development in line with the APST.

Since 2016, the remuneration and working conditions of public school teachers in New South Wales have also been aligned with the APST through the NSW Standards Based Salary Procedure (NSW Department of Education, 2017c). This requires teachers to achieve specific levels of accreditation to access salary increases which impacts not only the strength of the profession, but the quality of the service that it delivers to the community (Hattie, 2003). However, the intention of the APST in Australia was to do more than regulate underperforming teachers and standardise remuneration. It was expected that within ten years of implementation, 50% of the profession would be accredited at Highly Accomplished or Lead Teacher (Dinham et al., 2008). Higher accreditation would support the growth of school leaders, and remunerate and celebrate highly-skilled teachers who chose to remain in classrooms (Ingvarson, 2010; NESA, 2016; NSW Department of Education, 2017b).

More than ten years have now passed since the inception of the APST and it is estimated that less than 0.1% of Australia's teaching workforce have been successful in achieving higher accreditation under the APST (Centre for Education Statistics and Evaluation, 2022; NESA, 2023a, 2023b). This is a significant issue for the Australian education system and a learning opportunity for comparable international education systems interested in implementing professional standards as there is evidence that high-quality teaching has a sizable impact on the learning outcomes of students, as demonstrated in the USA (Darling-Hammond, 2000) and in Australia (Hattie, 2003). Masters (2015) also identified a strong link between top-performing countries in PISA and those who focus on raising the standard of teaching through stricter recruitment and registration processes.

In a time where education systems around the world are facing increasing teacher shortages and workload pressure, increasing the number of highly accredited and skilled teachers is one of many necessary measures to provide access to greater remuneration and

recognition opportunities for the profession. Tang et al. (2006) argued that teaching standards provide quality assurance in professional development and teaching quality. This has been supported by a number of studies conducted in the USA (Danielson & McGreal, 2000; Darling-Hammond, 2001). There is insufficient evidence available to determine whether the number of highly accredited teachers in Australia is a reflection of the capacity of its teachers. If student outcomes are used as the measuring stick, Australia's relatively high performance in international standardised testing such as PISA might suggest that the problem lies elsewhere.

The trend towards standards in the education sector is neither new, nor unique. Standards of practice have become increasingly common in many occupations over the last half-century. Power (1999) described an 'audit explosion' that has been occurring since the late 1980s, normalising 'accountability culture' and increasing the number and complexity of professional standards in many industries.

The way in which teaching standards are framed can also have a significant impact on their success as a policy. Mahony and Hextall (2000) discussed two ways that standards tend to be implemented. A regulatory approach sees standards "as a managerialist tool for measuring the efficiency and effectiveness of systems, institutions and individuals" (p. 31). Conversely, a developmental approach uses standards as an intervention "which can provide structured opportunities for teachers' further professional learning, aimed at improving the quality of their teaching throughout their careers" (p. 31).

Elements of both approaches are evident in the APST. Bourke et al. (2013) identified two key discourses surrounding the Australian teaching standards:

> First, quality teachers are a key determinant in student achievement and are clearly linked to a competitive economy; and second, professional standards are the mechanism for obtaining quality teaching as well as providing other benefits for the teaching profession (p. 407).

For individual teachers, accreditation serves as proof of both professionalism and an ability to demonstrate quality teaching practices.

Professional development

This study envisages professional development as a tool to improve teacher understanding of the APST and intends to use the principles of design-based research (DBR), as described in Reeves (2006), to systematically determine principles of effective professional development and create a prototype professional development program that addresses the critical issue of the low numbers of Highly Accomplished and Lead Teachers in Australia.

Professional development in this study encompasses any experience of workplace learning that is deliberate or can be measured. It is often also referred to in literature as 'professional learning' or 'continuing professional development' (Netolicky, 2016).

Whilst the terms are often used interchangeably, this study views the terms 'professional development' and 'professional learning' as different concepts. Murray (2016) defined professional learning as any act that "results in improvements in teachers' knowledge and instruction" (p. 9). The notion that professional learning can occur anywhere, makes professional development a more deliberate process. The focus of this study is, therefore, professional development.

Professional development can include activities run by external providers and activities that already occur within schools. Netolicky (2019) included "talks, courses and conferences… and other times where educators learn, and that influence their lives and work" (p. 5) as common examples of professional development.

The impact of professional development can be multifaceted. Drago-Severson and Blum-DeStefano (2018) discussed the idea that professional development can build the capacity of an individual, not just by adding to what they know, but changing the way in which they know it. Their book also highlighted "perspective taking, collaboration, and continuous learning as guiding processes for capacity building" (p. 7). This is considered in the determination of the initial design principles and subsequent professional development program developed in our study.

It is assumed that professional development is valid tool to improve teacher quality. Naylor and Sayed (2014) found that "teacher quality is not fixed at the point of entry into the profession but can develop through experience and exposure to ongoing professional development opportunities" (p.19). Professional development is also linked closely to teacher quality in a range of state and national government policies (AITSL, 2012b; NSW Department of Education, 2015).

The role of professional development within the teaching profession has changed dramatically since the introduction of the APST. Professional development is now mandatory for all practising teachers in New South Wales, with an expectation that teachers undertake at least 20 hours of professional development, on average, each year. This requirement remains the same for teachers applying for and maintaining higher accreditation (NESA, 2018; NSW Department of Education, 2018). For professional development providers, their programs must now be explicitly aligned with the APST to contribute to these mandatory hours.

Whilst the body of literature around what constitutes effective professional development has grown considerably over the last decade, a clearly articulated set of design principles that supports the development of such programs could provide significant benefit to future researchers and practitioners within the field. This study will utilise a systematic literature review and stakeholder analysis to create a set of initial design principles that will guide the development of a professional development program that supports teachers through the Australian higher accreditation process. The program will then be delivered and evaluated by participants to refine the initial design principles into a set of final design principles, usable for future researchers and practitioners. Timperley et al. (2007) claimed that "the empirical evidence relating to the professional learning of teachers is sparse.

Empirical articles are typically theory-free; theoretical articles are typically evidence-free" (p 228). The design-based research process utilised in our study aims to synthesise current literature with the voice of policy-makers and the profession in the development of the aforementioned design principles.

The Australian Institute for Teaching and School Leadership (AITSL) synthesised a range of research around teacher professional learning in 2012 to support the implementation of the APST. The findings are applicable to the creation of effective professional development and were used to hypothesise what the program in this study might look like. The synthesis defines professional learning as "the formal or informal learning experiences undertaken by teachers and school leaders that improve their individual professional practice, and a school's collective effectiveness, as measured by improved student learning, engagement with learning and wellbeing" (AITSL, 2012a, p. 2). AITSL found four determinants of high-quality professional learning: learning culture, collaboration, innovation and evaluation.

A 'learning culture' was found to have the greatest impact on the efficacy of professional learning where leadership drives and values workplace learning (AITSL, 2012f, 2017). This is supported by Timperley (2011), who found that "when learning becomes core business… these situations are likely to have a far greater effect on what leaders and teachers learn than out-of-school learning opportunities" (p. 14).

The synthesis also found that effective collaboration "encourages ongoing observation and feedback among colleagues where a culture of professional sharing, dialogue, experimentation and critique becomes commonplace" (AITSL, 2012c, p. 2).

Innovation was also found to be a key determinant of the effectiveness of professional learning. AITSL found that innovation "will use external and internal research and the creative and reasoning capacity of all staff to develop and implement practices to address problems or enhance already strong practice" (AITSL, 2012e, p. 3).

Finally, evaluation "can provide sound, useful, and sufficiently reliable information that can be used to make thoughtful and responsible decisions about ongoing professional development processes" (AITSL, 2012d, p. 2). These four determinants are intended to be used to guide the development of professional learning programs across Australia. It is important to consider that these determinants are expressed towards professional learning but can also be considered when designing and implementing a targeted professional development program.

Context

There are a number of assumptions made in the design of this study. Firstly, that the APST themselves reflect quality teaching practices. There is considerably more research in this area and whilst the APST are often contested and remain subject to change, they do reflect a common understanding of what practices are likely to lead to improved student outcomes.

Secondly, that it is important for high-performing teachers to gain higher accreditation. Whilst accreditation is now mandatory for all teachers in Australia, higher accreditation remains a voluntary process. The APST and the body of literature that rests behind them suggest that if more teachers demonstrate more of these practices more often, that student outcomes will improve. It is this assumption that drives the study.

By gaining an insight into stakeholder perceptions of teacher quality and the barriers in the accreditation process, the study is able to create a professional development program that supports teachers in gaining accreditation, regardless of the problems identified. In doing this, a set of design principles around professional development aimed at supporting teacher capacity to gain higher accreditation will be established to ensure that the program is scalable, and the principles are transferable. The proposed study incorporates four phases, following the processes of DBR.

A systematic literature review will be conducted in the first phase to further explore and define the concept of effective professional development. This will be supplemented by a key stakeholder analysis of teachers, school leaders, teacher accreditation authority representatives, and academics to establish a set of initial design principles that will inform the development of a professional development program.

The program will then be tested and evaluated in line with the principles of design-based research to determine a final set of design principles that will inform future research in the area of higher accreditation and be transferable, both across countries and industries. The professional development program itself aims to support teachers to engage with the higher accreditation process and if successful, will remain as an artefact to support future cohorts of aspiring teacher-leaders.

Aims and objectives

There is an evident gap in literature around higher accreditation in Australia. Our study situates itself in that gap by developing an understanding of the factors that enable and prevent success in the higher accreditation process. Additionally, the study utilises a systematic literature review and key stakeholder analysis to explore the idea of effective professional development and develop a set of design principles for a professional development program targeting higher accreditation applicants through a process of development, implementation, testing and refinement.

The study aims to answer the research question: What are the design principles for an effective professional development program targeting professional accreditation?

In order to answer this question, a series of three sub-questions have been established:

1. How does current literature define effective professional development?
2. What do key stakeholders see as effective professional development?
3. What is the impact of an effective professional development program?

The questions also allow the study to produce two key outcomes:

- an artefact, in the form an effective professional development program, that will support teachers in achieving higher accreditation; and
- a set of tested design principles, that will support the development of future effective professional development programs.

This study will be conducted in the context of school teachers in New South Wales, Australia, where teacher accreditation is regulated by the New South Wales Education Standards Authority (NESA). Whilst the professional development program will be specific to this context, it is anticipated that the design principles produced will be applicable across a range of professional contexts.

Methods

The nature of the questions posed above require an adaptable and responsive methodological approach to the study. Design-based research has been selected as this approach. This methodology originates from studies in the field of educational technology and facilitates the creation of new knowledge through an iterative, rigorous design process and the development of an artefact, which intends to benefit research participants.

Design-based research, also referred to in literature as design research or development research, is a solutions-based methodology that attempts to achieve the goals of both basic and applied research (Reeves, 2000; Reeves et al., 2005). While DBR gained popularity as a research methodology in the field of educational technology, it has been shown that the methodology can be adapted and applied to a range of areas (Ford et al., 2017; Shattuck & Anderson, 2013).

Reeves (2000) differentiated DBR from traditional methodologies by describing the goals of basic research as "aimed at extending fundamental understanding within a scientific field" (p. 2) and the goals of applied research as "solving problems that confront an individual, a group, or society at large" (p. 2). The functions and limitations of both research styles were considered when determining the intended outcomes of this study.

Stokes (1997) questioned the assumption that pure basic research leads to the development of new technologies and called for more "use-inspired basic research". Whilst it may be an oversimplification to categorise research as wholly 'basic' or 'applied', there has been significant debate over the relative value of each approach. Basic research can be seen as having little practical value in the solutions-focused world of educational research whereas applied research is often criticised for lacking 'scientific value' and not producing new knowledge (Ary et al., 2018; Bentley et al., 2015; Cockburn et al., 1999). DBR has the capacity to achieve both outcomes by producing new knowledge in the form of design principles, and a practical solution to an industry problem through the residual artefact.

The study also requires a clear methodological approach in order for the artefact produced to be both scalable and replicable. This study will produce a professional development program to support a group of teachers in achieving Highly Accomplished or Lead Teacher accreditation under the APST but acknowledges that this alone, will not solve the issue of the shortage of highly accredited teachers in Australia. Capacity for replication across teaching jurisdictions increases the potential impact of the study, and the design principles produced allow the findings to be transferable across professions.

Additionally, the literature reviewed in our review demonstrates a global desire for developmental standards of practice, both in teaching and in other industries (Call, 2018; Centre of Study for Policies and Practices in Education, Chile, 2013). There is, however, very little research available on how to successfully implement them. The design principles produced in DBR studies allow future researchers and practitioners "to make design more effective and efficient, in order to enable design practice to develop more successful products" (Blessing & Chakrabarti, 2009, p. 12). Figure 1 illustrates key differences between DBR and traditional research methods.
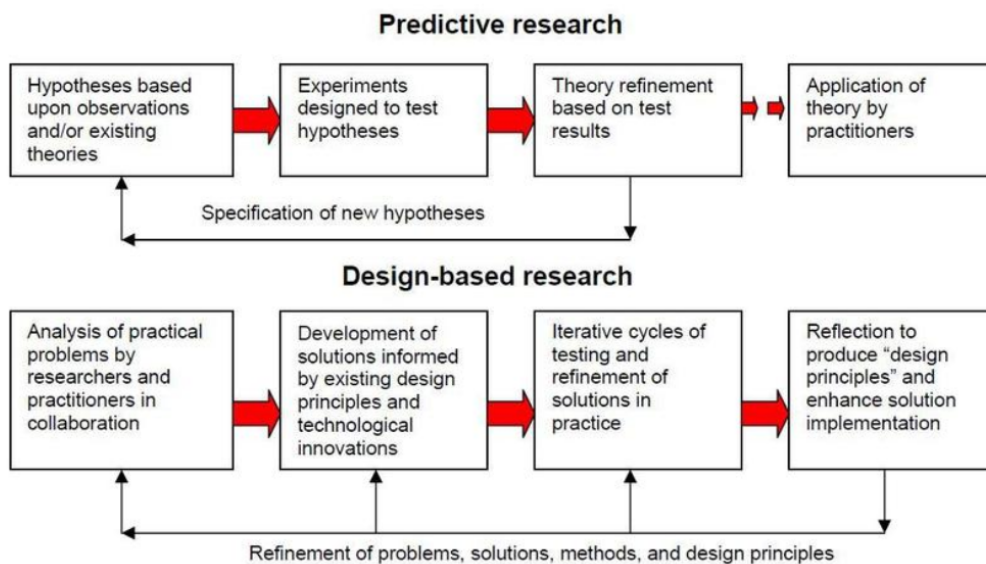

Figure 1: Model of design-based research (Reeves, 2006, p. 59)

The process of gaining teacher accreditation at Highly Accomplished or Lead Teacher in Australia can take up to three years (Association of Independent Schools of NSW, 2019; NESA, 2016; NSW Department of Education, 2017a). While it has been determined that professional development is most effective when it is sustained (Centre for Education Statistics and Evaluation, 2014; InPraxis Group Inc, 2006; Sims & Fletcher-Wood, 2021), the time limitations of this study require the delivery and evaluation of the program to be completed in no more than one year. Figure 2 shows the 'single-cycle' model of DBR to be used in this study.

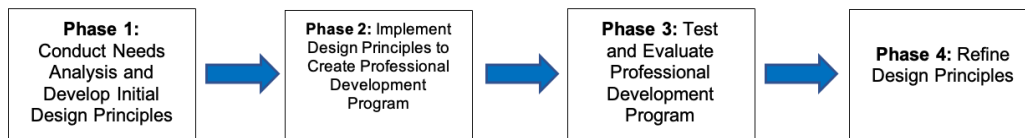| **Phase 1:** Conduct Needs Analysis and Develop Initial Design Principles | → | **Phase 2:** Implement Design Principles to Create Professional Development Program | → | **Phase 3:** Test and Evaluate Professional Development Program | → | **Phase 4:** Refine Design Principles |

Figure 2: Proposed 'single-cycle' model of DBR to be used in this study
(use "zoom in" function with web or PDF reader)

Herrington et al. (2007) stated that "we have to appreciate that design-based research is inherently exploratory and speculative" (p. 9). It is this nature that requires the planning of a DBR study to be adaptable, as each phase of the study is often dependant on the results of the last. This same nature, however, ensures that the professional development program and final design principles produced, are done so with greater rigour and less bias.

Phase 1: Conduct needs analysis and develop initial design principles

The Reeves (2006) model of DBR began with a needs analysis to determine the problem and consider potential solutions. In our study, the problem has been identified as the lack of participation by teachers in the higher accreditation process. In order to develop a solution, a systematic literature review will be conducted to build upon the research considered in this review. Due to the large amount of research around professional development, it is important that this review is done in a systematic manner to ensure that all research is considered and the process around what literature to include is transparent and rigorous.

Semi-structured interviews with key stakeholders will then be conducted to determine whether government policies and current jurisdictional processes align, provide stakeholders with a voice in the development of the study, and consider lessons from any current and past interventions implemented.

Systematic literature review

The literature reviewed in this paper establishes that there is little research around higher accreditation for teachers and this study will contribute to understanding in this area. An understanding of what constitutes 'effective professional development' will also be required to establish the design principles required for the professional development program.

'Professional development' goes by a range of names in academic discourse and is also often used interchangeably with the concept of 'professional learning'. This creates a challenge in being able to effectively capture all relevant literature. It also provides an opportunity to draw from a wider pool of evidence and develop a more comprehensive

definition. As such, a traditional literature review risks being non-exhaustive and falling prey to subjectivity. Zawacki-Richter et al. (2020) stated:

> In contrast to traditional or narrative literature reviews, that are criticised as being biased and arbitrary, the aim of a systematic review is to carry out a review that is rigorous and transparent in each step of the review process, to make it reproducible and updateable (p. vi)

Systematic reviews are also often the subject of criticism. Andrews (2005) stated that they can be considered "over-dependent on quantitative data and experimental designs; as favouring 'hard' statistical evidence rather than interpretive strategies; as positivist; as distilling too quickly and too crudely from large numbers of papers found in initial searches" (pp. 399-400). It is evident that some level of subjectivity remains necessary, especially when interpreting the findings and applying them to the creation of the initial design principles.

This systematic review will be reported on in line with the *Preferred Reporting Items for Systematic reviews and Meta-Analyses* (PRISMA) statement (Page et al., 2021). This reporting system is the most widely used reporting system for systematic literature reviews. The review is also registered on Open Science Framework (OSF) Registries (OSF Registries, 2023) to allow future researchers to replicate and update as required.

Search strategy

The search strategy used in this review has been adapted from other previously conducted systematic literature reviews (Freeman & Simonsen, 2015; Hopfenbeck et al., 2018) The *Population, Exposure, Outcome* (PEO) framework (Khan et al., 2003) was selected to guide the formulation of the keywords used in the search. This outcome of this process is summarised below:

- Population (1): teacher* or educator* and
- Population (2): school* or college*
- Exposure: "professional development" or "professional learning" or training
- Outcome: quality or effective* or success* or impact*

These keywords were then used in conjunction with the eligibility criteria shown in Appendix A to generate the following search terms:

- Keywords: teacher* or educator* and school* or college* and "professional development" or "professional learning" or training and quality or effective* or success* or impact*
- Date range: 1st January 2004 – 31st December 2021
- Databases: Scopus, Education Resources Information Center (ERIC), Web of Science, British Education Index.
- Language: English
- Refined by: peer-reviewed journals, full text available online by open access or by library subscriptions.

Results will then undergo a screening process, using the eligibility criteria outlined in Appendix A, to determine final inclusion in the synthesis.

After this, a methodological quality assessment tool that has been adapted from Dixon-Woods et al. (2004) will be used to assess the risk of bias in each included study. Data will then be extracted and synthesised into themes that will be used to answer research sub-question 1.

Key stakeholder analysis

The systematic literature review aims to generate an understanding of what constitutes effective professional development. However, the creation of the professional development program will also require an understanding of the higher accreditation process, the barriers preventing teachers from engaging in this process, and the policy goals surrounding the process. As previously discussed, research around higher accreditation is scarce and as such, interviews with key stakeholders in the accreditation process will be conducted to fill this knowledge gap. These interviews will be used to answer research sub-question 2.

Semi-structured interviews were selected as the most appropriate approach to the interview process. Dejonckheere and Vaughn (2019) described semi-structured interviews as an effective method for data collection "when the researcher wants: (1) to collect qualitative, open-ended data; (2) to explore participant thoughts, feelings and beliefs about a particular topic; and (3) to delve deeply into personal and sometimes sensitive issues" (pp. 2-3).

Participants

Five key stakeholder groups were identified to be participants in this phase of the study. Four groups represent the bodies responsible for developing and implementing the APST and will be consulted to ensure that the design and development of the professional development program aligns with the policy goals of relevant governing bodies. It will also determine the existence of any unpublished interventions already implemented and allow any knowledge gained from these interventions to inform the development of the initial design principles in this study.

The fifth stakeholder group represents the profession. Teachers, as the people affected by the policy, will be given voice in the design of the professional development program. Teacher input will also be valuable in developing an understanding of the reasons why engagement with the higher accreditation process has remained so low. Potential representatives of key stakeholder groups (and sample size) include:

- Representatives of academia with relevant research around the APST (2)
- A representative from AITSL (1).
- Representatives of teacher accreditation authorities (1). In NSW, the authority is NESA.

- Representatives of teacher employers. The three bodies identified in NSW are:
  - NSW Department of Education (2);
  - Catholic Schools NSW (1); and
  - The Association of Independent Schools NSW (1).
- Representatives of the profession. This will include teachers who have:
  - been accredited as either a Highly Accomplished or Lead Teacher (2);
  - started but not yet finished the higher accreditation process (2);
  - been unsuccessful in the higher accreditation process (2); and
  - been identified as suitable but have chosen not to start the higher accreditation process (2).

Students, whilst heavily impacted by the APST, have been determined to be outside of the scope of this study and are not included as participants.

Invitations will be sent out to representatives from each of the stakeholder groups. Teachers will be identified and recruited through relevant staff noticeboards, local Highly Accomplished and Lead Teacher (HALT) Networks within the NSW Department of Education, and equivalent networks in the Catholic and Independent systems if available.

The identified stakeholders will be contacted via email, requesting consent to participate in a semi-structured interview. The interviews will be conducted at a location that is convenient for the participant, through videoconferencing or over the phone. Appendix A outlines a list of questions will be asked to facilitate discussion and draw out the information required to develop the initial design principles and subsequent professional development program:

All interviews will be conducted by the researchers named in this paper. This ensures that the interviewer has the requisite background knowledge to ask clarifying and follow-up questions as appropriate for the differing stakeholder groups and individual participants.

Develop initial design principles

The information gathered in the systematic literature review, supplemented by the insights gained from the key stakeholder analysis, will form the evidence necessary to develop and substantiate the initial design principles used in the design of the professional development program. Design principles can be defined as a heuristic set of hypotheses and principles that are used to guide a design process (Edelson, 2002). Edelson (2002) also stated that design principles:

> ... are not detailed enough to determine every design decision. In addition, these guiding principles are not followed slavishly if accumulated evidence, specific circumstances, or informed intuition lead the designers to believe they do not apply (p. 106).

No limits have been placed on the number of design principles to be developed in this phase but the review of similar design-based research studies in education (Sultoni et al., 2021) suggests that 4-6 principles could be anticipated.

Design principles can vary from general laws of design to specific opportunities for designers. Bell et al. (2013) grouped design principles within the context of education research into four categories:

- general cognitive principles;
- meta principles;
- pragmatic pedagogical principles; and
- specific principles.

This study expects to produce general cognitive principles which describe cognitive principles and are transferable for use in future research and professional development design (Bell et al., 2013). A set of general cognitive principles in this context could be organised as a set of statements beginning with 'Effective professional development should'.

Phase 2: Implement design principles to create PD program

This will implement the design principles developed in Phase 1 by developing an effective professional development program that supports teacher engagement with the higher accreditation process. It is hoped that the provision of effective professional development to teachers will benefit the participants of the study, their schools and communities, the goals of the APST, and the wider education system.

In order to meet the time requirements of the study, the program will need to be deliverable within a one-year timeframe and be evaluable at intermittent intervals throughout its delivery. This will provide additional opportunities to monitor the progress of the study and ensure that the data collected is consistent with the research questions posed.

Phase 3: Test and evaluate PD program

The purpose of Phase 3 is to test and evaluate the professional development program designed in Phase 2. This study allows for one year of delivering and evaluating the professional development program. The number of participants in the program will be informed by the needs analysis and the requirements of any chosen venue. It is expected that there will be at least 15 participants in the program. Applicants who express an interest in the program and meet the eligibility requirements will be considered and should the number of applicants exceed the number of places available, selection will be made based on applicant capacity, experience, and diversity.

The content of the program will also be informed by the needs analysis, but this phase of the study will be limited to a maximum time-period of one year. If the needs analysis determines that a shorter program is appropriate, there will be scope for multiple iterations of the program to be tested and refined. However, initial research examined in this study suggests that professional development is most effective when it is delivered

over a sustained period of time (Centre for Education Statistics and Evaluation, 2014; InPraxis Group Inc, 2006; Sims & Fletcher-Wood, 2021).

It is expected that the research team will be able to deliver the professional development program and administer the evaluation tool under the current protocols. It is worth noting, however, that final design of the professional development program may present ethical and practical barriers. If this is the case, research assistants will be recruited to conduct elements of the evaluation.

The data gathered through implementation and evaluation will also be used to answer the primary research question.

Participants

The professional development program will be tested and evaluated in Sydney, Australia. Expressions of interest in the program will be sought from local teachers who are interested in applying for either Highly Accomplished or Lead Teacher accreditation. The expression of interest will be circulated in employer bulletins across the three education systems (NSW Department of Education, Catholic Schools NSW and the Association of Independent Schools NSW). In order to be eligible for participation in the program, it will be required that applicants meet the minimum requirements for eligibility for accreditation at Highly Accomplished and Lead Teacher in NSW. Participants must:

• be an Australian citizen or have a permanent residency visa;
• have full accreditation at Proficient Teacher if required by the Teacher Accreditation Act 2004;
• have been assessed as satisfactory in their two most recent annual performance assessments for those applying for Highly Accomplished career stage, or have been assessed as satisfactory in their three most recent annual performance assessments for those applying for Lead career stage. (NESA, 2016, p. 15).

A self-identification method of recruitment and selection is necessary as the study requires participants to have a specific set of knowledge and experiences to be able to fully participate in the program. The final number of participants in the professional development program will be determined by the program's design but it is anticipated that the program could accommodate between 15 and 30 participants.

The nature of the higher accreditation process requires participants to commit a significant amount of their own time to gathering and annotating evidence portfolios. The application process can take up to three years and teachers can draw on any evidence produced over that three year period (NESA, 2016). This was considered from both a practical and ethical perspective and contributed to the choice of recruitment methodology.

As the study will be located in Sydney, participation will be limited to residents and those who are able to travel there. It is acknowledged that this limitation will have implications on the data generated with regards to diversity.

Evaluation

Effective evaluation is a critical component in determining the success of the professional development program and the final iteration of design principles. The evaluation tool to be used will be informed by the needs analysis conducted in Phase 1 of the study. It is anticipated that the evaluation could involve an assessment of the portfolio evidence produced throughout the program, and pre and post interviews or focus groups to measure change in participant knowledge, attitudes and practices, and evaluate their experiences.

Collins et al. (2004) proposed five sections to be reported on in a DBR study: goals and elements of the design, settings where implemented, description of each phase outcomes found, lessons learned. This framework will guide the design of the final evaluation tool to be used in this study. The final assessment tool will also be developed in line with the professional development program. This is consistent with the principles of DBR and will allow for greater flexibility in the development of the tool, as the specifics of the professional development program have not yet been finalised.

Phase 4: Refine design principles

The knowledge gained from Phases 2 and 3 of the study will be used to reflect on the initial set of design principles. Based on this reflection, a final set of refined design principles will be created, justified and disseminated to provide a framework for future researchers and practitioners to produce more effective professional development programs, both within teacher accreditation, and across other industries.

Ethical considerations

Ethical considerations are fundamental in the design of any research. Govil (2013) identified four rights of research participants in educational research as "(a) right to maintain privacy (b) guaranteed anonymity (c) guaranteed confidentially and (d) avoiding harm, betrayal or deception" (p. 18).

Guaranteed privacy, anonymity and confidentiality will be addressed in the consent process. All participants will be required to give consent through a participant consent form which outlines the rights and responsibilities of all parties. Additionally, group norms will be established at the beginning of the professional development program, and rights and responsibilities will be formally addressed in each interview.

The professional development program intends to go beyond simply avoiding harm to participants and will be designed to support participants in navigating the higher

accreditation process. It must be acknowledged that this program is a trial and may not represent best practice at the time of delivery, however, all efforts will be made to ensure that it does.

It is important that participants are made aware of the limitations of the professional development program in order to manage expectations. Participants will be made aware that the program will be designed to support them in the accreditation process but is not a guarantee of accreditation.

It is anticipated that the researchers will also deliver the professional development program and administer the evaluation tool. This process will be explained to participants and all efforts will be taken to ensure that responses are de-identified and kept anonymous.

Another consideration will be whether a program to support teachers in the accreditation process is, itself, ethical. The key stakeholder analysis will determine whether this study aligns with the goals of higher accreditation policies. Both the stakeholder analysis and professional development program have been approved by the University of Sydney Human Research Ethics Committee (HREC) - approval nos. 2022/159 and 2023/479 respectively.

Discussion

This paper identifies the significant disparity between the number of teachers who currently hold higher accreditation under the APST and the number of teachers proposed upon the introduction of these professional standards. There is no suggestion that this disparity in numbers is a reflection of the profession's capacity, but a lack of formal identification of teacher leaders and mentors presents potential issues for both the goals of the policy and the wider profession.

The protocols outlined for this design-based research study aim to synthesise current literature with stakeholder knowledge to determine the key difficulties that the profession faces in engaging with the higher accreditation process. The study also aims to create a professional development program that addresses these difficulties.

The program will be underpinned by a set of design principles for effective professional development that will be developed, refined and tested throughout the study and aim to support future practitioners and researchers within the field of teacher professional development and beyond.

Disclosures

References

AITSL (2012a). *Australian charter for the professional learning of teachers and school leaders.* https://www.aitsl.edu.au/docs/default-source/national-policy-framework/australian-charter-for-the-professional-learning-of-teachers-and-school-leaders.pdf?sfvrsn=6f7eff3c_6

AITSL (2012b). Australian teacher performance and development framework. https://www.aitsl.edu.au/docs/default-source/national-policy-framework/australian-teacher-performance-and-development-framework.pdf?sfvrsn=4a7fff3c_8

AITSL (2012c). *The essential guide to professional learning: Collaboration.* https://www.aitsl.edu.au/docs/default-source/default-document-library/the-essential-guide-to-professional-learning---collaboration2dc5ac91b1e86477b58fff00006709da.pdf?sfvrsn=86a2ec3c_2

AITSL (2012d). *The essential guide to professional learning: Evaluation.* https://www.aitsl.edu.au/docs/default-source/default-document-library/the-essential-guide-to-evaluationc02cad91b1e86477b58fff00006709da.pdf?sfvrsn=25a2ec3c_2

AITSL (2012e). *The essential guide to professional learning: Innovation.* https://www.aitsl.edu.au/docs/default-source/default-document-library/the-essential-guide-to-professional-learning---innovationdc2cad91b1e86477b58fff00006709da.pdf?sfvrsn=e6a2ec3c_2

AITSL (2012f). The essential guide to professional learning: Leading culture. https://www.aitsl.edu.au/docs/default-source/default-document-library/the-essential-guide-to-leading-culturece2cad91b1e86477b58fff00006709da.pdf

AITSL (2017). *Enabling high quality professional learning: A practical guide for leaders.* https://www.aitsl.edu.au/docs/default-source/hqpl/enabling-high-quality-professional-learning---practical-guide.pdf

Andrews, R. (2005). The place of systematic reviews in education research. *British Journal of Educational Studies*, 53(4), 399-416. https://doi.org/10.1111/j.1467-8527.2005.00303.x

Ary, D., Jacobs, L. C., Irvine, C. K. S. & Walker, D. (2018). *Introduction to research in education.* Cengage Learning. [10th ed.] https://au.cengage.com/c/introduction-to-research-in-education-10e-ary-jacobs-sorensen-irvine-walker/9781337566001/

Association of Independent Schools of NSW (2019). *Accreditation of teachers at Highly Accomplished Teacher and Lead Teacher: Procedures for AISNSW Member Schools.* [not found 30 October 2023] https://www.aisnsw.edu.au/Resources/WAL%204%20[Open%20Access]/Highly%20Accomplished%20and%20Lead%20Teacher%20Accreditation%20Procedures.pdf

Bell, P., Hoadley, C. M. & Linn, M. C. (2004). Design-based research in education. In M. C. Linn, E. A. Davis & P. Bell (Eds.), *Internet environments for science education.* Routledge. https://doi.org/10.4324/9781410610393

Bentley, P. J., Gulbrandsen, M. & Kyvik, S. (2015). The relationship between basic and applied research in universities. *Higher Education*, 70(4), 689-709. https://doi.org/10.1007/s10734-015-9861-2

Blessing, L. T. M. & Chakrabarti, A. (2009). *DRM, a design research methodology.* Springer. https://doi.org/10.1007/978-1-84882-587-1

Bourke, T., Ryan, M. E. & Lidstone, J. (2013). Reflexive professionalism: Reclaiming the voice of authority in shaping the discourses of education policy. *Asia-Pacific Journal of Teacher Education*, 41(4), 398-413. https://doi.org/10.1080/1359866X.2013.838619

Call, K. (2018). Professional teaching standards: A comparative analysis of their history, implementation and efficacy. *Australian Journal of Teacher Education*, 43(3), 93-108. https://doi.org/10.14221/ajte.2018v43n3.6

Centre for Education Statistics and Evaluation (2014). *The elements of effective professional development*. NSW Department of Education. https://www.cese.nsw.gov.au//images/stories/PDF/The-elements-of-effective-professional-development.pdf

Centre for Education Statistics and Evaluation (2020). *Workforce profile of the NSW teaching profession 2017*. NSW Department of Education. https://www.cese.nsw.gov.au//images/stories/PDF/Workforce_profile_2017.pdf

Centre of Study for Policies and Practices in Education, Chile (2013). *Learning standards, teaching standards and standards for school principals*. OECD Education Working Papers. https://doi.org/10.1787/5k3tsjqtp90v-en

Cockburn, I., Henderson, R. & Stern, S. (1999). *Balancing incentives: The tension between basic and applied research*. NBER Working Paper 6882, National Bureau of Economic Research. https://www.nber.org/papers/w6882

Collins, A., Joseph, D. & Bielaczyc, K. (2004). Design research: Theoretical and methodological issues. *Journal of the Learning Sciences*, 13(1), 15-42. https://doi.org/10.1207/s15327809jls1301_2

Danielson, C. & McGreal, T. L. (2000). *Teacher evaluation to enhance professional practice*. Association for Supervision & Curriculum Development. https://www.ascd.org/books/teacher-evaluation-to-enhance-professional-practice

Darling-Hammond, L. (2000). Teacher quality and student achievement. A review of state policy evidence. *Education Policy Analysis Archives*, 8(1), 1-44. https://epaa.asu.edu/index.php/epaa/article/view/392/515

Darling-Hammond, L. (2001). Standard setting in teaching: Changes in licensing, certification, and assessment. In V. Richardson (Ed.), *Handbook of research on teaching* (Vol. 4, pp. 751-776). American Educational Research Association.

Dejonckheere, M. & Vaughn, L. M. (2019). Semistructured interviewing in primary care research: A balance of relationship and rigour. *Family Medicine and Community Health*, 7(2), article e000057. https://doi.org/10.1136/fmch-2018-000057

Dinham, S., Ingvarson, I. & Kleinhenz, E. (2008). *How can we raise the quality of school education so that every student benefits. Teaching talent: The best teachers for Australia's classrooms*. Business Council of Australia. https://d3n8a8pro7vhmx.cloudfront.net/bca/pages/2893/attachments/original/1531445978/teaching_talent_the_best_teachers_for_australias_classrooms_final_26-5-2008.pdf

Dixon-Woods, M., Shaw, R. L., Agarwal, S. & Smith, J. A. (2004). The problem of appraising qualitative research. *BMJ Quality & Safety*, 13(3), 223-225. https://doi.org/10.1136/qshc.2003.008714

Drago-Severson, E. & Blum-DeStefano, J. (2018). *Leading change together : Developing educator capacity within schools and systems*. ASCD.

https://files.ascd.org/staticfiles/ascd/pdf/siteASCD/publications/books/LeadingCh
angeTogether-DragoBlum.pdf

Edelson, D. C. (2002). Design research: What we learn when we engage in design. *The Journal of the Learning Sciences*, 11(1), 105-121.
https://doi.org/10.1207/S15327809JLS1101_4

Ford, C., McNally, D. & Ford, K. (2017). Using design-based research in higher education innovation. Online Learning, 21(3), 50-67. https://doi.org/10.24059/olj.v21i3.1232

Freeman, J. & Simonsen, B. (2015). Examining the impact of policy and practice interventions on high school dropout and school completion rates: A systematic review of the literature. *Review of Educational Research*, 85(2), 205-248.
https://doi.org/10.3102/0034654314554431

Govil, P. (2013). Ethical considerations in educational research. *International Journal of Advancement in Education and Social Sciences*, 1(2), 17-22.
https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=c0c0efc1c8d4c5b
2721694098a831cb00aaf887a

Hattie, J. (2003). Teachers make a difference, what is the research evidence? Presented at the ACER Conference, Melbourne, October.
https://research.acer.edu.au/research_conference_2003/4/

Herrington, J., McKenney, S., Reeves, T. C. & Oliver, R. (2007). Design-based research and doctoral students: Guidelines for preparing a dissertation proposal. In C. Montgomerie & J. Seale (Eds.), *Proceedings of EdMedia 2007: World Conference on Educational Multimedia, Hypermedia & Telecommunications* (pp. 4089-4097). Chesapeake, VA: AACE. https://ro.uow.edu.au/edupapers/627

Hopfenbeck, T. N., Lenkeit, J., El Masri, Y., Cantrell, K., Ryan, J. & Baird, J.-A. (2018). Lessons learned from PISA: A systematic review of peer-reviewed articles on the Programme for International Student Assessment. *Scandinavian Journal of Educational Research*, 62(3), 333-353. https://doi.org/10.1080/00313831.2016.1258726

Hotaman, D. (2010). The teaching profession: Knowledge of subject matter, teaching skills and personality traits. *Procedia - Social and Behavioral Sciences*, 2(2), 1416-1420.
https://doi.org/10.1016/j.sbspro.2010.03.211

Ingvarson, L. (2010). Recognising accomplished teachers in Australia: Where have we been? Where are we heading? *Australian Journal of Education*, 54(1), 46-71.
https://doi.org/10.1177/000494411005400105

InPraxis Group Inc. (2006). *Effective professional development: What the research says*. Alnerta Education. https://files.eric.ed.gov/fulltext/ED494706.pdf

Khan, K. S., Kunz, R. & Antes, G. (2003). Five steps to conducting a systematic review. *Journal of the Royal Society of Medicine,* 96(3), 118-121.
https://journals.sagepub.com/doi/10.1177/014107680309600304

Lagowski, J. J. (1986). Teaching as a profession, not an occupation. *Journal of Chemical Education*, 63(7), 555. https://doi.org/10.1021/ed063p555

Hextall, I. & Mahony, P. (2000). *Reconstructing teaching: Standards, performance and accountability*. RoutledgeFalmer. https://www.routledge.com/Reconstructing-Teaching-Standards-Performance-and-Accountability/Hextall-Mahony/p/book/9780415230971

Maskit, D. & Firstater, E. (2016). Preschool teachers' perspectives on teaching as a profession and pedagogical change. *Journal of Research in Childhood Education*, 30(2), 200-210. https://doi.org/10.1080/02568543.2016.1143417

Masters, G. N. (2015). Raising the professional status of teaching. *Teacher*, 14 September. https://research.acer.edu.au/cgi/viewcontent.cgi?article=1013&context=columnists

Murray, J. (2016). *Designing and implementing effective professional learning*. Corwin. https://doi.org/10.4135/9781483331225

Naylor, R. & Sayed, Y. (2014). *Teacher quality: Evidence review*. Canberra: Australian Government. https://www.dfat.gov.au/sites/default/files/evidence-review-teacher-quality.pdf

NESA (NSW Education Standards Authority) (2016). *Policy for accreditation at Highly Accomplished and Lead Teacher*. https://educationstandards.nsw.edu.au/wps/wcm/connect/872f1394-518c-46bc-90b1-a55bde1e92b0/NESA+Policy+for+Accreditation+at+Highly+Accomplished+and+Lead.pdf?MOD=AJPERES&CVID=

NESA (NSW Education Standards Authority) (2018). *Maintenance of Teacher Accreditation Policy*. [currently *NSW Teacher Accreditation Manual 2022*] https://educationstandards.nsw.edu.au/wps/portal/nesa/teacher-accreditation/resources/policies-procedures/nsw-teacher-accreditation-manual-2022

NESA (NSW Education Standards Authority) (2023a). *Highly Accomplished Teachers*. https://educationstandards.nsw.edu.au/wps/portal/nesa/teacher-accreditation/apply/higher-levels/highly-accomplished-teachers

NESA (NSW Education Standards Authority) (2023b). *Lead Teachers*. https://educationstandards.nsw.edu.au/wps/portal/nesa/teacher-accreditation/apply/higher-levels/lead-teachers

Netolicky, D. M. (2016). Rethinking professional learning for teachers and school leaders. *Journal of Professional Capital and Community*, 1(4), 270-285. https://doi.org/10.1108/JPCC-04-2016-0012

Netolicky, D. M. (2019). *Transformational professional learning: Making a difference in schools*. Routledge. https://www.routledge.com/Transformational-Professional-Learning-Making-a-Difference-in-Schools/Netolicky/p/book/9780367341749

Northam, M. (2018). Pre-2004 teacher workforce accredited with NESA. *Newsmonth*, 38(2), 2. https://publications.ieu.asn.au/2018-march-newsmonth/executive-reports/pre-2004-teacher-workforce-accredited-nesa/

NSW Department of Education (2015). Performance and development framework for principals, executives and teachers in NSW public schools. https://education.nsw.gov.au/content/dam/main-education/about-us/jobs-and-opportunities/media/documents/performance_development_framework.pdf

NSW Department of Education (2017a). *Accreditation at Highly Accomplished and Lead Teacher procedures*. [currently incorporated into *Accreditation in NSW public schools*] https://education.nsw.gov.au/policy-library/policies/pd-2005-0165

NSW Department of Education (2017b). *School Excellence Framework: Version 2*. https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/school-excellence-and-accountability/media/documents/SEF_Document_Version_2_2017_AA.pdf

NSW Department of Education (2017c). *Standards based teacher salary procedure*. https://education.nsw.gov.au/content/dam/main-education/about-us/careers-at-

education/salary-and-benefits/salary-and-awards/DOC16-1249032-Standards-Based-Teacher-Salary-Procedure-26_05_2017.pdf

NSW Department of Education (2022). Maintenance of teacher accreditation at Proficient, Highly Accomplished and Lead Teacher. https://education.nsw.gov.au/content/dam/main-education/policy-library/public/implementation-documents/maintenance-accreditation-proficient-highly-accomplished-and-lead-procedures.pdf

OSF Registries (2023). *Bringing leadership to a HALT: A systematic literature review of quality professional development in primary and secondary schools.* Center for Open Science. https://osf.io/fwczq

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hrobjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Systematic Reviews*, 10, article 89. https://doi.org/10.1186/s13643-021-01626-4

Power, M. (1999). *The audit society: Rituals of verification.* Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198296034.001.0001

Reeves, T. C. (2000). Enhancing the worth of instructional technology research through "design experiments" and other development research strategies. Paper presented at the Symposium *International perspectives on instructional technology research for the 21st century*, AERA Meeting, New Orleans. 24-28 April [file was "AERA2000Reeves.pdf", not found 28 Oct 2023]

Reeves, T. C. (2006). Design research from a technology perspective. In J. van der Akker, K. Gravemeijer, S. McKenney & N. Nieveen (Ed.), *Educational design research.* Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780203088364-13/design-research-technology-perspective-thomas-reeves

Reeves, T. C., Herrington, J. & Oliver, R. (2005). Design research: A socially responsible approach to instructional technology research in higher education. *Journal of Computing in Higher Education*, 16(2), 96-115. https://doi.org/10.1007/BF02961476

Shattuck, J. & Anderson, T. (2013). Using a design-based research study to identify principles for training instructors to teach online. *The International Review of Research in Open and Distributed Learning*, 14(5), 186-210. https://doi.org/10.19173/irrodl.v14i5.1626

Sims, S. & Fletcher-Wood, H. (2021). Identifying the characteristics of effective teacher professional development: A critical review. *School Effectiveness and School Improvement*, 32(1), 47-63. https://doi.org/10.1080/09243453.2020.1772841

Stokes, D. E. (1997). *Pasteur's quadrant: Basic science and technological innovation.* Brookings Institution Press.

Sultoni, K., Peralta, L. & Cotton, W. (2021). Technology-supported university courses for increasing university students' physical activity levels: A systematic review and set of design principles for future practice. *International Journal of Environmental Research and Public Health*, 18(11), article 5947. https://doi.org/10.3390/ijerph18115947

Tang, S. Y. F., Cheng, M. M. H. & So, W. W. M. (2006). Supporting student teachers' professional learning with standards-referenced assessment. *Asia-Pacific Journal of Teacher Education*, 34(2), 223-244. https://doi.org/10.1080/13598660600720629

Timperley, H. (2011). *A background paper to inform the development of a national professional development framework for teachers and school leaders*. Melbourne: AITSL. https://docplayer.net/156309-A-background-paper-to-inform-the-development-of-a-national-professional-development-framework-for-teachers-and-school-leaders-october-2011.html

Timperley, H., Wilson, A., Barrar, H. & Fung, I. (2007). *Teacher professional learning and development: Best evidence synthesis iteration*. Wellington, New Zealand: Ministry of Education. https://www.educationcounts.govt.nz/publications/series/2515/15341

Wise, A. E. (2005). Establishing teaching as a profession: The essential role of professional accreditation. *Journal of Teacher Education*, 56(4), 318-331. https://doi.org/10.1177/0022487105279965

Zawacki-Richter, O., Kerres, M., Bedenlier, S., Bond, M. & Buntins, K. (2020). *Systematic reviews in educational research: Methodology, perspectives and application*. Springer Nature. https://link.springer.com/book/10.1007/978-3-658-27602-7

Appendix A: Systematic literature review inclusion criteria

The following inclusion criteria have been developed to determine eligibility in the study's systematic literature review:

- the research evaluates the effectiveness of a professional development program,
- the professional development program targets teachers,
- the research was conducted in either a primary or secondary school setting,
- other conditions (location, political climate, etc.) in the research are comparable to those in Australian schools,
- the research draws conclusions about what constitutes effective professional development,
- the findings/discussion of the research are not limited to the effectiveness of a single professional development program,
- the research measures the term 'effective' by gains in teacher knowledge/skills/performance (ie. not improved student outcomes),
- the research is not conducted on a 'niche' or 'experimental' form of professional development (robotics, virtual reality, Massive Open Online Courses, etc.),
- the research is not, itself, a review.

Appendix B: Semi-structured interview questions

- What is your current job role?
- What is your current level of accreditation?
- If accredited, are you interested in gaining higher accreditation? Why/why not?
- What do you understand to be the main policy goals of higher accreditation for teachers in Australia?
- What do you understand to be the main roles of Highly Accomplished and Lead Teachers in school improvement?

- Why do you think that so few teachers engage in the higher accreditation process?
- Do you see any elements of the higher accreditation process as advantageous/disadvantageous to certain groups of teachers?
- What are the indicators of effective professional development?
- What would an effective professional development program to support the higher accreditation process look like?
- In an effective professional development program to support the higher accreditation process, what would be an appropriate:
  - number of participants in the program?
  - overall length of the program?
  - number of sessions?
  - length for each session?
- How would you measure the effectiveness of such a program?
- Do you have anything else to add?

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