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Teacher Attrition and Retention Research in Australia: Towards a New Theoretical Framework

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Abstract: During the last decades, the search to try to understand why Australian teachers prematurely leave their jobs has become an increasing focus of research interest. This article yields significant insights into the history and potential future of the teacher attrition research field. Using a thematic content analysis methodology, a study of the Australian literature reveals that the field in this country is still in its infancy, and is dominated by small-scale, qualitative exploratory studies. Furthermore, it shows the lack of consistency amongst studies discussing teacher attrition, as well as the need for a theoretically informed framework that acknowledges the complex nature of teacher attrition. To fill this void, the authors propose a new theoretical model, arguing that teacher attrition is a complex phenomenon, a product of the interaction of elements from social capital, human capital, positive psychological capital and structural capital intersecting.

Introduction

Teacher attrition is costly, both for a nation's budget, and for the social and academic outcomes of its citizens. In teacher attrition research, there are two main foci. First, trying to determine the size of the problem and second, trying to understand what may contribute to it in an attempt to identify solutions. Some countries have made efforts to determine the rates of attrition, but have been impeded by problems with inconsistent results and unavailable data (Gray & Taie, 2015; Hanna & Pennington, 2015; Ingersoll & Smith, 2003; Mulkeen & Crowe-Taft, 2010; Pennington & Hanna, 2014). A ten-year old study by the Organisation for Economic Cooperation and Development (OECD) suggested that up to 30% of Australian teachers leave their careers within the first five years (OECD, 2005). More recently, estimates of early career attrition rates range from 8% to 50% (Queensland College of Teachers, 2013), which raises concerns regarding the trustworthiness of the data collected and the validity of the claims made by the various sources. There is generally acknowledgement that teacher shortages are a concern, although not equally in all areas. For example, shortages tend to be felt more profoundly in non-metropolitan areas (Brown, 2014), and in specific discipline areas, such as languages, science, and senior mathematics (Dodd, 2014; Jacks, 2014; Vonow, 2015). The need to address these shortages by looking at the retention of teachers, particularly of teachers in the beginning phase of their careers, is becoming more widely acknowledged in research circles and in the sphere of the Australian public media (Hiatt, 2012; McMillan, 2011; Milburn, 2011; *Stressed teachers quitting*, 2015).

Trying to understand the factors and conditions that contribute to teachers leaving or staying in the field is an emerging focus of research interest, not just in Australia but all around the globe. While the United States leads the world in the number of studies investigating a variety of factors relating to teacher attrition or retention, in Australia there is a small body of research worthy of investigation. It is problematic that there have been no comprehensive reviews of the teacher attrition literature in Australia, although a dated but still regularly cited review of the international literature did include a number of local studies (Macdonald, 1999). With 20 years of history, it has reached the point where a critical review of the existing literature is needed to better understand the current state of the field of teacher attrition and to develop a research agenda.

This paper focuses on the examination of teacher attrition and retention research in Australia over the two decades from 1995-2014. A qualitative study was conducted using a thematic content analysis methodology. Findings are discussed in terms of the studies' definitions and measures of attrition, their participants, and research methodologies. The study found that the major factors that contribute to the retention or attrition of teachers in Australian schools can be explained by pre-existing theories of non-economic capital. By applying principles of capital to these themes, the authors propose a new four-capital conceptual model for understanding teacher attrition and promoting retention. This new conceptualisation suggests that in order to retain teachers, they need to have, have supported, and have opportunities to further develop their human capital, social capital, structural capital, and positive psychological capital. The paper concludes by discussing in detail the nature of the analytical framework, and calling for further research in this area.

The Study

The gap in knowledge regarding the causes that contribute to teacher attrition is particularly concerning in light of recent social and educational concerns about teacher attrition and teacher shortages. As such, understanding the current body of literature is paramount. For this purpose, a qualitative study was conducted, using a thematic content analysis methodology to collate and analyse the current knowledge base available in the Australian teacher attrition literature. This section discusses the nature and scope of the studies conducted in this area.

In order to source Australian studies of teacher attrition, searches were conducted of three major international databases in the field of education: The Social Sciences Citation Index, the Educational Resources Information Center (ERIC) database, and the A+ Education database, using combinations of the keywords 'teacher', 'attrition', 'retention', and 'turnover', a term widely used in the United States. The criteria for inclusion were: peer-reviewed studies of Australian participants, from the past twenty years published in peer reviewed scholarly journals, which investigated the relationship of the study variables directly with the attrition and/or retention of teachers in school settings.

Twenty studies met the selection criteria for inclusion in the analysis, and these are listed in Table 1. The twenty studies were reported in 24 peer reviewed journal articles, meaning that some studies bore multiple papers, as they were reporting on different aspects of the study conducted. For example, this was the case of Harrington (Harrington & Brasche, 2011; Harrington, 2013), who reported on two stages of a five year longitudinal study. Sharplin, O'Neill and Chapman (2010) reported on a 15-month longitudinal study of 29 early career teachers in Western

Australia. In their study, out-of-field teaching emerged as a particular issue, and a separate paper was published (Sharplin, 2014). Finally, Buchanan (2009, 2010, 2012) published three papers from the same study, with nuanced foci. In all of these cases, because the participants in each set of papers were the same cohort, for the purpose of analysis they were only counted once.

	Author/s	Year	Paper/s reporting each study	
			Journal	Title
1	Ashiedu & Scott-Ladd	2012	Australian Journal of Teacher Education	Understanding teacher attraction and retention drivers: Addressing teacher shortages
2	Boylan & McSwan	1998	Australian Journal of Education	Long-staying rural teachers: Who are they?
3	Buchanan	2009	Issues in Educational Research	Where are they now? Ex-teachers tell their life-work stories
		2012	Australian Journal of Education	Telling tales out of school: Exploring why former teachers are not returning to the classroom
		2010	Asia Pacific Journal of Education	May I be excused? Why teachers leave the profession
4	Buchanan, Prescott, Schuck, Aubusson, Burke, & Louviere	2013	Australian Journal of Teacher Education	Teacher retention and attrition: Views of early career teachers
5	Ewing & Smith	2003	English Teaching: Practice and Critique	Retaining quality beginning teachers in the profession
6	Fetherston & Lummis	2012	Australian Journal of Teacher Education	Why Western Australian secondary teachers resign
7	Frid, Smith, Sparrow, & Trinidad	2008	Education in Rural Australia	An exploration of issues in the attraction and retention of teachers to non-metropolitan schools in Western Australia
8	Hall	2012	Australian Journal of Indigenous Education	The "come and go" syndrome of teachers in remote indigenous schools: Listening to the perspective of indigenous teachers about what helps teachers to stay and what makes them go
9	Handal, Watson, Petocz, & Maher	2013	Australian and International Journal of Rural Education	Retaining mathematics and science teachers in rural and remote schools
10	Harrington & Brasche	2011	Australian Journal of Indigenous Education	Success stories from an indigenous immersion primary teaching experience in New South Wales schools
	Harrington	2013	Australian Journal of Teacher Education	"When the wattle comes out, the turtles are ready": Success of the Enhanced Teacher Training program
11	Howes & Goodman-Delahunty	2014	Journal of Career Development	Life course research design: Exploring career change experiences of former school teachers and police officers
12	Laming & Horne	2013	Teachers and Teaching: Theory and Practice	Career change teachers: Pragmatic choice or a vocation postponed?
13	Manuel	2003	Asia Pacific Journal of Teacher Education	Such are the ambitions of youth!: Exploring issues of retention and attrition of early career teachers in New South Wales
14	Mason	2010	Babel	Language teacher: To be or not to be
15	Moore	2009	Curriculum and Teaching	Enhancing the world of educational quality: peer mentoring processes to retain quality elementary male teachers in Australian contexts.
16	Paris	2013	Australian Journal of Teacher Education	Reciprocal Mentoring: Can it help prevent attrition for beginning teachers?
17	Plunkett & Dyson	2011	Australian Journal of Teacher Education	Becoming a teacher and staying one: Examining the complex ecologies associated with educating and retaining new teachers in rural Australia?
18	Rice	2014	Educational Review	Working to maximise the effectiveness of a staffing mix: what holds more and less effective teachers in a school, and what drives them away?
19	Sharplin	2014	Educational Research	Reconceptualising out-of-field teaching: experiences of rural teachers in Western Australia

	Sharplin, O'Neill, & Chapman	2010	Teaching and Teacher Education	Coping strategies for adaptation to new teacher appointments: Intervention for retention
20	Sumsion	2003	Australian Educational Researcher	Rereading metaphors as cultural texts: A case study of early childhood teacher attrition

Table 1: List of papers included in the meta-analysis

Once the data were collected, the content of each study was analysed. Thus data was collected on the time the study was conducted, the type of journal in which it was published, the nature of the studies and the participants, the theoretical frameworks underpinning the studies, the research designs and methodologies, the data collection and analysis approaches and their findings, including recommendations for future research. A thematic analysis was conducted on the factors which showed a relationship to teacher attrition or retention, using the six step process of familiarization with the data, generating initial codes, searching for themes, reviewing themes, and defining and naming themes, before producing the final report (Braun & Clarke, 2006). A third researcher was also invited to review our study for further validation of the findings.

Discussion of Findings

The data obtained from the thematic analysis of the Australian literature on teacher attrition and retention, and the major findings are discussed in detail in this section.

Publication Venues and Times

The papers came from seventeen peer reviewed journals, three being Australian and thirteen being international, showing that teacher attrition is an international issue, and that findings from Australian research are also of interest to international researchers. Seven of the papers were published in the *Australian Journal of Teacher Education*, while two of the papers were published in the *Asia Pacific Journal of Teacher Education*. The remaining journals were: *Babel*, *Australian Educational Researcher*, *Teaching and Teacher Education*, *Educational Research*, *Educational Review*, *Curriculum and Teaching*, *Issues in Educational Research*, *Asia Pacific Journal of Education*, *English Teaching: Practice and Critique*, *Education in Rural Australia*, *Australian Journal of Indigenous Education*, *Australian and International Journal of Rural Education*, *Australian Journal of Indigenous Education*, and the *Journal of Career Development*, *Teachers and Teaching: Theory and Practice*. The journal publishing the most papers on the issue, probably due to its specific focus on teacher education in Australia, is the *Australian Journal of Teacher Education*. The journal is well-established and well-respected, having been given an 'A' ranking by the *Excellence in Research for Australia* body, which is evidence that teacher attrition and retention studies are an area of interest for their readership.

The majority of the studies analysed took place in the most recent five-year period. As Figure 1 shows there has been a significant increase in studies since 2010. This could be due to the intensification and complexity of teachers' work in recent decades (Ballet & Kelchtermans, 2009; Easthope & Easthope, 2007).

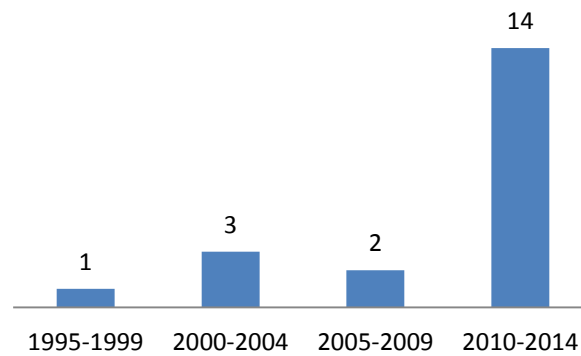


Figure 1: Number of peer reviewed Australian teacher attrition studies, five year intervals from 1995-2014.

Definitions of Attrition and Retention

A consistent definition of the key terms is something missing from the Australian literature. As warned by Billingsley (2004), “subtle differences in the way that attrition is defined can result in major differences in research findings” (p. 50). While on the surface it may seem that ‘retention’ and ‘attrition’ are simple dichotomous terms to describe those who stay and those who leave, the following analysis will prove that the process is anything but simple. For example, while in many studies attrition is said to occur when a teacher leaves the field, one study identifies those who have left teaching in non-metropolitan areas (Frid, Smith, Sparrow, & Trinidad, 2008), and another identifies those who have left language teaching (Mason, 2010), but not the teaching profession altogether. While these two groups may not fit under the definition of attrition in other studies, it is important to investigate areas of high demand that have arguably higher rates of attrition. Buchanan (2012) has attempted to look at the possibility of former teachers being lured back into teaching, and his study emphasises the fact that temporary attrition is a phenomenon that is rarely covered in the literature. Furthermore, as detailed in the following sections, the time period over which a teacher is studied to determine their retention or otherwise in the field, varies significantly between studies.

Through the analysis we were able to extract de facto definitions by way of the research context. In doing so we found three methods of investigating attrition or retention, each with its own advantages and disadvantages. These methods included:

1. Following teachers over a period and identifying those who stay and leave, and reasons why,
2. Eliciting the perspectives of current teachers, former teachers, or both, and
3. Asking current teachers about their intentions to leave.

Firstly, some studies followed the progress of teachers over a period of time and the actual rates of attrition and retention were observed within their sample populations. An advantage of this is looking at the differences in experiences and characteristics of those who take different career paths. Of particular benefit is the ability to access teachers at the time of their departure, as it can be more difficult to locate former teachers once they have left the field, particularly if some time has passed. Additionally, memory errors are more likely when some time has passed since the attrition occurred. This phenomenon was shown in a recent study of marathon runners, whereby participants tended to report feeling better after the race than they had during the race, illustrating a ‘rosy’ bias whereby their memory of the event changed from the reality after a period of time (Lemm & Wirtz, 2013). The main limitation of

this approach to sampling is the inability to project the findings to wider populations, firstly due to the small number of most of the study samples, and also because of the different lengths of time over which teachers were followed. Some studies observed teachers at the beginning of their careers in longitudinal studies for three years (Frid, Smith, Sparrow, & Trinidad, 2008; Harrington & Brasche, 2013), four years (Buchanan, Prescott, Schuck, Aubusson, Burke, & Louviere, 2013) and up to five years (Manuel, 2003) into their careers. Two more studies looked at attrition rates of teachers by seeking out the destinations of specific cohorts of graduates at a future post-graduation point in time. In Mason's (2010) study, graduates were sought eight years after entering teaching, while Laming and Horne (2013) chose to seek graduates two to four years after graduation, as they felt that first year teachers "had not yet had sufficient time to settle into their new occupation and reflect on their experiences" (p. 329). While comparing and contrasting both former and current teachers is paramount, the collection of data after different time periods makes comparison across studies difficult.

Next, teachers' perspectives were used to uncover factors that may relate to their decisions to stay or leave the profession. In some cases, the perspectives of current teachers were sought (Handal, Watson, Petocz, & Maher, 2013; Laming & Horne, 2013), while others sought the perspectives of former teachers (Buchanan, 2009, 2010, 2012; Howes & Goodman-Delahunty, 2014), and still others sought both (Buchanan et al., 2013; Mason, 2010). A unique study sought the perspective of indigenous Australian teachers regarding the factors they believe promote retention or attrition of non-indigenous teachers in their communities (Hall, 2012). A further study sought the perspective of 'long-staying teachers', defined as teachers who have remained in the profession for more than six years with no immediate intention of leaving, in an effort to identify those factors that assist in retention (Boylan & McSwan, 1998). Of course, teachers have intimate insights about their own careers and experiences, but they are also unlikely to be objective participants. Also, factors that teachers are not consciously aware of may be at play when they make their decisions, and as such they cannot solely be relied on to solve the puzzle of teacher attrition.

Lastly, intention to leave is used as a predictive measure of attrition. While there have been links made between one's intention to leave teaching and actually leaving (Gersten, Keating, Yovanoff, & Harniss, 2001), the connection between the two is not sufficiently understood. A further impediment to the reliability of this measure is the use of different forms of questioning, and different time frames for requesting information about future intentions, a problem also found in an international review of literature relating to special education teacher attrition and retention (Billingsley, 2004). In this review, two studies requested information about participants' future intentions in five years' time (Ashiedu & Scott-Ladd, 2012; Paris, 2013), while a further two requested intentions in five and ten years' time (Boylan & McSwan, 1998; Ewing & Smith, 2003). How these questions were framed is not always clear and this further muddies the waters regarding the replicability of the studies. Two other methods of gathering data on teachers' intentions to leave were also used in the studies. Plunkett and Dyson (2011) asked teachers in a purposely vague way about their goals in the 'short term', and in the 'long term'. Another method was the content analysis of teachers' narratives, where 'thoughts of leaving' were identified post-data collection (Laming & Horne, 2013). In both of these cases, teachers were required to independently reveal an intention to leave, rather than being prompted by a direct question about their intentions, and therefore this is possibly a more accurate prediction of actual retention. Albeit with major limitations, 'intent to leave' provides a surrogate measure of attrition, allowing research to continue despite the difficulties in conducting large-scale longitudinal studies. However, to strengthen the rigour of this approach, researchers must be careful to frame their questions carefully and consistently.

Type of Participants, Populations and Priorities

The number of participants and the method for their selection varied across the studies. The number of participants ranged from one (Sumsion, 2003) to 919 participants (Rice, 2014), with the average number across the studies being approximately 113. In many of the studies, data were collected from a convenient sample of respondents. Only one of the twenty studies crossed borders to include teachers in multiple states (Howes & Goodman-Delahunty, 2014), and in fact at least seven studies involved participants who graduated from a single university. In no case has there been an opportunity to adopt a random sample approach, and this is due to the lack of commitment at a federal level to collate national data relating to teachers.

Moreover, the nature of the participants selected for the studies varied and different populations were used in different studies, choices that reflect the different research priorities. One study looked at the career paths of Australian teachers alongside Australian police officers. The decision behind this choice being that both professions “traditionally offered life time employment and now have increased employee attrition” (Howes & Goodman-Delahunty, 2014, p. 64). In their analysis, the authors found the main similarity between the two groups of participants was a shared feeling of being undervalued. Ten of the twenty studies investigated the attrition and retention of early career teachers, reflecting the high level of interest in retaining this group of teachers (Marshall, 2013; Milburn, 2011). One issue that has been revealed is the time frame over which early career teachers were studied. This ranged from twelve months (Paris, 2013); fifteen months (Ewing & Smith, 2003; Sharplin, O’Neill, & Chapman, 2010), three years (Frid, Smith, Sparrow, & Trinidad, 2008; Harrington & Brasche, 2011; Plunkett & Dyson, 2011), four years (Buchanan et al., 2013) to five years (Manuel, 2003). While financial and time constraints do not always allow for the collection of data over extended periods, the lack of consistency in defining the term ‘early career teacher’ is an issue that must be addressed, as different time periods will produce different results, results that cannot be compared across studies unless everyone is on the same page.

Studies of teachers in non-metropolitan areas (Boylan & McSwan, 1998; Frid, Smith, Sparrow, & Trinidad, 2008; Handal, Watson, Petocz, & Maher, 2013; Plunkett & Dyson, 2011; Sharplin, 2014; Sharplin, O’Neill, & Chapman, 2010), and teachers in indigenous communities (Harrington, 2013; Harrington & Brasche, 2011) are also represented in the literature, as well as a further study that fits into both of these classifications (Hall, 2012). While ‘regional’, ‘rural’ and ‘remote’ are all terms used in the literature, the term ‘non-metropolitan’ was used in one study to cover all of these definitions. Of course, what a regional, rural, or remote area is differs depending on the context, but in the six studies of non-metropolitan teachers, all have adopted the boundaries as defined by the relevant education authorities. One study focuses specifically on the retention of teachers in remote indigenous schools, an area where the author suggests there is a ‘come and go’ syndrome of teachers entering and leaving schools, sometimes after as little as a few months (Hall, 2010). Hall was particularly “conscious of the postcolonial discourse regarding the detrimental impact of ‘research’ being ‘done to’ Indigenous peoples” (p. 190), and spent a large part of her paper discussing the ways she tried to ensure she conducted her research in a culturally sensitive manner. Harrington (2013; Harrington & Brasche, 2011) reported on the success of a teacher training program that was designed specifically to prepare teachers for positions in schools with high indigenous populations, and some of these were in rural locations but others were in western Sydney.

It has been argued that considering that teacher shortages in Australia are not equitably spread among the different disciplines, “attrition should be examined to uncover issues unique to each content area” (Wilkerson, 2000, p. 1). However, it is interesting to note that only two of the studies were discipline-specific, showing that this is not currently a

research priority. The first of these studies was from the areas of mathematics and science (Handal, Watson, Petocz, & Maer, 2013), and the second was from languages other than English (Mason, 2010), both areas where teachers are in high demand (Weldon, 2015). Incidentally, the study of mathematics and science teachers also included the only study that focused on one gender, that being male. Male teachers are also in high demand, representing only one in four teachers, and their presence in the education system is seen as a huge benefit for the social development of all children, but particularly boys (Tuohy, 2014). This is an especially under-researched area and its presence in the Australian literature is welcome, although more research is warranted.

Collating data from a variety of perspectives is an important part of exploratory research. The limitation is that findings can generally not be applied to a wider population of teachers, as each study refers to different types of teachers in different locations and contexts. In the United States, one factor likely to have contributed to the depth and maturation of the field is the Schools and Staffing Survey (SASS), a series of questionnaires that use “a stratified probability sample design to ensure that the samples of schools, principals, teachers, districts, ... contain sufficient numbers for reliable estimates” (National Center for Education Statistics, 2015, para. 8). Cross-sectional data is collected in four-year cycles, meaning that trends can be revealed over time, and the datasets have provided the basis for a large number of studies on teacher attrition and retention in the United States (Cannaday, 2011; Ingersoll, 2001; Hahs-Vaughn & Scherff, 2008). This commitment to large-scale, continuous, comprehensive and representative data collection is something that is desperately needed in the Australian context, not just for research into teacher attrition and retention, but for a wide range of issues which impact on the education of Australian students.

Research Designs and Methodologies

In terms of research design, the analysis found that there is an inclination toward qualitative, cross-sectional research designs, probably explained by this being an emerging field of research in Australia. While only one study adopted a purely quantitative approach (Rice, 2014), fourteen studies used a qualitative design, and five mixed-methods. The most common methods for collecting data were interviews, surveys, questionnaires, or a combination of these. Seven of the articles reported on longitudinal studies, ranging in length from one year to five years. Several studies adopted a quasi-experimental approach, where the impact of a particular mentoring, induction, or teacher preparation programme was explored (Harrington, 2013; Harrington & Brasche, 2011; Moore, 2009; Paris, 2013). However, in all of these studies there was no pre-post design, control group, or random assignment. While this research design precludes making generalizations about the wider population, it has advantages for research in the social sciences, and the findings from these studies all point to the importance of social support for teachers.

Theoretical Underpinnings Used in the Studies

While many factors contributing to teacher attrition were discussed (the focus of the next section), few theories were adopted to inform the data analysis and interpretation, a clear sign of a research field being in its developing stages. Theories that were adopted include Situated Theory (Buchanan, et al., 2013), Social Critical Theory (Fetherston & Lummis, 2012), and Quality of Worklife (Sharplin, O’Neill, & Chapman, 2010), although their integration into the research is varied. For example, Fetherston and Lummis (2012) state in the abstract that their study is framed by Social Critical Theory, without giving a definition or

interpretation of the theory, or details of how it was used to inform the research design, data collection and analysis. Sharplin and colleagues (Sharplin, 2014; Sharplin, O'Neill, & Chapman, 2010) on the other hand, provide a background and review of the literature relating to Quality of Worklife, and data gathered through this conceptual lens found that the adoption of certain coping strategies (Sharplin, O'Neill, & Chapman, 2010) and the congruence of teachers' appointments with their area of expertise (Sharplin, 2014) were important factors in retaining teachers. The scarcity of conceptually driven research is to be expected in a relatively new field of endeavour. However, if we are serious about tackling teacher attrition on more than a surface level, maturity in the research in the form of large-scale longitudinal studies, random sampled populations, and theoretically-driven research, is necessary.

Type of Recommendations Made for Future Research

Twelve of the papers analysed included recommendations for further research in light of their findings. A number called broadly for furthering research into specific areas, including motivation (Ashiedu & Scott-Ladd, 2012), classroom management (Buchanan, 2010), and reciprocal mentoring (Paris, 2013). There were also calls for further research of specific groups of teachers, including those in non-metropolitan areas (Frid, Smith, Sparrow, & Trinidad, 2008), as well as language teachers (Mason, 2010). Sharplin attempts to forward the research agenda in two ways, firstly by calling for the replication of the study "in diverse contexts to test the veracity of the propositions" (Sharplin, O'Neill, & Chapman, 2011, p. 144), and secondly through the development of a framework to categorise and explore out-of-field teaching (Sharplin, 2014). However, on the whole, the research agenda is not being fully propelled by explicit recommendations for what needs to be done, and the methods for doing so. This is likely due to the lack of an overall model, without which current studies remain isolated and disconnected from a broader understanding of the complexities of teacher attrition or retention.

Factors Contributing to Teacher Attrition or Retention

In analyzing the findings of the twenty studies, a long and varied list of factors were identified that showed some relationship - sometimes statistical but generally observed or anecdotal - to teacher attrition or retention. While some studies focused on one particular variable, others, particularly the more exploratory studies, revealed multiple factors. These factors underwent a process of thematic analysis where themes were identified and then "combined, refined and separated, or discarded" to determine patterns and organise the themes (Braun & Clarke, 2006, p. 91). The main, recurrent factors were ultimately organised into thirteen themes, which allowed the factors to be reduced to a more manageable size, without impacting on the richness of the data. The themes are shown below in Figure 2, with the numbers in brackets corresponding to the studies as they are listed in Table 1.

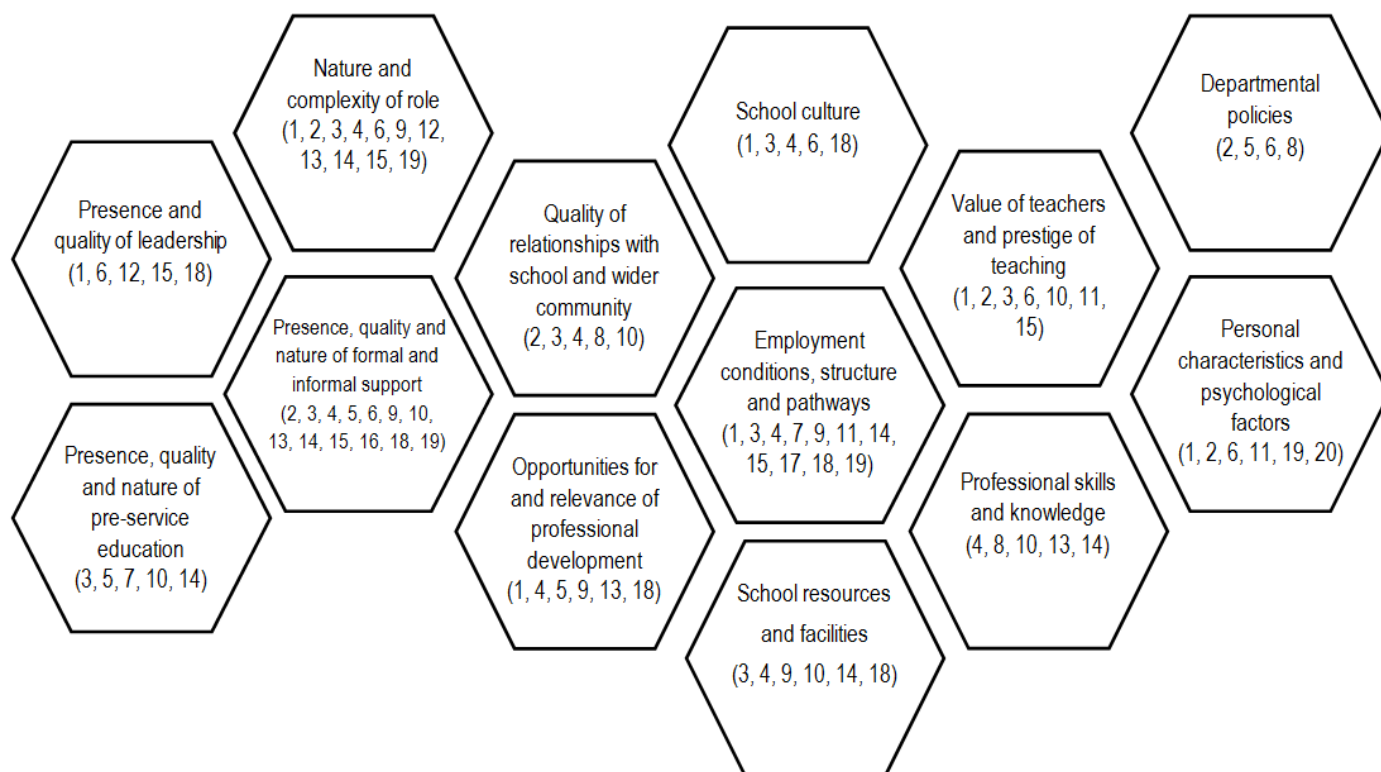


Figure 2: Thirteen themes contributing to attrition or retention of Australian teachers (numbers in brackets relate to the studies in which they appear, as listed in Table 1).

While some studies attempt to theorise teacher attrition and retention by organising themes into categories, we attempted to go one step further to understand the presence of these themes through the lens of pre-existing and well-established theories. We began with two theories – that of human capital and social capital, which are often linked together in social research (Healy & Cote, 2001; OECD, 2010; Pil & Leana, 2009). After the analysis revealed that not all of the factors could be explained sufficiently by these two theories alone, a further two theories – structural capital and positive psychological capital – were added to the model. Together, these four theories provide a framework for understanding the varied and complex factors that contribute to teacher attrition or retention, illustrated in Figure 3.

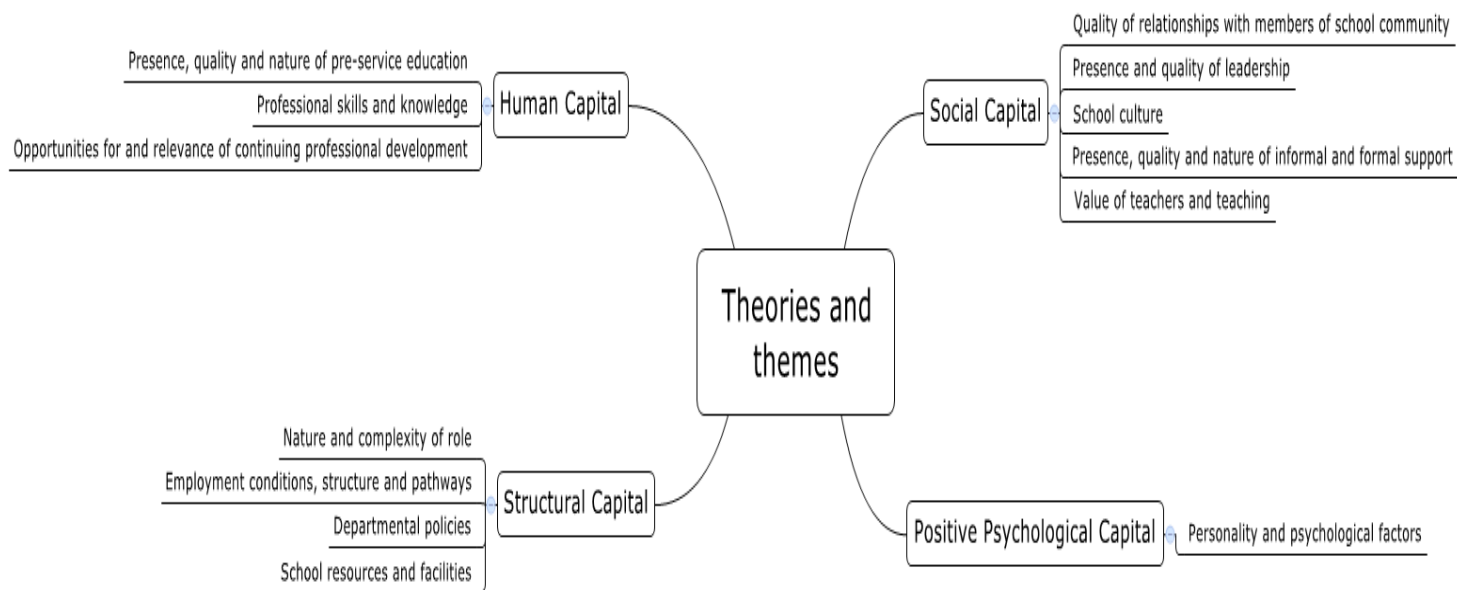


Figure 3: Thirteen themes impacting on teacher attrition or retention and their relationship to four established theories of non-economic capital

Human Capital Themes

Human capital has been defined as “the collective skills, knowledge, or other intangible assets of individuals that can be used to create economic value for the individuals, their employers, or their communities” (Caverley, Quresette, Shepard, & Mani, 2013, p. 574). In the school context, according to Pil and Leana (2009), human capital is defined as “an individual’s cumulative abilities, knowledge, and skills developed through formal and informal experiences” (p. 1103). Moreover, it has been argued that teachers with higher levels of human capital tend to be more effective, and are more likely to remain in their jobs, as they possess the skills and knowledge to cope with the demands of their positions (Boyd, Lankford, Loeb, & Wyckoff, 2005).

Three of the themes uncovered in the analysis of Australian studies relate to human capital. Firstly, the quality and nature of pre-service education is fundamental in the development of teachers’ human capital. Pre-service education aims to provide teachers with the required professional skills and knowledge - the second theme - to meet the demands of teaching in modern and complex school environments. The ability of pre-service education to meet this aim, however, is mixed. In Harrington’s (2013) study, the success in retaining teachers was put down to the specialized design of the *Enhanced Teacher Training Scholarship Program*, which aimed to “empower new teachers with the cultural and classroom awareness necessary for teaching in Indigenous communities” (p. 80), an area that generally experiences high rates of attrition. Mason, on the other hand, found a number of language teachers left because their pre-service training had left them feeling “underprepared for the realities of being a language specialist” (p. 17), as well as not having sufficient language proficiency, which in language education is both the content knowledge and the method of instruction. Other researchers argued that teacher’s professional knowledge and skills needed to be further developed in areas such as educational and school politics (Ewing & Smith, 2003), pedagogical knowledge, classroom and behaviour management, (Manuel, 2003), and cultural awareness (Hall, 2012; Harrington, 2013) in order to facilitate retention. Pre-service training that presents teaching in an overly idealized and unrealistic way was also

criticized (Ewing & Smith, 2003; Frid, Smith, Sparrow, & Trinidad, 2008). The third theme revolved around the continued professional development of teachers, which was considered one of the most influential factors for retaining teachers in Ashiedu's (2012) study. While participants in some studies greatly valued their positive professional development experiences (Buchanan et al., 2013), others found the relevance and number of opportunities for continuing professional development to be lacking (Rice, 2014).

Social Capital Themes

Social capital has been defined as the “connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them” (Putnam, 2000, p. 19). While there are a range of definitions of social capital - in fact, Adler and Kwon (2002) found 23 distinct definitions in the literature - the underlying principle is that human interrelationships are valuable. In education, schools that have strong social capital through solid relationships and support have better outcomes not only in student academic achievement, but also in retaining staff (Leana, 2010). Social capital in a school context has been described as “a trusting climate in the school – one where teachers talked to each other, shared the same norms, and had strong agreement in their descriptions of the culture of the school” (Leana, 2010, p. 18).

In the Australian analysis, social capital accounted for five themes. Relationships are the core business of teaching, and the quality of relationships with colleagues (Buchanan, 2012), students (Boylan & McSwan, 1998; Mason, 2010), and school leaders (Ashiedu & Scott-Ladd, 2012; Fetherston & Lummis, 2012) were found to have an impact on Australian teachers' decisions to stay or leave. Also of importance were teachers' relationships with members of the wider community, and this was particularly important for participants working in indigenous communities (Hall, 2012; Harrington, 2013). Two further and closely related themes, school culture and school leadership, appeared across several studies. School culture is determined largely by the strength of leadership in a school, and poor and absent leadership was mentioned in the literature as a factor in teachers' decision-making (Fetherston & Lummis, 2012; Laming & Horne, 2013; Rice, 2014). School culture is something that is built over time, but it is something that can be felt almost immediately by teachers when they enter a new workplace. Schools with a poor culture, in the form of negative discourse and bullying (Fetherston and Lummis, 2012) and poor student behaviour (Ashiedu & Scott-Ladd, 2012; Buchanan, 2010, 2012; Buchanan et al., 2013; Mason, 2010) arguably experience higher rates of attrition. Support is a broad term in the literature. It is a term that is rarely defined and which is perhaps not even clear in the minds of teachers themselves, who often talk about a lack of support (Handal, Watson, Petocz, & Maher, 2013; Manuel, 2003; Mason, 2010; Rice, 2014). A common strategy for building support for beginning teachers is the implementation of formal mentoring and induction programmes. In the review of the literature, it was found that some such programmes in Australian schools have been effective (Moore, 2009; Paris, 2013), but others are lacking or are non-existent (Buchanan 2012; Ewing & Smith, 2003). Lack of support can be manifested as feelings of isolation (Buchanan, 2009, 2010; Handal, Watson, Petocz, & Maher, 2013). Our understanding of teacher isolation is strengthened by the identification of four types of isolation: physical, geographic, emotional and professional (Buchanan et al., 2013). Finally, a common issue raised by teachers was the lack of value placed on them as professionals within schools (Howes & Goodman-Delahunty, 2014; Mason, 2010) and the value and prestige of teaching in wider society (Ashiedu, & Scott-Ladd, 2012; Buchanan, 2009, 2010; Fetherston & Lummis, 2010).

Structural Capital Themes

While human and social capital factors are generally considered ‘teacher factors’, a significant part of the literature on teacher attrition also looks at the role of the context in which teachers work. While human capital refers to the individuals within a company, structural capital has been defined as “everything left at the office when the employees go home” (Edvinsson & Malone, 1997, p. 11). A number of recent studies have found an important relationship between investment in structural capital and financial returns in the corporate sector (Chen, Liu, & Kweh, 2014; Lu, Wang, Kweh, 2014; Mondal & Ghosh, 2012; Sumedrea, 2013). Structural capital in a school would encompass the physical infrastructure, including buildings as well as the physical teaching resources and technological equipment. It would incorporate the school-based procedures, processes and policies put in place to manage teachers’ schedules, subject appointments, and to manage classroom routines and student behaviour. It also includes the procedures and processes for the appointment, movement, compensation and promotion of teachers, as well as curriculum frameworks and administrative procedures which in some cases may be implemented at a school level and others at a departmental or organisation level.

Teachers’ work is becoming increasingly complex, and the nature of teachers’ roles has contributed to the early departure of some teachers (Moore, 2009). While some studies used the broad term ‘work conditions’ (Ashiedu & Scott-Ladd, 2012; Buchanan, 2009, 2010, 2012; Manuel, 2003), others identified specific examples of these conditions such as workload (Buchanan et al., 2013; Laming & Horne, 2013), increased administrative tasks (Handal, Watson, Petocz, & Maher, 2013), and increased levels of accountability (Howes & Goodman-Delahunty, 2014). The conditions of teachers’ employment is also of significance, and job insecurity was a widely acknowledged problem (Buchanan, 2009, 2010, 2012; Frid, Smith, Sparrow, & Trinidad, 2008; Handal, Watson, Petocz, & Maher, 2013; Plunkett & Dyson, 2011). Additionally, the centralized methods used in many sectors for appointing teachers to schools have been shown to promote attrition (Ashiedu & Scott-Ladd, 2012). Plunkett and Dyson (2011) argued strongly against the “current system utilised in many Australian Education Departments, involving a contract system whereby the employment of new teachers is mainly based on short term contracts” (p. 35). Further to this, some teachers are employed in discipline areas outside of their field of expertise. This is particularly of concern considering that Sharplin (2014), who specifically investigated the variable of role-congruence, found that mis-assigned teachers were more likely not only to express dissatisfaction, but also to ultimately leave. This was confirmed in another study that found teaching outside of their subject area was a concern for teachers of maths and science (Handal, Watson, Petocz, & Maher, 2013). Salary was an issue that was raised in several studies, but was generally not considered a strong contributor to attrition (Ashiedu & Scott-Ladd, 2012; Buchanan, 2009, 2010, 2012). Employment conditions, including accommodation and cost of living, were also areas of dissatisfaction for some teachers working in non-metropolitan areas (Ashiedu & Scott-Ladd, 2012; Handal, Watson, Petocz, & Maher, 2013). While most education departments provide incentives for teachers working in non-metropolitan areas, some teachers in a New South Wales study lamented that financial incentives “were quickly eroded or at least neutralised by more expensive costs of living” (Handal, Watson, Petocz, & Maher, 2013, p. 23). A contentious issue for some teachers is the implementation and changing of government driven waves of ‘reform’ and initiatives which place unnecessary burdens on teachers (Fetherston & Lummis, 2012; Hall, 2012). Lastly, the quality of school facilities and access to resources is also a theme placed under the umbrella of structural capital (Buchanan et al., 2013; Handal, Watson, Petocz, & Maher, 2013; Mason, 2010; Rice, 2014).

Positive Psychological Capital Themes

Positive psychological capital (PsyCap), a recent and more common term for what is sometimes referred to as psychological capital, has been defined as “those features of personality psychologists believe contribute to an individual’s productivity” (Goldsmith, Veum, & Darity, 2007, p. 815). In a major meta-analysis of over 12,000 employees, a correlation was found between strong PsyCap and employees’ desirable attitudes, behaviour and performance, and conversely that employees with lower PsyCap displayed negative attitudes, behaviours, and performance – including employee turnover (Avey, Reichard, Luthans, & Mhatre, 2011). Within the international literature on teacher attrition are a growing number of studies of psychological factors, such as grit (Robertson-Kraft & Duckworth, 2014), commitment (Day, Elliot, & Kington, 2005), and resilience (Howard & Johnson, 2004; Le Cornu, 2013; Pearce & Morrison, 2011; Peters & Pearce, 2012). PsyCap factors can not only be developed, but this development has shown to have a positive impact on workplace performance (Luthans, Avey, & Patera, 2008; Luthans, Avey, Avolio, & Peterson, 2010).

While only one theme lies under the umbrella of PsyCap, a number of psychological states were investigated, including motivation (Ashiedu & Scott-Ladd, 2012), satisfaction and commitment (Boylan & McSwan, 1998), and the adoption of coping strategies (Sharplin, O’Neill & Chapman, 2011). Additionally, limited agency was a catalyst for teachers’ premature departure from the field in two studies (Howes & Goodman-Delahunty, 2014; Sumsion, 2003). The inclusion of PsyCap factors in the teacher attrition theoretical model developed is important because it acknowledges the fact that variables that are internal to the teacher also play a part in their career path choices. Such factors are often overlooked in exploratory studies that question teachers themselves about the factors that influence their decisions, as they are not generally considered consciously by teachers when they make a decision to leave. However, the current body of research is balanced toward human, social, and structural factors, and more research is needed into the psychological traits of teachers, what traits promote retention, and how these can be harnessed and developed.

Towards a Four-Capital Framework for Teacher Retention

Teacher attrition is a complex phenomenon with numerous variables at play. The findings of the content analysis study reported in this paper indicate that there is not one single factor that can explain teacher attrition or retention, but a wide variety of factors that interact with each other. In order to retain the richness of the data, the factors revealed in the analysis of recent Australian studies were reduced to thirteen themes, and in turn these themes were linked to four existing theories: human capital, social capital, structural capital, and positive psychological capital. It is our contention, which is supported by the study of the Australian literature, that factors relating to four capitals may contribute to teachers’ decision making processes to remain in or to leave their jobs. Thus, a four-capital theoretical model is proposed, where teacher retention is at the intersection point, as illustrated in Figure 4.

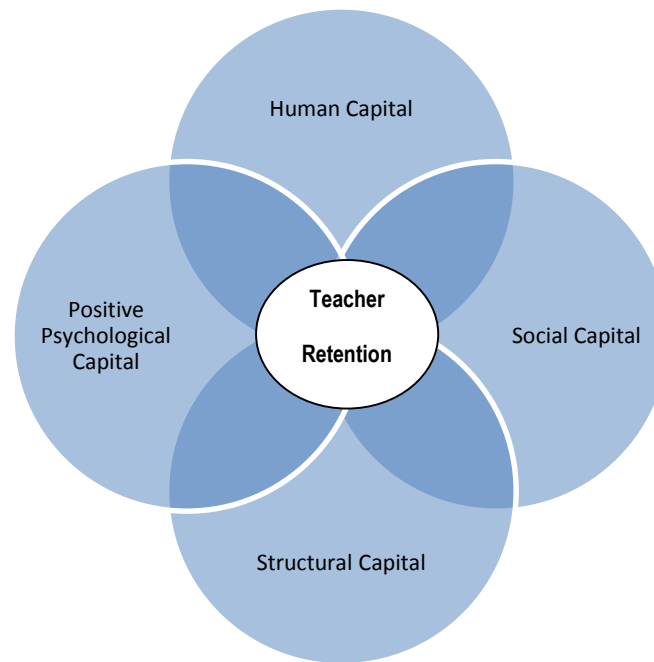


Figure 4: The four-capital theoretical model of teacher retention

The conceptual framework proposed in this paper acknowledges the complexity of the phenomenon by stepping back from individual factors that have been the focus of most of the research, and taking a bigger-picture, holistic approach. In capturing all of the major variables that have been found to concern Australian teachers over the past 20 years, we believe the comprehensive model is an invaluable tool in documenting and understanding the problem of teacher attrition and retention in a holistic way, in order to inform policy, and to address this important area of public concern.

Non-economic forms of capital have been criticized, particularly in the early days when applying a traditionally economic principle to the human sciences was considered to be quite a progressive idea. A recent review of the criticisms of human capital theory concluded that although human capital has “its shortcomings and imperfections, it would be fair to say that it is still a strong theory” (Tan, 2014, p. 436). Indeed, despite its limitations, human capital and other non-economic forms of capital have “survived and expanded (their) influence over other research disciplines” (Tan, 2014, p. 411).

It is only after the presentation of the framework that we mention the issue of teacher quality, which is sprinkled throughout the literature. While some researchers have suggested that attrition can actually be a positive thing if poor teachers are leaving the field, balancing this equation is not so simple. Determining teacher quality has been a focus of many reports and articles, as synthesised by Goe & Stickler (2008). The justification for this is at first glance obvious – a higher quality of teachers should result in a higher quality of education for students. But measuring teacher quality is fraught with ethical and methodological difficulties, “given the many ways of identifying and measuring the qualifications, characteristics, and practices that contribute to the concept of what makes a good teacher” (Goe & Stickler, 2008, p. 1). Nevertheless, some studies have linked measures of teacher quality to improved student outcomes, including teacher qualifications (Clotfeler, Ladd, & Vigdor, 2007; Darling-Hammond, 2000; Goldhaber & Anthony, 2005; Goldhaber & Brewer, 1999), teaching skills (Frome, Lasater, & Cooney, 2005; Matsumura, Garnier, Pascal, & Valdes, 2002), teacher characteristics (Goddard, Hoy, & Hoy, 2000; Leana & Pil, 2006), and teacher-student relationships (Liberante, 2012). All of these factors fit under the four-capital framework. It is our belief that without strong human, social, structural and positive psychological capital,

even teachers starting with high levels of human capital will be unable to meet their full potential to develop professionally and become better teachers in their educational contexts.

Conclusions and Future Recommendations

The qualitative study reported here on teacher attrition and retention in Australia to identify gaps in the existing literature, and to drive the research agenda, led to five major findings, and the development of a new theoretical framework. The five findings were: 1) research into teacher attrition lacks consistency in terminology, with terms such as 'attrition', 'shortages' and 'turnover' being used to refer to different teacher populations, with different measures used to determine attrition or retention over different periods of time; 2) the research field of teacher attrition in Australia, dominated by small exploratory and qualitative studies, is still in its very early days; 3) the increasing concerns about the trustworthiness and validity of current data available on US teacher attrition rates could also be applied to Australia, thus, there is a need to find new ways to calculate reliable teacher attrition rates; 4) more longitudinal statistical studies on teacher attrition are needed; and 5) the field is in need of a theoretical model that acknowledges the complex nature of teacher attrition.

The field of teacher attrition lacks a comprehensive theoretical conceptual model, able to connect the different theoretical and conceptual elements contributing to teacher attrition, and as such, a new theoretical conceptual framework is proposed here. The four-capital theoretical model argues that teacher attrition is a complex phenomenon, a product of the intersection of elements from social capital, human capital, positive psychological capital and structural capital.

In the current global climate of increased work knowledge and advances in technology, education is becoming more and more important. At the same time, the teaching profession is becoming devalued in a context of heightened pressure to perform on standardised testing, intensification of teachers' workloads, and a broadening of the role that teachers play in the lives of their students. The premature departure of teachers from the field has an economic and social price that is already being felt, but will continue unless teachers can be retained. Thus, research into Australian teacher attrition and retention remains as important as ever.

While qualitative exploratory studies have been found to dominate the first twenty years of this field of research in Australia, the research agenda is ready to move forward with studies that: a) provide consistency and clarity in the use of terminology and definitions surrounding teacher attrition and retention; b) commit to detailed data collection on teacher attrition and retention, similar to that undertaken in the United States by the *Schools and Staffing Surveys* (National Center for Education Statistics, 2015) and *Teaching and Learning International Study* (OECD, 2015); c) conduct large-scale and longitudinal research; d) include larger numbers of participants to support random-sampling and thus reliability of findings; and e) focus on the areas that are under the most staffing pressure in Australia, including geographic areas and discipline areas, such as languages and senior mathematics and sciences.

In addition, further research is encouraged to explore the proposed conceptual framework, to test its validity, to build on the existing body of knowledge, and to continue the journey of documenting and understanding teacher attrition in Australia to improve the retention of teachers in the future, and for the education of our next generation.

References

- Adler, P. S., & Kwon, S-W. (2002). Social capital: Prospects for a new concept. *The Academy of Management Review*, 27(1), 17-40. Retrieved from <http://www.jstor.org/stable/4134367>
- Ashiedu, J. A., & Scott-Ladd, B. (2012). Understanding teacher attraction and retention drivers: Addressing teacher shortages. *Australian Journal of Teacher Education*, 37(11). <http://dx.doi.org/10.14221/ajte.2012v37n11.1>
- Avey, J. B., Reichard, R. J., Luthans, F., & Mhatre, K. H. (2011). Meta-analysis of the impact of positive psychological capital on employee attitudes, behaviors, and performance. *Human Resource Development Quarterly*, 22, 127-152. <http://dx.doi.org/10.1002/hrdq.20070>
- Ballet, K., & Kelchtermans, G. (2009). Struggling with workload: Primary teachers' experience of intensification. *Teaching and Teacher Education*, (25), 1150-1157. <http://dx.doi.org/10.1016/j.tate.2009.02.012>
- Billingsley, B. S. (2004). Special education teacher retention and attrition: A critical analysis of the literature. *The Journal of Special Education*, 38(1), 39-55. Retrieved from <http://copsse.education.ufl.edu/docs/RS-2/1/RS-2.pdf> <http://dx.doi.org/10.1177/00224669040380010401>
- Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2005). Explaining the short careers of high-achieving teachers in schools with low-performing students. *Understanding Teacher Quality*, 95(2), 166-171. Retrieved from [http://stanford.edu/~sloeb/Short%20Careers%20\(2\).pdf](http://stanford.edu/~sloeb/Short%20Careers%20(2).pdf) <http://dx.doi.org/10.1257/000282805774669628>
- Boylan, C., & McSwan, D. (1998). Long-staying rural teachers: Who are they? *Australian Journal of Education*, 42(1), 49-65. <http://dx.doi.org/10.1177/000494419804200104>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <http://dx.doi.org/10.1191/1478088706qp063oa>
- Brown, C. (2014, July 29). NT bush schools facing teacher shortages next year. *ABC News*. Retrieved from <http://www.abc.net.au/news/2014-07-29/nt-bush-schools-face-teacher-shortage/5629140>
- Buchanan, J. (2009). Where are they now? Ex-teachers tell their life-work stories. *Issues in Educational Research*, 19(1), 1-13. Retrieved from <http://www.iier.org.au/iier19/buchanan.pdf>
- Buchanan, J. (2010). May I be excused? Why teachers leave the profession. *Asia Pacific Journal of Education*, 30(2), 199-211. <http://dx.doi.org/10.1080/02188791003721952>
- Buchanan, J. (2012). Telling tales out of school: Exploring why former teachers are not returning to the classroom. *Australian Journal of Education*, 56(2), 205-217. <http://dx.doi.org/10.1177/000494411205600207>
- Buchanan, J., Prescott, A., Schuck, S., Aubusson, P., Burke, P., & Louviere, J. (2013). Teacher retention and attrition: Views of early career teachers. *Australian Journal of Teacher Education*, 38(3), 112-129. <http://dx.doi.org/10.14221/ajte.2013v38n3.9>
- Cannaday, M. A. (2011). Modeling teacher attrition: Teacher characteristics and working conditions (Doctoral dissertation). Boston College, Boston. Retrieved from <http://gradworks.umi.com/34/65/3465761.html>
- Caverley, N., Quresette, B. C., Shepard, B. C., & Mani, P. S. (2013). Emerging trends: Canadian perspectives on career development practice in the 21st century. In B. C. Shepard & P. S. Mani (Eds.), *Career Development Practice in Canada: Perspectives, Principles, and Professionalism* (555-578). Toronto: Canadian Education and Research Institute for Counselling.

- Chen, F-C., Liu, Z-J., Kweh, Q. L. (2014). Intellectual capital and productivity of Malaysian general insurers. *Economic Modelling*, 36, 413-420. <http://dx.doi.org/10.1016/j.econmod.2013.10.008>
- Clotfeler, C. T., Ladd, H. F., & Vigdor, J. L. (2007). Teacher credentials and student achievement: Longitudinal analysis with student fixed effects. *Economics of Education Review*, 26(6), 673-682 <http://dx.doi.org/10.3386/w12828>
- Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, 8(1), 1-44. <http://dx.doi.org/10.14507/epaa.v8n1.2000>
- Day, C., Elliot, B., & Kington, A. (2005). Reform, standards and teacher identity: Challenges of sustaining commitment. *Teaching and Teacher Education*, 21, 563-577. <http://dx.doi.org/10.1016/j.tate.2005.03.001>
- Dodd, T. (2014, June 20). Maths teacher shortage set to worsen. *Australian Financial Review*. Retrieved from <http://www.afr.com/news/policy/education/maths-teacher-shortage-set-to-worsen-20140611-ix2pp>
- Easthope, C., & Easthope, G. (2007). Teachers' stories of change: Stress, care and economic rationality. *Australian Journal of Teacher Education*, 32(1), 1-16. <http://dx.doi.org/10.14221/ajte.2007v32n1.1>
- Edvinsson, L., & Malone, M. S. (1997). *Intellectual Capital*. London: Piatkus.
- Ewing, R. & Smith, D. (2003). Retaining quality beginning teachers in the profession. *English Teaching: Practice and Critique*. 2(1), 15-32. Retrieved from <http://education.waikato.ac.nz/research/files/etpc/2003v2n1art2.pdf>
- Fetherston, T., & Lummis, G. (2012). Why Western Australian secondary teachers resign. *Australian Journal of Teacher Education*, 37(4), 1-20. <http://dx.doi.org/10.14221/ajte.2012v37n4.1>
- Frid, S., Smith, M., Sparrow, L., & Trinidad, S. (2008). An exploration of issues in the attraction and retention of teachers to non-metropolitan schools in Western Australia. *Education in Rural Australia*, 18(1), 43-56. Retrieved from <http://search.informit.com.au/documentSummary;dn=468985607591925;res=IELHSS>
- Frome, P., Lasater, B., & Cooney, S. (2005). Well-qualified teachers and high quality teaching: Are they the same? *Southern Regional Education Board*. Retrieved from http://publications.sreb.org/2005/05V06_Research_Brief_high-quality_teaching.pdf
- Gersten, R., Keating, T., Yovanoff, P., & Harniss, M. K. (2001). Working in special education: Factors that enhance special educators' intent to stay. *Exceptional Children*, 67(4), 549-567. <http://dx.doi.org/10.1177/001440290106700408>
- Goddard, R. D., Hoy, W. K., & Hoy, A. W. (2000). Collective teacher efficacy: Its meaning, measure, and impact on student achievement. *American Educational Research Journal*, 37(2), 479-507. <http://dx.doi.org/10.3102/00028312037002479>
- Goldhaber, D., & Anthony, E. (2005). *Can teacher quality be effectively assessed?* Seattle: University of Washington and the Urban Institute. Retrieved from http://www.urban.org/research/publication/can-teacher-quality-be-effectively-assessed-0/view/full_report
- Goldhaber, D. D., & Brewer, D. J. (2000). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22(2), 129-145. <http://dx.doi.org/10.3102/01623737022002129>
- Goldsmith, A. H., Veum, J. R., & Darity, W. (2007). The impact of psychological and human capital on wages. *Economic Inquiry*, 35, 815-829. <http://dx.doi.org/10.1111/j.1465-7295.1997.tb01966.x>

- Goe, L. & Stickler, L. M. (2008). Teacher quality and student achievement: Making the most of recent research. *National Comprehensive Center for Teacher Quality*. Washington, DC: National Comprehensive Center for Teacher Quality. Retrieved from <http://www.ucdenver.edu/academics/colleges/SPA/researchandoutreach/Buechner%20Institute%20for%20Governance/Centers/CEPA/EdStimulusFunds/Documents/Marc%20h2008Brief.pdf>
- Gray, L., and Tie, S. (2015). *Public School Teacher Attrition and Mobility in the First Five Years: Results from the First Through Fifth Waves of the 2007–08 Beginning Teacher Longitudinal Study* (NCES 2015-337). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved from <http://nces.ed.gov/pubsearch>
- Hahs-Vaughn, D. L., & Scherff, L. (2008). Beginning English teacher attrition, mobility, and retention. *The Journal of Experimental Education*, 77(1), 21-54. <http://dx.doi.org/10.3200/JEXE.77.1.21-54>
- Hall, L. (2012). The ‘come and go’ syndrome of teachers in remote indigenous schools: Listening to the perspective of indigenous teachers about what helps teachers to stay and what makes them go. *The Australian Journal of Indigenous Education*, 41, 187-195. <http://dx.doi.org/10.1017/jie.2012.13>
- Handel, B., Watson, K., Petcock, P., & Maher, M. (2013). Retaining mathematics and science teachers in rural and remote schools. *Australian and International Journal of Rural Education*, 23(3), 13-27. Retrieved from <http://search.informit.com.au/documentSummary;dn=845659956102621;res=IELHSS>
- Hanna, R., & Pennington, K. (2015, January 8). Despite reports to the contrary, new teachers are staying in their jobs longer. *Center for American Progress*. Retrieved from <https://www.americanprogress.org/issues/education/news/2015/01/08/103421/despite-reports-to-the-contrary-new-teachers-are-staying-in-their-jobs-longer/>
- Harrington, I. (2013). When the wattle comes out, the turtles are ready: Success of the Enhanced Teacher Training Program. *Australian Journal of Teacher Education*, 38(5), 80-88. <http://dx.doi.org/10.1017/jie.2012.13>
- Harrington, I. & Brasche, I. (2011). Success stories from an indigenous immersion primary teaching experience in New South Wales schools. *The Australian Journal of Indigenous Education*, 40, 23-29. <http://dx.doi.org/10.1375/ajie.40.23>
- Healy, T. & Cote, S. (2001). *The well-being of nations: The role of human and social capital*. Paris: Organisation for Economic Cooperation and Development. Retrieved from <http://www.oecd.org/site/worldforum/33703702.pdf>
- Hiatt, B. (2012, May 9). Schools face teacher shortage. *The West Australian*. Retrieved from <https://au.news.yahoo.com/thewest/a/13638048/schools-face-teacher-shortage/>
- Howard, S. & Johnson, B. (2004). Resilient teachers: Resisting stress and burnout. *Social Psychology of Education*, 7, 399-420. <http://dx.doi.org/10.1375/ajie.40.23>
- Howes, L. M. & Goodman-Delahunty, J. (2014). Life Course Research Design: Exploring Career Change Experiences of Former School Teachers and Police Officers. *Journal of Career Development*, 41(1), 62-84. <http://dx.doi.org/10.1375/ajie.40.23>
- Ingersoll, R. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal*, 38(3), 499-534. <http://dx.doi.org/10.3102/00028312038003499>
- Ingersoll, R. M. & Smith, T. M. (2003). The wrong solution to the teacher shortage. *Educational Leadership*, 60(8), 30-33. Retrieved from http://www.gse.upenn.edu/pdf/rmi/EL_TheWrongSolution_to_theTeacherShortage.pdf

- Jacks, T. (2014, May 4). Victorian schoolchildren learn Mandarin via Skype. *The Age*. Retrieved from <http://www.theage.com.au/victoria/victorian-schoolchildren-learn-mandarin-via-skype-20150504-1my8e1.html>
- Laming, M. M., & Horne, M. (2013). Career change teachers: Pragmatic choice or a vocation postponed? *Teachers and Teaching: Theory and Practice*, 19(3), 326-343. <http://dx.doi.org/10.1080/13540602.2012.754163>
- Leana, C. (2010). Social capital: The collective component of quality teaching. *V.U.E, Spring*, 16-23. Retrieved from <http://www.readbag.com/annenberginstitute-vue-wp-content-pdf-vue27-leana>
- Leana, C., & Pil, F. K. (2006). Social capital and organizational performance: Evidence from urban public schools. *Organization Science*, 17(3), 353-366. <http://dx.doi.org/10.1287/orsc.1060.0191>
- Le Cornu, R. (2013). Building early career teacher resilience: The role of relationships. *Australian Journal of Teacher Education*, 38(4), 1-16. <http://dx.doi.org/10.14221/ajte.2013v38n4.4>
- Lemm, K., & Wirtz, D. (2013). Exploring “rosy” bias and goal achievement in marathon runners. *Journal of Sport Behavior*, 36, 66-82.
- Liberante, L. (2012). The importance of teacher–student relationships, as explored through the lens of the NSW Quality Teaching Model. *Journal of Student Engagement: Education Matters*, 2(1), 2-9. Retrieved from <http://ro.uow.edu.au/jseem/vol2/iss1/2>
- Lu, W-M., Wang, W-K., & Kweh, Q. L. (2014). Intellectual capital and performance in the Chinese life insurance industry. *Omega*, 42(1), 65-74. <http://dx.doi.org/10.1016/j.omega.2013.03.002002>
- Luthans, F. Avey, J. B. Avolio, B. J. & Peterson, S. J. (2010). The development and resulting performance impact of positive psychological capital. *Human Resource Development Quarterly*, 21(1), 41-67. <http://dx.doi.org/10.1002/hrdq.20034>
- Luthans, F., Avey, J. B., & Patera, J. L. (2008). Experimental analysis of a web-based intervention to develop positive psychological capital. *Academy of Management Learning and Education*, 7, 209-221. <http://dx.doi.org/10.5465/AMLE.2008.32712618>
- Macdonald, D. (1993, November). *Why do they leave? Physical Education teacher attrition*. Paper presented at the Australian Association for Research in Education Annual Conference, Fremantle, Western Australia. Retrieved from <http://www.aare.edu.au/data/publications/1993/macdd93140.pdf>
- Manuel, J. (2003). ‘Such are the ambitions of youth’: Exploring issues of retention and attrition of early career teachers in New South Wales. *Asia-Pacific Journal of Teacher Education*, 31(2), 139-151. <http://dx.doi.org/10.1080/13598660301611>
- Marshall, K. (2013, October 6). Burnout hits one in four teachers. *The Age Victoria*. Retrieved from <http://www.theage.com.au/victoria/burnout-hits-one-in-four-teachers-20131005-2v13y.html>
- Mason, S. (2010). Language teacher: To be or not to be. *Babel*, 45(1), 14-21. Retrieved from <http://search.informit.com.au/documentSummary;dn=168966339384233;res=IELHSS>
- Matsumura, L. C., Garnier, H., Pascal, J., & Valdés, R. (2002). Measuring instructional quality in accountability systems: Classroom assignments and student achievement. *Educational Assessment*, 8(3), 207-229. http://dx.doi.org/10.1207/S15326977EA0803_01
- McMillan, A. (2013). School's out early for overworked and undersupported young teachers. *The Guardian*. Retrieved from <http://www.theguardian.com/education/2013/aug/06/teachers-leave-profession-early>

- Milburn, C. (2011, March 7). More teachers but fewer staying the course. *Sydney Morning Herald*. Retrieved from <http://www.smh.com.au/national/education/more-teachers-but-fewer-staying-the-course-20110306-1bhuv.html>
- Mondal, A., & Ghosh, S. K. (2012). Intellectual capital and financial performance of Indian Banks. *Journal of Intellectual Capital*, 13(4), 515-530. <http://dx.doi.org/10.1108/14691931211276115>
- Moore, T. (2009). Enhancing the world of educational quality: Peer mentoring processes to retain quality elementary male teachers in Australian contexts. *Curriculum and Teaching*, 24(2), 59-75. <http://dx.doi.org/10.7459/ct/24.2.06>
- Mulkeen, A. & Crowe-Taft, N. (2010). *Teacher attrition in sub-Saharan Africa: The neglected dimension of the teacher supply challenge*. Paris: United Nations Educational, Scientific and Cultural Organization. Retrieved from <http://unesdoc.unesco.org/images/0018/001881/188197e.pdf>
- National Center for Education Statistics. (2015). *Schools and Staffing Survey (SASS)* (Online). Retrieved from <https://nces.ed.gov/surveys/sass/overview.asp>
- Organisation for Economic Cooperation and Development. (2005). *Teachers matter: Attracting, developing and retaining effective teachers*. Paris: OECD. Retrieved from <http://www.oecd.org/edu/school/attractingdevelopingandretainingeffectiveteachers-finalreportteachersmatter.htm>
- Organisation for Economic Cooperation and Development. (2010). *Social capital, human capital and health. What is the evidence?* Paris: OECD. Retrieved from <http://www.oecd.org/edu/research/45760738.pdf>
- Organisation for Economic Cooperation and Development. (2015). *TALIS - The OECD Teaching and Learning International Survey*. Paris: OECD. Retrieved from <http://www.oecd.org/edu/school/talis.htm>
- Paris, L. (2013). Reciprocal mentoring: Can it help prevent attrition for beginning teachers? *Australian Journal of Teacher Education*, 38(6), 136-158. <http://dx.doi.org/10.14221/ajte.2013v38n6.5>
- Pearce, J., & Morrison, C. (2011). Teacher identity and early career resilience: Exploring the links. *Australian Journal of Teacher Education*, 36(1), 48-59. <http://dx.doi.org/10.14221/ajte.2011v36n1.4>
- Pennington, K., & Hanna, R. (2014, January 21). Teachers stay in the profession during Obama-era policies. *Center for American Progress*. Retrieved from <https://www.americanprogress.org/issues/education/news/2014/01/21/80846/teachers-stay-in-the-profession-during-obama-era-policies/>
- Peters, J., & Pearce, J. (2012). Relationships and early career teacher resilience: A role for school principals. *Teachers and Teaching: Theory and Practice*, 18(2), 249-262. <http://dx.doi.org/10.1080/13540602.2012.632266>
- Pil, F. K. & Leana, C. (2009). Applying organizational research to public school reform: The effects of teacher human and social capital on student performance. *Academy of Management Journal*, 52(6), 1101-1124. Retrieved from http://www.lrdc.pitt.edu/BOV/documents/Pil_ApplyingOrganizationalResearch.pdf <http://dx.doi.org/10.5465/AMJ.2009.47084647>
- Plunkett, M. & Dyson, M. (2011). Becoming a teacher and staying one: Examining the complex ecologies associated with educating and retaining new teachers in rural Australia. *Australian Journal of Teacher Education*, 36(1), 32-47. <http://dx.doi.org/10.14221/ajte.2011v36n1.3>
- Putnam, R. D. (2000). *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.

- Queensland College of Teachers. (2013). *Attrition of recent Queensland graduate teachers*. Brisbane: Queensland College of Teachers. Retrieved from http://www.qct.edu.au/Publications/Retention_Research_Report_RP01.pdf
- Rice, S. M. (2014). Working to maximise the effectiveness of a staffing mix: What holds more and less effective teachers in a school, and what drives them away? *Educational Review*, 66(3), 311-329. <http://dx.doi.org/10.1080/00131911.2013.776007>
- Robertson-Kraft, C., & Duckworth, A. L. (2014). True grit: Trait-level perseverance and passion for long-term goals predicts effectiveness and retention among novice teachers. *Teachers College Record*, 116, 1-27. Retrieved from <https://upenn.app.box.com/s/81h02pjga2igfzsb0qk2>
- Sharplin, E. D. (2014). Reconceptualising out-of-field teaching: Experiences of rural teachers in Western Australia. *Educational Research*, 56(1), 97-110. <http://dx.doi.org/10.1080/00131881.2013.874160>
- Sharplin, E. D., O'Neill, M., & Chapman, A. (2011). Coping strategies for adaptation to new teacher appointments: Intervention for retention. *Teaching and Teacher Education*, 27, 136-146. <http://dx.doi.org/10.1016/j.tate.2010.07.010>
- Stressed teachers quitting*. (2015, May 10). Stressed teachers quitting over high workload, Australian Education Union report reveals. *News.com.au*. Retrieved from <http://www.news.com.au/national/stressed-teachers-quitting-over-high-workload-australian-education-union-report-reveals/story-fncynjr2-1227349535411>
- Sumedrea, S. (2013). Intellectual capital and firm performance: A dynamic relationship in crisis time. *Procedia Economics and Finance*, 6, 137-144. [http://dx.doi.org/10.1016/S2212-5671\(13\)00125-1](http://dx.doi.org/10.1016/S2212-5671(13)00125-1)
- Sumsion, J. (2003). Rereading metaphors as cultural texts: A case study of early childhood teacher attrition. *The Australian Educational Researcher*, 30(3), 67-87. <http://dx.doi.org/10.1007/BF03216798>
- Tan, E. (2014). Human capital theory: A holistic criticism. *Review of Educational Research*, 84(3), 411-445. <http://dx.doi.org/10.3102/0034654314532696>
- Tuohy, W. (2014, October 9). Declining male teacher numbers is a disaster for our boys. *Herald Sun*. Retrieved from <http://www.heraldsun.com.au/news/opinion/declining-male-teacher-numbers-is-a-disaster-for-our-boys/story-fni0fhk1-1227086044231>
- Vonow, B. (2015, March 11). Looming shortage in maths and physics as male teachers age. *The Courier Mail*. Retrieved from <http://www.couriermail.com.au/news/queensland/looming-shortage-in-maths-and-physics-as-male-teachers-age/story-fnihsrf2-1227257632165>
- Weldon, P. R. (2015). *The Teacher workforce in Australia: Supply, demand and data issues. Policy Insights, Issue 2*. Melbourne: Australian Council for Educational Research. Retrieved from <http://research.acer.edu.au/policyinsights/2/>
- Wilkerson, C. (2000). Attrition of foreign language teachers: Workplace realities. *Foreign Language Annals*, 33(1), 31-35. <http://dx.doi.org/10.1111/j.1944-9720.2000.tb00887.x>

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