

**How well prepared are Australian preservice teachers to teach
beginning reading skills?**

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April 2018

This thesis is presented for the degree of Doctor of Philosophy

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REQUIREMENTS AND FORMAT OF A THESIS BY PUBLICATION

This statement provides an overview of the requirements and format of a thesis by publication, in relation to University and Departmental requisites.

A thesis must form a distinct contribution to knowledge either by the discovery of new facts or by the exercise of independent critical power. The thesis as a whole should be focused on a single project or set of related questions and should present an integrated body of work, reflecting a coherent program of research.

The basic structure of a thesis by publication is as follows:

- An introduction providing a coherent overview of the background of the thesis, the research questions and the structure and organisation of the remaining chapters.
The distinct contribution of the thesis should be clearly identified.
- A number of chapters, each written in the format of self-contained journal articles.
These chapters should be published, in press or submitted. Where articles are published, they do not need to be reformatted for inclusion in the thesis. Each chapter should be prefaced by a brief introduction outlining how the chapter fits into the program of research and, in the case of jointly authored chapters, the student's contribution should be clearly specified.
- The final chapter should provide an integrative conclusion, drawing together all the work described in the other parts of the thesis and relating this back to the issues raised in the Introduction.
- The length for a thesis in special education at Macquarie University should generally be 50,000-70,000 words for a Doctorate and 20,000-40,000 words for a Master of Philosophy.

ABSTRACT

A series of related papers examining the knowledge of final-year preservice early childhood and primary teachers in the area of beginning reading, and an investigation into the content of literacy units offered in early childhood and primary teacher preparation programs, are presented in this thesis by publication. The primary aim of this program of research was to investigate the perceived and actual subject-specific content and pedagogical knowledge of final-year preservice early childhood and primary teachers of the teaching of early literacy, with a specific focus on beginning reading instruction. A secondary aim was to examine the content and characteristics of early literacy units offered in Australian teacher preparation programs.

Over the past fifteen years, results from national and international assessments of literacy have shown a continual decline in the literacy competence of Australian primary and secondary students. Although scientific research has identified the essential contributing components of beginning reading instruction, it would appear that this information may not be reaching classroom teachers. A systematic literature review, therefore, was conducted in order to locate evidence regarding preservice teachers' knowledge of the subject-specific content for literacy instruction. Although only a limited amount of research was available, there appeared to be inadequate preservice teacher knowledge in the countries in which the research was implemented and this included Australia.

To extend the small Australian research base, an online survey similar in construction to those included in the literature review was conducted. Surveys were distributed by 16 institutions, making this the first Australian survey to include preservice teachers from more than one institution. Preservice early childhood and primary teachers' perceptions of preparedness and ability to teach, and content knowledge of, beginning reading and spelling skills were examined. Although the preservice teachers generally rated themselves as prepared to teach early reading, most demonstrated minimal to very poor knowledge of the phonological awareness, phonemic awareness and phonics components of beginning reading and spelling

instruction. Three original questions were also included in the survey in order to gauge preservice teachers' knowledge of the early literacy components and pedagogical practices supported by the current scientific research. The results indicated that Australian preservice teachers have an incomplete understanding of early reading terms and concepts and are limited in their knowledge of the research-based recommendations for best instructional practices.

In order to explore the responses to four of the questions included in the online survey in more depth, eleven telephone interviews were conducted. Recently graduated teachers' perceptions of their preparedness and ability to teach beginning reading and spelling, their early reading content knowledge, and their views of the quality of their teacher preparation were canvassed. This was the first time that recently graduated teacher interviews had been conducted across multiple institutions and Australian states. The results mirrored those reported in the survey paper, raising questions about the effectiveness of preservice preparation of beginning reading instruction offered in tertiary institutions.

A combination of the findings from the systematic literature review, the online survey and the interview study raised concerns regarding the content of literacy units provided in preservice primary and early childhood tertiary programs. A detailed examination of unit outcomes, unit guides, assessment tasks, prescribed texts, and the qualifications and expertise of unit coordinators of relevant literacy units, the first study of this type to be conducted in Australia, was undertaken. A need for an increased focus on research-based beginning reading instruction and subject content pedagogy in literacy units was identified.

STATEMENT OF CANDIDATURE

I certify this thesis entitled “How well prepared are Australian preservice teachers to teach beginning reading skills?” is an original piece of research and my own work. All assistance from others in conducting the research and preparing this thesis has been appropriately acknowledged.

I also certify that the work in this thesis has not been submitted for a higher degree to any university or institution other than Macquarie University.

In addition, I certify that all sources of information and literature used are indicated in the thesis.

The research presented in this thesis was approved by the Macquarie University Faculty of Human Sciences Human Research Ethics Sub-Committee, on 30th July 2014 (referenced no. 5201400754) and 26th February 2015 (referenced no. 5201300190).

A handwritten signature in black ink that reads "Linda Meeks". The signature is written in a cursive style with a long horizontal stroke extending to the right.

Linda Meeks

11.04.18

STATEMENT OF CONTRIBUTION

This is a statement of my contribution to this thesis and the jointly written papers included in it. The following is a list of papers written in conjunction with my Co-Supervisors Dr. Coral Kemp, Associate Professor Jennifer Stephenson, and Dr. Alison Madelaine.

1. Meeks, L., Kemp, C., & Stephenson, J. (2014). Standards in Literacy and Numeracy: Contributing Factors. *Australian Journal of Teacher Education*, 39(7).
doi:10.14221/ajte.2014v39n7.3.

I wrote this position paper with advice and input from Dr. Coral Kemp and Associate Professor Jennifer Stephenson.

2. Meeks, L., Kemp, C., Stephenson, J. & Madelaine, A. (2017). How well prepared are pre-service teachers to teach early reading? A systematic review of the literature. *Australian Journal of Learning Difficulties*. doi: 10.1080/19404158.2017.128710.

I wrote this review with advice and input from Dr. Coral Kemp, Associate Professor Jennifer Stephenson and Dr. Alison Madelaine.

3. Meeks, L., & Kemp, C. (2017). How well prepared are Australian preservice teachers to teach early reading skills? *Australian Journal of Teacher Education*, 42(11), 1-17. doi: 10.14221/ajte.2017v42n11.1.

I conducted this study and wrote this paper with advice and input from Dr. Coral Kemp.

4. Meeks, L., Madelaine, A., & Kemp C. (2017). *Research and theory into practice: Australian preservice teachers' knowledge of evidence-based early literacy instruction*.

I conducted this study and wrote this paper with advice and input from Dr. Alison Madelaine and Dr. Coral Kemp.

Manuscript submitted for publication.

5. Meeks, L., Madelaine, A., & Stephenson, J. (2017). *New teachers talk about their preparation to teach early literacy*. Manuscript submitted for publication.

I conducted this study and wrote this paper with advice and input from Dr. Alison Madelaine and Associate Professor Jennifer Stephenson.

6. Meeks, L., & Stephenson, J. (2018). *How much instruction on early reading instruction is provided to preservice teachers in Australian teacher education programs?*

Manuscript submitted for publication.

I conducted this study and wrote this paper with advice and input from Associate Professor Jennifer Stephenson.

ACKNOWLEDGEMENTS

My sincere and heartfelt thanks go to

- my supervisors, Dr. Coral Kemp, Associate Professor Jennifer Stephenson, and Dr. Alison Madelaine, for their continuous support, patience, motivation and constructive feedback, and for sharing their immense knowledge. I have learnt so much from them over the last six years.

Also

- my trusty husband for 50 years, Alan, for tolerating the mood swings, fixing the computer problems, running the business, caring for the house and garden, and cooking;
and
- my parents, Joan and Ted, for instilling in me the belief that anything is possible;
and
- my three handsome sons, Stuart, Campbell and Lachlan and their beautiful partners, Prabata, Kate and Alison, for keeping me grounded;
and
- my six gorgeous grandchildren, Atticus and Augustina, Charlotte and Finn, and Parker and Jarvis, for keeping me continually entertained;
and
- my wonderful friends, for their support, laughter, dinners, patience, encouragement, coffee and wine.

Thank you all for believing that I **could** do it!

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CHAPTER 1: INTRODUCTION

Chapter Overview

In this chapter the purpose of the research contained in this thesis is introduced. The background to the research, including the literacy levels of Australian students as determined by both national and international assessment programs, the current scientific research base regarding beginning reading instruction, the existing knowledge base about the early literacy content knowledge of preservice and recently graduated teachers, the content of teacher preparation programs in the area of beginning reading, and the rationale for the research are presented. This is followed by an outline of the research plan and an overview of each chapter of the thesis.

Purpose of the Research

The primary purpose of the research presented in this thesis was to investigate the perceived and actual subject-specific content knowledge and pedagogical content knowledge (Shulman, 1987) necessary for teaching beginning reading, of final-year preservice and recently graduated teachers from Australian Early Childhood and/or Primary undergraduate and postgraduate teacher preparation courses. A secondary purpose was to examine the content and characteristics of early literacy units offered in Australian teacher preparation courses, in order to investigate the role that such units play in the preparation of teachers to teach early reading to their students and to identify and understand likely deficiencies that exist in such curricula.

Background to the Research

The literacy competence of Australian primary and secondary school students

The Programme for International Student Assessment (PISA) is held every three years and is a key part of Australia's National Assessment Program (Thomson, De Bortoli, & Underwood, 2017). In 2015 (the most recent cycle), 758 Australian schools and a total of

14 530 randomly selected, 15-year old Australian students participated in the assessment of science, mathematics, reading, collaborative problem solving and financial literacy (Organization for Economic and Co-operation Development [OECD], 2016). The Australian reading results reported for PISA 2015 indicated a significant decline between 2009 and 2015 (Thomson, De Bortoli, & Underwood, 2017).

The Progress in International Reading Literacy Study (PIRLS) is an international comparative study of the reading achievement of fourth-graders and is conducted every five years. Australian students have participated in the last two cycles (2011 and 2016). In 2016, approximately 286 Australian schools and more than 6 000 students took part. Although Australia's overall score for 2016 showed a statistically significant increase on the scores recorded in the PIRLS 2011 cycle, 18 per cent of students in metropolitan schools, 22 per cent of students in regional schools, and 30 per cent of students in remote schools, did not achieve the Intermediate benchmark. (Thomson, Hillman, Schmid, Rodrigues, & Fullarton, 2017).

The Australian National Assessment Program: Literacy and Numeracy (NAPLAN) has been conducted every year since 2008. It is designed to monitor the progress of students in grades 3, 5, 7, and 9 for achievement in reading, writing, spelling, grammar, punctuation (language conventions), and numeracy (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2017). The overall results for the literacy components described in the 2017 NAPLAN report indicated that there was little difference in scores between 2016 and 2017, and no statistically significant differences in achievement across year levels or the majority of States and Territories for 2017 (ACARA, 2017). A particular area of concern, however, is the continued over-representation of Indigenous students scoring below the national minimum standard.

Many influences may have an impact on the extent and quality of student learning. However, if the literacy competency of too many students in a given population is low, and improvement over time does not occur, it is important to investigate potential contributing factors, one of which may be the quality of instruction that occurs in the classroom. One of the factors contributing to quality teaching is the content-specific and pedagogical content knowledge of the teachers.

Research-based beginning reading instruction

The extensive national and international evidence base for best practice in beginning reading instruction has been developed, extended and confirmed over the past three decades. However, the promotion of theories and approaches for the teaching of reading such as Whole Language and balanced literacy, where the proponents may not accept the extensive scientific evidence-base produced by educators, cognitive scientists, psychologists and speech therapists, continues to fuel the debate regarding the best approach to beginning reading instruction. It is acknowledged, however, that what counts as scientific evidence is contested and that there are levels of evidence even within a scientific approach. Indeed, the quality of reports produced by the What Works Clearinghouse, for example, has been described as being of significant concern (Wood, 2017).

The research base for beginning reading instruction supports a phonics approach combined with instruction in phonological awareness (the awareness of speech sounds, onset-rimes, syllables and rhymes) and phonemic awareness (the ability to focus on and manipulate individual sounds in spoken words) (National Institute of Child Health and Human Development, 2000; Rose, 2006; Rowe, 2005). Research concerning these two components demonstrates the contribution they make to comprehension, vocabulary and reading fluency, with the ‘simple view of reading’ (Tunmer & Chapman, 2012) explaining the relationship between these basic skills and language comprehension.

The simple view of reading states that reading comprehension is the product of decoding and listening comprehension ($D \times LC = RC$) (Tunmer & Chapman, 2012). Reading for meaning, therefore, results from the combination of fluent decoding skills (phonemic awareness and phonics) and fluent comprehension skills (vocabulary and language skills). This view of the reading process corresponds with the findings of the National Reading Panel (NRP) published in the United States in 2000 (National Institute of Child Health and Human Development [NICHD]), the Australian *Teaching reading: Report and recommendations* published in 2005 (Rowe), and the *Independent review of the teaching of early reading: Final report* (Rose) published in the United Kingdom in 2006. The recommendations from these reports are reflected in the Australian Curriculum for English F-6 (2015) literacy program, which outlines the sequence of content for phonological and phonemic awareness from Foundation to Year 2 and the alphabet and phonic knowledge program from Foundation to Year 6.

In order for teachers to meet the beginning reading needs of all students, it is important that they have both subject-specific content knowledge *and* pedagogical content knowledge on which to base their instructional programs (Board of Studies, Teaching and Educational Standards NSW [BOSTES], 2014). Pedagogical knowledge is based on a generic form of teaching that includes knowledge about the processes and methods involved in the teaching and learning process, such as programming, classroom management, student assessment and the monitoring of student progress (Mishra & Koehler, 2006). Pedagogical content knowledge as described by Shulman (1987) links pedagogical knowledge to the teaching of specific content. The evidence base for specific pedagogical approaches includes direct instruction and precision teaching, and these approaches are based on the use of teacher-controlled strategies such as mastery learning; an emphasis on academic engaged time;

immediate, affirmative and corrective feedback; teaching for generalisation; prompting; and pacing (Rosenshine, 1995; Rowe, 2006).

The beginning reading content and pedagogical knowledge of recently graduated early childhood and primary teachers.

Research into preservice teachers' perceptions of their preparation, knowledge-base and ability to teach beginning reading suggests that many preservice teachers do not feel confident to teach early reading skills (Fielding-Barnsley, 2010; Mather, Bos, & Babur, 2001), and many who *do* consider themselves to be prepared do not, in fact, have sufficient knowledge for this important task (Bostock & Boon, 2012; Meehan & Hammond, 2006). In 1994, Moats conducted a survey of 103 teachers in the United States regarding their knowledge of the structure of spoken and written language. Topics included speech sounds and syllables, letter-sound correspondences and concepts of language organisation (e.g., spelling rules). Results indicated that teacher knowledge of phonics, spelling and phoneme identification was weak. Following the publication of the National Reading Panel in 2000, research into preservice teacher knowledge of phonemic awareness and phonics increased, with international and Australian researchers continuing to report similar findings to those outlined by Moats in 1994 (e.g., Fielding-Barnsley, 2010; Mahar & Richdale, 2008; Mather, Bos, & Babur, 2001; Washburn, Joshi, & Binks-Cantrell, 2011). An important observation included in this body of research was that, even though preservice teachers believed it was important to be able to teach phonological awareness and phonics, many reported feeling ill-prepared to teach these topics (Fielding-Barnsley, 2010; Mahar & Richdale, 2008; Meehan & Hammond, 2006). Not all preservice teachers have demonstrated this awareness, however. A recent Canadian study investigated the relationship between preservice teachers' perceived and actual knowledge for the teaching of phonemic awareness. The results demonstrated that although this cohort reported being confident in their knowledge of, and ability to teach,

phonemic awareness, this confidence did not match their ability as measured by the researchers (Martinussen, R., Ferrari, J., Aitken, M., & Willows, D. 2015). This was a worrying finding as it demonstrated that these preservice teachers did not know what they did not know. However, following a one-hour long multimedia-enhanced lecture, the preservice teachers made significant gains in actual knowledge. An Australian study has demonstrated similar results. Following an intensive course in language concepts, a cohort of preservice teachers had higher phonological scores than those achieved in research conducted by other researchers in this field, as well as more accurate and realistic perceptions of their content knowledge (Tetley & Jones, 2014).

Early childhood and primary teacher preparation programs

According to Roberts-Hull, Jensen, and Cooper (2015), the research base for evaluating initial teacher preparation programs is small and gives no clear indication of what good preparation programs should look like. In Australia, the Advisory Group of the Teacher Education Ministerial Advisory Group (TEMAG) (2014) found that both structural and cultural change in initial teacher education programs was deemed necessary, and recommended that providers, school systems and schools work together to improve all elements of teacher education.

Three ‘traditional’ contributing factors may be considered when determining the quality of teacher preparation programs: the content of the curriculum, the nature and use of resources, and the staffing profile (Ingvarson, Schwille, Tatto, Rowley, Peck, & Senk, 2013). In addition, the quality and extent of subject content and subject-specific pedagogical skills (Martinussen, Ferrari, Aitken, & Willows, 2015) may also be seen as contributing factors. There has been no prior research in Australia in which the reading content in teacher preparation programs has been evaluated. However, the study conducted by Joshi, Binks, Hougen, Dahlgren, Ocker-Dean, and Smith (2009) in the United States recommended that

teacher education programs should provide more content knowledge about language structure, and Meehan and Hammond (2006) reported that many faculty teaching staff in Australia did not appear to be familiar with the concepts of the linguistic features of the English language. These linguistic features include a dense orthography, complex morphological structures, and wide and varied etymological influences.

Rationale for the Research

The results of national and international literacy assessment programs over the last decade reveal that the literacy standards of Australian primary and secondary school students have either declined or stagnated. In addition, the performance of Australian students is considered to be lower than it should be relative to Australia's overall level of affluence. The literacy skills and knowledge of classroom teachers, which will be influenced by the inclusion of relevant content and other quality components of teacher education programs, may make an important contribution to literacy standards. An improvement in teacher preparation may assist in reversing the decline. An important first step is to investigate both the literacy skills and knowledge of graduating teachers, and the teacher education programs that prepare them to teach literacy.

The importance of early reading instruction has been the subject of research for decades, with scientific research into the teaching of reading and current national and international reports continuing to support the inclusion of two crucial elements, phonemic awareness and phonics, in beginning reading programs. Previous international research regarding preservice and in-service teachers' subject and pedagogical knowledge for beginning reading instruction generally concludes that not all teachers have sufficient knowledge of these two elements and are often unaware of this gap in their teaching knowledge. Recent research into the content and effectiveness of Australian preservice preparation programs, especially with regard to

beginning reading instruction, has been limited. However, there have been some studies that concluded Australian beginning teachers may not have the skills necessary for early reading instruction (Fielding-Barnsley, 2010; Mahar & Richdale, 2008; Meehan & Hammond, 2008).

Unlike any previous research in this area, this thesis combines a number of separate but related studies, conducted in multiple Australian teacher preparation institutions and across multiple Australian states. The integration of information gathered from different sources (e.g., survey, interviews, website searches), and from different perspectives (e.g., preservice and recently graduated teachers, and handbooks/unit guides), may provide a starting point for change.

Aims of the Research

Broadly, the aims of the research were to explore the following questions:

1. What are the factors that contribute to school students' performance in literacy? (See Chapter 2)
2. What has the extant research literature revealed about the level of preparedness of preservice teachers to teach early reading? (See Chapter 3)
3. How well prepared are Australian final-year preservice teachers to teach early reading? (See Chapter 4)
4. What knowledge do Australian final-year preservice teachers have concerning the current evidence base for beginning reading instruction? (See Chapter 5)
5. What do recently graduated teachers have to say about their preparation to teach early literacy? (See Chapter 6)
6. What content on early reading instruction is provided to preservice teachers in Australian teacher education courses? (See Chapter 7)

Structure of the Thesis

This thesis is presented in the format of a series of self-contained manuscripts, each formatted in a journal article style. The manuscripts are presented along with an introductory chapter, concluding chapter, and linking paragraphs. As a result of the manuscripts being self-contained, this thesis includes some repetition of information. Furthermore, there is some inconsistency in formatting (e.g., the style of headings, the use of American English/British English spelling) due to the varying requirements of journals. Information regarding the publication status of each of the papers is presented in each chapter introduction.

Methodological Approach

Various methodologies were employed in the studies contained in this thesis. As a discussion paper, the purpose in Chapter 2 was to present an overview of the reading performance of Australian students within an international framework, and to identify those factors that current research has determined contribute to improvements in reading ability. In Chapter 3 a systematic literature review was employed to facilitate a synthesis of the literature related to the preparation of preservice teachers in the area of beginning reading instruction. In Chapter 4 the use of a survey to obtain data related to the perceptions of Australian preservice teachers in the final year of their course regarding their preparedness and ability to teach early literacy, and their knowledge of beginning literacy instruction is described. Informed by the findings of the review presented in Chapter 3 and responses to three specific questions included in the survey described in Chapter 4, a qualitative/quantitative methodology, employed to investigate preservice teachers' knowledge of current reading research, is described in Chapter 5. Chapter 6 includes a description of an interview protocol, used with recently graduated teachers, designed to verify and extend responses to the knowledge and perceived ability questions contained in the

online survey described in Chapter 4. The final content-analysis study, presented in Chapter 7, was designed to investigate the structure and content of literacy units offered to Australian primary and early childhood preservice teachers.

Chapter Outlines

Chapter 2

Chapter 2 is a discussion paper published in the *Australian Journal of Teacher Education* (Meeks, Kemp, & Stephenson, 2014). Over the last 18 years, Australian students have participated in various international comparative assessments (Programme for International Student Assessment [PISA]; Progress in International Reading Literacy Study [PIRLS]; Trends in International Mathematics and Science Study [TIMSS]). In addition, a national assessment system, the National Assessment Program – Literacy and Numeracy (NAPLAN), commenced in 2008. A comparison of results for Australian students over this time has shown a decline in literacy standards. Several contributing factors and potential influences on student achievement have been well researched, with the quality of teaching that occurs in classrooms being identified as one of the main contributors to student success. The concept of quality teaching has also been researched with recommendations relating to the selection processes for the choice of candidates admitted to teacher education programs; the provision of preservice teacher programs based on the current research-base for individual subjects (for example, literacy and numeracy); a coherent system of induction, coaching and mentoring for beginning teachers; and the provision of continuing professional development.

Chapter 3

Chapter 3 is a literature review paper relating to the preparation of preservice teachers to teach early reading, published in the *Australian Journal of Learning Difficulties* (Meeks, Stephenson, Kemp, & Madelaine, 2017). Concerns regarding teacher knowledge in the area of early literacy had prompted a number of studies into the subject-specific content knowledge, and pedagogical knowledge, of preservice teachers in the area of early literacy instruction. Twelve studies and one dissertation were completed between 2001 and 2014. A comprehensive review of these thirteen studies makes this the first systematic review of

teacher preparation in the area of early reading skills. Data specific to the preparation of preservice teachers in Australia were limited. Recommendations for future research were made.

Chapter 4

The findings from an online survey published in the *Australian Journal of Teacher Education* (Meeks & Kemp, 2017) are presented in Chapter 4. The survey was designed to investigate early reading subject-specific knowledge of final-year preservice teachers enrolled in all Australian primary and early childhood programs. Only four Australian studies into preservice teacher knowledge of beginning reading had previously been conducted on this subject, and each study was limited to one teacher preparation institution (Fielding-Barnsley, 2010; Mahar & Richdale, 2008; Meehan & Hammond, 2006; Tetley & Jones, 2014). Although the support of the institutions was poorer than anticipated and the response rate from preservice teachers was low, data were consistent with previous survey results. Recommendations for future research were suggested.

Chapter 5

Chapter 5 is a paper submitted for publication to a peer-reviewed journal (Meeks, Madelaine, & Kemp, under review). The findings from three questions relating to preservice teachers' knowledge of the current research regarding literacy instruction, which were included in the survey described in chapter 4, are presented. These questions had not been included in previous surveys. Quantitative and qualitative data were collected to explore Australian final-year preservice primary, and early childhood, teachers' knowledge of the early literacy components and research-based strategies for early literacy instruction. Findings suggest that preservice teachers have a notional understanding of early reading terms and concepts, but are less knowledgeable of the recommendations contained in current

research. The paper provides suggestions for future research, including an investigation of the early literacy units included in teacher preparation programs.

Chapter 6

Chapter 6 is a paper submitted for publication to a peer-reviewed journal (Meeks, Madelaine, & Stephenson, under review). Only one Australian study was found that had conducted interviews with preservice teachers, but this research was limited to preservice teachers attending one tertiary institution in Western Australia. The intent of the study reported in Chapter 6 was to verify and extend the data collected in the preservice teacher survey reported in chapter 4. Telephone interviews were conducted with eleven Australian recently graduated teachers in four Australian states. Results related to interviewees' perceptions of their preparedness and ability to teach early reading compared to their assessed knowledge and skills, and their views regarding the quality of their teacher preparation, are presented. Consistent with other studies investigating this topic, these recently graduated teachers demonstrated inadequate knowledge of phonological awareness and phonics, but considered themselves well, or somewhat, prepared to teach early reading skills, raising questions about the effectiveness of preservice preparation in the area of beginning reading.

Chapter 7

Chapter 7 is a paper submitted for publication to a peer-reviewed journal (Meeks & Stephenson, under review). The findings of the research presented in Chapters 2 to 5 of this thesis indicate that preservice teachers' knowledge and skills related to the teaching of beginning reading was not only limited, but that many preservice teachers were unaware of the gaps in their subject-specific content knowledge, specifically in relation to the alphabetic principle, phonics and phonemic awareness. In order to determine the reason for this lack of knowledge, an investigation was conducted into the organisation and content of literacy units offered to undergraduate and postgraduate students enrolled in primary and early childhood

teacher preparation programs across Australia. This was the first time such an investigation had been conducted in Australia.

Chapter 8

This concluding chapter provides a summary of the findings of the research presented in the papers that comprise this thesis. Implications for future research and practice are discussed, and the original contribution of this research is highlighted.

Summary

In this chapter the purpose of the research contained in this thesis was introduced. Literature providing a background to, and rationale for, this research was presented. A scientific approach to beginning reading was taken, and other epistemologies were noted that contribute to a contested view of early reading. An overview of the structure and content of this thesis by publication was also provided.

References

- Australian Curriculum, Assessment and Reporting Authority (ACARA). (2015). *Curriculum for English F-6*. Sydney, NSW: Author. Retrieved from http://docs.acara.edu.au/resources/English_-_Sequence_of_content.pdf.
- Australian Curriculum, Assessment and Reporting Authority (ACARA). (2017). *NAPLAN achievement in reading, writing, language conventions and numeracy: National report for 2017*. Sydney, NSW: ACARA. Retrieved from http://www.nap.edu.au/docs/default-source/default-document-library/naplan-national-report-2017_final_04dec2017.pdf?sfvrsn=0.
- Board of Studies, Teaching and Educational Standards NSW. (2014). *Literacy learning in the early years*. Sydney, NSW: Author. Retrieved from <https://educationstandards.nsw.edu.au/wps/wcm/connect/ba6185b4-59d9-4488-914c-4f65da54a828/LiteracyLearningReportAccess.pdf?MOD=AJPERES&CVID=>.
- Bostock, L. & Boon, H. (2012). Pre-Service teachers' literacy self-efficacy and literacy competence. *Australian and International Journal of Rural Education*, 22, 19-37.
- Fielding-Barnsley, R. (2010). Australian preservice teachers' knowledge of phonemic awareness and phonics in the process of learning to read. *Australian Journal of Learning Difficulties*, 15, 99-110. doi: 10.1080/19404150903524606.
- Ingvarson, L., Schwille, J., Tatto, M. T., Rowley, G., Peck, R., & Senk, S. (2013). *An analysis of teacher education context, structure, and quality-assurance arrangements in TEDS-M countries*. Amsterdam, the Netherlands: International Association for the Evaluation of Educational Achievement (IEA). Retrieved from <https://files.eric.ed.gov/fulltext/ED545244.pdf>.

- Joshi, R. M., Binks, E., Hougen, M., Dahlgren, M. E., Ocker-Dean, E., & Smith, D. L. (2009). Why elementary teachers might be inadequately prepared to teach reading. *Journal of Learning Disabilities, 42*, 392-402. doi: 10.1177/0022219409338736.
- Mahar, N. E., & Richdale, A. L. (2008). Primary teachers' linguistic knowledge and perceptions of early literacy instruction. *Australian Journal of Learning Difficulties, 13*, 17-37. doi: 10.1080/19404150802093703.
- Martinussen, R., Ferrari, J., Aitken, M., & Willows, D. (2015). Pre-service teachers' knowledge of phonemic awareness: Relationship to perceived knowledge, self-efficacy beliefs, and exposure to a multimedia-enhanced lecture. *Annals of Dyslexia, 65*, 142-158. doi: 10.1007/s11881-015-0104-0.
- Mather, N., Bos, C., & Babur, N. (2001). Perceptions and knowledge of preservice and inservice teachers about early literacy instruction. *Journal of Learning Disabilities, 34*, 472-482. doi: 10.1177/002221940103400508.
- Meehan, R. & Hammond, L. (2006). Walking the talk: Western Australian teachers' beliefs about early reading and spelling instruction and their knowledge of metalinguistics. *Australian Journal of Learning Disabilities, 11*, 17-24. doi: 10.1080/19404150609546804.
- Meeks, L., & Kemp, C. (2017). How well prepared are Australian preservice teachers to teach early reading skills? *Australian Journal of Teacher Education, 42*(11), 1-17. doi: 10.14221/ajte.2017v42n11.1.
- Meeks, L., Stephenson, J., Kemp, C., & Madelaine, A. (2017). How well prepared are pre-service teachers to teach early reading? A systematic review of the literature. *Australian Journal of Learning Difficulties*. doi: /10.1080/19404158.2017.1287103.

- Meeks, L., Kemp, C., & Stephenson, J. (2014). Standards in literacy and numeracy: Contributing factors. *Australian Journal of Teacher Education*, 39(7). doi: 10.14221/ajte.2014v39n7.3.
- Mishra, P. & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108, 1017–1054. doi: 10.1111/j.1467-9620.2006.00684.x.
- Moats, L. C. (1994). The missing foundation in teacher education: Knowledge of the structure of spoken and written language. *Annals of Dyslexia*, 44, 81-102.
- National Institute of Child Health and Human Development (NICHD). (2000). Report of the National Reading Panel: Teaching children to read: Reports of the subgroups (00-4754). Washington, DC: US Government Printing Office.
- Organization for Economic Co-operation and Development (OECD). (2016). *PISA 2015: Results in focus*. Retrieved from <https://www.oecd.org/pisa/pisa-2015-results-in-focus.pdf>.
- Roberts-Hull, K., Jensen, B., & Cooper, S. (2015). *A new approach: Reforming teacher education*. Melbourne, VIC: Learning First.
- Rose, J. (2006). *Independent review of the teaching of early reading: Final report*. Nottingham, UK: Department for Education and Skills.
- Rosenshine, B. V. (1995). Advances in Research on Instruction. *The Journal of Educational Research*, 88, 262-69. doi: 10.2307/27541984.
- Rowe, K. (2006). Effective teaching practices for students with and without learning difficulties: Issues and implications surrounding key findings and recommendations from the National Inquiry into the Teaching of Literacy. *Australasian Journal of Learning Difficulties*, 11, 99-115. doi: 10.1080/1940415069546813.
- Rowe, K. (2005). *Teaching reading: Report and recommendations*. Canberra: Australian

- Government, Department of Education, Science and Training.
- Shulman, L. S. (1987). Knowledge and Teaching: Foundations of the New Reform. *Harvard Educational Review*. doi: 10.17763/haer.57.1.j463w79r56455411.
- Teacher Education Ministerial Advisory Group (TEMAG). (2014). *Action now: Classroom ready teachers*. Canberra, ACT: Australian Government, Department of Education and Training. Retrieved from https://docs.education.gov.au/system/files/doc/other/action_now_classroom_ready_teachers_print.pdf.
- Tetley, D., & Jones, C. (2014). Preservice teachers' knowledge of language concepts: Relationships to field experiences. *Australian Journal of Learning Difficulties*, 1-16. doi: 10.1080/19404158.2014.891530.
- Thomson, S., De Bortoli, E., & Underwood, C. (2017). *PISA 2015: Reporting Australia's results*. Melbourne, Vic: Australian Council for Educational Research (ACER). Retrieved from <https://research.acer.edu.au/cgi/viewcontent.cgi?article=1023&context=ozpisa>.
- Thomson, S., Hillman, K., Schmid, M., Rodrigues, S., & Fullarton, J. (2017). *Reporting Australia's results: PIRLS 2016*. Melbourne Vic: Australian Council for Educational Research (ACER). Retrieved from <https://research.acer.edu.au/cgi/viewcontent.cgi?article=1000&context=pirls>.
- Tunmer, W. E., & Chapman, J. W. (2012). The simple view of reading redux: Vocabulary knowledge and the independent components hypothesis. *Journal of Learning Disabilities*, 45, 453-466. doi: 10.1177/0022219411432685.
- Washburn, E. K., Joshi, R. M., & Binks-Cantrell, E. S. (2011). Teacher knowledge of basic language concepts and dyslexia. *Dyslexia*, 17, 165-183. doi: 10.1002/dys.426

Wood, T. W. (2017). *Does the What Works Clearinghouse really work: Investigations into issues of policy, practice, and transparency*. Retrieved from <https://www.nifdi.org/docman/research/white-papers/1431-does-the-what-works-clearinghouse-really-work-investigations-into-issues-of-policy-practice-and-transparency/file>.

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CHAPTER 2: STANDARDS IN LITERACY AND NUMERACY: CONTRIBUTING FACTORS

Chapter Overview

This chapter is a discussion paper, published in the *Australian Journal of Teacher Education* (Meeks, Kemp, & Stephenson, 2014). Using results from international and national assessments of literacy and numeracy across a range of age groups, in combination with current research literature, this paper explores a number of potential contributing factors to student achievement in literacy and numeracy. It is suggested that government policy makers and course coordinators in tertiary institutions need to work together in order to address a number of issues affecting student achievement. These issues include the development of selection processes for choosing the best candidates to undertake teacher training, and the provision of teacher preparation courses that include content and pedagogies based on findings from the scientific research related to literacy and numeracy. An examination of preservice teachers' content and pedagogical knowledge to teach early literacy, and their perceptions of preparedness and ability to implement beginning reading instruction, would provide a starting point for such a collaboration.

2014

Standards in Literacy and Numeracy: Contributing Factors

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Recommended Citation

Meeks, L., Kemp, C., & Stephenson, J. (2014). Standards in Literacy and Numeracy: Contributing Factors. *Australian Journal of Teacher Education*, 39(7).

<http://dx.doi.org/10.14221/ajte.2014v39n7.3>

This Journal Article is posted at Research Online.

<http://ro.ecu.edu.au/ajte/vol39/iss7/7>

Standards in Literacy and Numeracy: Contributing Factors

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Abstract: The establishment of international testing regimes such as the Progress in International Reading Literacy Study (PIRLS), the Trends in International Mathematics and Science Study (TIMSS), and the Programme for International Student Assessment (PISA) has provided one way for individual countries to monitor the effectiveness of their educational systems. In addition, student achievement may be compared with that of students from other participating countries. Studying the educational organisation of those countries and economies in which high-ranking results in international testing have been produced, including the roles played by teachers, students, and systems, provides valuable information for use in countries where there is a desire for improved student performance. In combination with the research literature, the main findings from such an investigation suggest that it is teachers who make the difference, and that it is the responsibility of governments and teacher training institutions to select and prepare teachers accordingly.

It has become increasingly clear over the last decade that education systems in a number of countries are failing to provide a learning environment that leads to success for many of their students (Auguste, Kihn, & Miller, 2010; Department of Education, Science and Training, 1997; Greenberg, McKee, & Walsh, 2013; Office for Standards in Education (Ofsted), 2011, 2012; Rowe, 2005; Thomson, 2008). In several member countries of the Organisation for Economic Cooperation and Development (OECD) low standards of literacy and numeracy are viewed as a serious problem in economic terms, especially when poor adult literacy requires a large financial commitment from governments, as well as from industry councils, in their drive to assist adults to attain basic literacy and numeracy skills (Baer, Kutner, & Sabatini, 2009; Industry Skills Council, 2011; Kingston, 2009; OECD, 2010b; Toppo, 2009). A recent survey of adult skills conducted as part of the Programme for the International Assessment of Adult Competencies (PIACC) (OECD, 2013c), found a close relationship between countries' performance in the Programme for International Student Assessment (PISA) and the literacy and numeracy proficiency of their students later in life. The result of having poor skills in literacy and numeracy often had a major impact on access to more desirable, and well-paid, employment opportunities (OECD, 2013b).

Every year, since 2008, Australian students in years 3, 5, 7, and 9 have taken part in the National Assessment Program – Literacy and Numeracy (NAPLAN). The results are used for a number of purposes: to give parents an indication of their child's school progress; to assist teachers and schools to provide programs that meet the needs of their students; and to enable school systems to evaluate and improve the services that they offer (Australian Curriculum, Assessment and Reporting Authority, 2011). Australian students also take part in international assessments of literacy and numeracy including the Progress in International Reading Literacy Study (PIRLS), through which the literacy skills of students in Grade 4 are assessed, and the Trends in International Mathematics and Science Study (TIMSS), through

which a range of mathematics skills of students in Grades 4 and 8 is assessed. They also participate in the Programme for International Student Assessment (PISA), which is used to evaluate education systems worldwide by assessing the competencies of 15-year olds in three key areas: reading, mathematics and science (OECD, 2009c). Based on the results of these assessment programs, reports in the Australian media continue to refer to falling standards in literacy and numeracy and the effect that this decline has on the students themselves, as well as the effect on adults in the workforce who are unable to develop their careers because of their low literacy skills (Bailey, 2010; Bonnor, 2010; Ferrari, 2012; Laurie, 2012; Maher, 2011; "Reading Decline", 2010; Rosenberg, 2012).

Regardless of whether or not the perception that standards in literacy and numeracy are falling can be substantiated, the results of national and international assessment regimes indicate that many students are entering secondary education without the skills needed to negotiate the curriculum at this level, and that students are still completing their secondary education without reaching functional levels of literacy and numeracy (Thomson, De Bortoli, Nicholas, Hillman, & Buckley, 2010). If standards are falling we need to consider the extent of this decline by comparing Australian data with international rates of student achievement. The extent and range of data resulting from the PISA process offers policy makers and educators, in any given country, the opportunity to compare the success or otherwise of their own policy decision-making against those of the world's most effective education systems. "Indeed, in a global economy, success is no longer measured against national standards alone, but against the best-performing and most rapidly improving education systems" (OECD, 2013a, p. 3).

The purpose of the current paper is to explore the factors that potentially influence the literacy and numeracy levels of students within the Australian context, with specific attention given to those students whose performance is weak. Levels of literacy and numeracy among young Australians will be examined and compared to two major English-speaking countries (the United Kingdom and the United States) and four of the top performing countries in PISA, PIRLS and TIMSS (Korea, Hong Kong (China), Shanghai (China), and Finland). The relationship between student achievement and factors such as teachers, students, and education systems, will be investigated by comparing countries and economies participating in international assessment programs. The implications for government intervention, following the identification of factors that (a) have the potential to influence standards, and (b) are amenable to change, will be briefly discussed.

International Assessments of Student Achievement

Concerns about a decline in literacy and numeracy standards are not new. In order to determine factors and interventions that may contribute to improved student achievement, it is important to consider student performance in an international context. The Progress in International Reading Literacy Study (PIRLS) assessment program, through which the literacy performance of students in Grade 4 is assessed, commenced in 2001 and has occurred subsequently every five years. Grade 4 is seen as an important point in children's development as readers, as it is at this age that most students make the transition from learning to read to reading to learn. PIRLS defines two major purposes of reading (literary experience and the acquisition of information), and four processes of comprehension (retrieval of explicit information; making inferences; integration of ideas and information; and evaluation of content) for Grade 4 students (Thomson et al., 2012). Of the forty-five countries that participated in PIRLS 2011, the four top-performing countries were Hong Kong (China), the Russian Federation, Finland, and Singapore. Australia ranked 27th in the

list of 45 countries, and was also ranked lower than all other English-speaking countries (Thomson et al., 2012). See Table 1 for details relating to average scale scores and rankings for the 2011 PIRLS (Korea and Shanghai (China) did not participate). As Australian students participated in PIRLS for the first time in 2011, it is not possible to use data from PIRLS to investigate any change in literacy performance of Australian primary school students.

Country	PIRLS Score 2011 (Rank out of 45 countries)
Finland	568 (3)
Hong Kong, China	571 (1)
United States	556 (6)
England	552 (11)
Australia	527 (27)
PIRLS Scale Centrepont	500

Note. Data source – Mullis, Martin, Foy, & Drucker, 2012.

Table 1: PIRLS 2011 Grade 4 average scale scores and rankings for reading

The data provided in Table 2 show the total percentage of students reaching each PIRLS 2011 benchmark score. Although the scores for Australian students were generally at the international median, it is a concern that 7% of Australian students scored less than the low benchmark score, with the performance of 2% of students being too low for estimation.

The Trends in International Mathematics and Science Study (TIMSS) has been conducted at Grade 4 and Grade 8 on a four-year cycle since 1995. Australian students have participated in TIMSS since its inception. The TIMSS Grade 4 mathematics assessment covers: number (whole numbers, fractions and decimals, number sentences, patterns and relationships); geometric shapes and measurement (lines and angles, two- and three-dimensional shapes, location and movement); and data display (reading and interpreting, organising and representing) (Mullis, 2012). Of the 50 countries that participated in TIMSS in 2011, the four top-performing countries were Korea, Hong Kong (China) Singapore, and Chinese Taipei. Australia ranked 19th in the list of 50 countries, lower than all other English-speaking countries apart from New Zealand. Across the years for which data are available, there does not appear to be a substantial change in either mean scores or ranking for Australian students. See Table 3 for details relating to TIMSS mean student scores and rankings.

The data provided in Table 4 show the total percentage of Grade 4 students reaching benchmark scores for mathematics in 2011. The scores for Australian students were above the international median at Advanced, High, and Intermediate benchmark levels. However, 10% of Australian students scored less than the Low benchmark, with 3% of these students having results too low for estimation (Mullis et al., 2012). This compares with 0%, 1%, 2%, and 4% respectively for Korea, Hong Kong (China), Finland and the United States for scores less than the Low benchmark, with only two of those countries (Finland and the United States) having any students (1% for each country) too low for estimation.

Country		Advanced 625	High 550	Intermediate 475	Low 400	Less than Low	Too Low for Estimation
	Ranking	Percentage of Students at Benchmark and Above			Percentage of Students at Benchmark		
Finland	4	18	63	92	99	1	0
Hong Kong, China	6	18	67	93	99	1	0
United States	7	17	56	86	98	2	1
England	5	18	54	83	95	5	2
Australia	17	10	42	76	93	7	2
International Median		8	44	80	95	5	

Note. Data source – Mullis et al., 2012.

Table 2: PIRLS 2011 Performance at the international benchmarks of reading achievement 4th Grade (N=45)

Country	TIMSS Score 2011 (Rank out of 50)	TIMSS 2007 (Rank out of 36)	TIMSS 2003 (Rank out of 25)	TIMSS 1995 (Rank out of 26)
Finland	545 (8)			
Hong Kong, China	602 (3)	607 (1)	575 (2)	587 (4)
Korea	605 (2)			611 (2)
United States	541 (11)	529 (11)	518 (12)	545 (7)
England	542 (9)	541 (7)	531 (10)	513 (10)
Australia	516 (19)	516 (14)	499 (16)	546 (11)

Note. Data sources –Mullis et al., 1998; Mullis, Martin, Gonzalez, & Chrostowski, 2004; Mullis et al., 2008; Mullis et al., 2012. Blank cells indicate that no data are available for that year. TIMSS was not carried out for Grade 4 students in 1999.

Table 3: TIMSS 2011 Grade 4 average scale scores and rankings for mathematics

Country		Advanced 625	High 550	Intermediate 475	Low 400	Less than Low	Too Low for Estimation
	Ranking	Percentage of Students at Benchmark and Above			Percentage of Students at Benchmark		
Finland	10	12	49	85	98	2	1
Hong Kong, China	3	37	80	96	99	1	0
Korea	2	39	80	97	100	0	0
United States	9	13	47	81	96	4	1
England	7	18	49	78	93	7	2
Australia	13	10	35	70	90	10	3
International Median		4	28	69	90		

Note. Data source – Mullis et al., 2012.

Table 4: TIMSS 2011 Performance at the international benchmarks of mathematics achievement 4th Grade (N=50)

Topics included in the TIMSS Grade 8 mathematics assessment were number (whole numbers, fractions and decimals, integers, patterns and ratio, proportion, and percentage); algebra (patterns, algebraic expressions, equations/formulas and functions); geometry (geometric shapes, geometric measurement, location and movement); and data and chance (data organisation and representation, data interpretation, chance) (Mullis, 2008). Forty-two countries participated in TIMSS (Grade 8) in 2011. The three top-performing countries were Korea, Singapore, and Chinese Taipei, with Australia ranking 12th. Australia's average student scores and ranking do not appear to have changed substantially over the assessment periods. TIMSS data for Grade 8 students are presented in Table 5.

Country	TIMSS Score 2011 (Rank out of 42)	TIMSS 2007 (Rank out of 49)	TIMSS 2003 (Rank out of 45)	TIMSS 1999 (Rank out of 38)	TIMSS 1995 (Rank out of 25*)
Finland	514 (8)			520 (14)	
Hong Kong, China	586 (4)	572 (4)	586 (3)	582 (4)	588 (4)
Korea	613 (1)	597 (2)	589 (2)	587 (2)	607 (2)
United States	509 (9)	508 (9)	504 (15)	502 (19)	500 (18)
England	507 (10)	513 (7)	498	496 (20)	506 (16)
Australia	505 (12)	496 (14)	505 (14)	525 (13)	

Note. Data sources – Mullis et al., 1998; Mullis et al., 2000; Mullis et al., 2004; Mullis et al., 2008; Mullis et al., 2012; http://nces.ed.gov/timss/results99_1.asp. Blank cells indicate that no data are available for that year. *41 countries participated in TIMSS 1995 at 8th Grade. 16 countries did not satisfy guidelines. Ranking is based on the 25 countries that did satisfy guidelines.

Table 5: TIMSS 2011 Grade 8 average student scores and rankings for mathematics

The data in Table 6 show the total percentage of Grade 8 students reaching benchmark scores for mathematics. The scores for Australian students were well above the international median at Advanced, High, and Intermediate benchmark levels. However, 11% of Australian students scored less than the Low benchmark, with 4% of these students having results too low for estimation (Mullis et al., 2012). This compares with 1%, 3%, 4% and 8% respectively for students scoring less than the Low benchmark in Korea, Hong Kong (China), Finland and the United States, with 1%, 2%, 2%, and 3% respectively of student scores too low to be estimated.

The Programme for International Student Assessment (PISA), was officially launched in 1997, with the first survey taking place in 2000 and then subsequently every three years. One function of the surveys is to determine to what extent students at the end of compulsory education can apply their knowledge to real-life situations and are equipped for full participation in society (OECD, 2009b). By measuring the content knowledge and skills of 15-year-old students in the areas of reading, mathematics, and science literacy, the tests also provide an insight into the “quality, equity and efficiency of school systems” throughout the world (OECD, 2011a, p. 84).

Country		Advanced 625	High 550	Intermediate 475	Low 400	Less than Low	Too Low for Estimation
	Ranking	Percentage of Students at Benchmark and Above			Percentage of Students at Benchmark		
Finland	18	4	30	73	96	4	2
Hong Kong, China	4	34	71	89	97	3	2
Korea	3	47	77	93	99	1	1
United States	12	7	30	68	92	8	3
England	19	8	32	65	88	12	4
Australia	8	9	29	63	89	11	4
International Median		3	17	46	75		

Note. Data source – Mullis et al., 2012.

Table 6: TIMSS 2011 Performance at the international benchmarks of mathematics achievement 8th Grade (*N*=42)

PISA is designed to assess content knowledge and the ability to analyse problems, seek solutions, and communicate ideas. Students are required to answer a background questionnaire, providing information about themselves and their homes. School principals are asked to complete a questionnaire about their schools. One of the important responsibilities of PISA is to ensure that the instruments used in all participating countries to assess their students' reading, mathematical and scientific literacy provide reliable and fully comparable information. To this end, a set of specific descriptive scales has been developed for each subject area. The scales are divided into six levels that represent groups of PISA test questions, beginning at Level 1 and increasing in difficulty with each level. For example, a reading unit task may require students to answer five questions. Each question is given a level of difficulty indicated by a score point (OECD, 2009d, p. 17-18, 58-59). In each test subject, the score for each participating country is the average of all student scores in that country. The average score among OECD countries is 500 points (*SD*,100) with about two-thirds of students scoring between 400 and 600 points (OECD, 2011a). PISA gives a score for each subject area and countries are ranked by their mean score in each area (OECD, 2009b).

Table 7 provides the mean student scores and 2012, 2009, 2006, 2003, and 2000 rankings for reading and mathematics for the countries selected for comparison in this paper. Although Finland has generally been considered the top performer in PISA since its inception in 2000, closely followed by Korea, Shanghai, China has been ranked highest for both reading and mathematics since it joined the program in 2009.

An inspection of Australia's PISA ranking over time would suggest that, although the reading and mathematics scores for Australian students are both still above the OECD average (see Tab. 7), the performance of Australian students is declining. However, the number of countries participating in PISA has risen by 33 countries between 2000 and 2012 and this factor may partly account for Australia's lower rankings. As with the PIRLS and TIMSS data, therefore, it is likely to be more useful to identify the percentage of Australian students falling into the bottom performance levels (Levels 1 and 2) in reading and mathematics (see Tab. 8 and 9).

	2012		2009		2006		2003		2000	
	Number of Participating Countries and Economies									
	65		65		57		41		31	
	Reading	Maths	Reading	Maths	Reading	Maths	Reading	Maths	Reading	Maths
Finland	524 (6)	519 (12)	536 (3)	541 (2)	547 (2)	548 (2)	543 (1)	544 (2)	546 (1)	536 (4)
Hong Kong China	570 (2)	561 (3)	533 (4)	555 (4)	536 (3)	547 (3)	510 (10)	550 (1)		
Korea	536 (5)	554 (5)	539 (2)	546 (3)	556 (1)	547 (4)	534 (2)	542 (3)	525 (6)	547 (2)
Shanghai China	570 (1)	613 (1)	556 (1)	600 (1)						
United States	498 (24)	481 (36)	500 (24)	487 (32)		474 (35)	495 (18)	483 (28)	504 (15)	493 (19)
United Kingdom	499 (23)	494 (26)	494 (27)	492 (21)	495 (17)	495 (24)			523 (7)	529 (8)
Australia	512 (13)	504 (19)	515 (9)	514 (15)	513 (7)	520 (13)	525 (4)	524 (11)	528 (4)	533 (5)
OECD Average	496	494	493	496	492		494	500	500	500

Note. Data sources – Micklewright & Schnepf, 2006, OECD 2004, 2007, 2010a, 2011a, 2013a, Thomson et al., 2010. Blank cells indicate that no data are available for that year. Rankings are based on the mean scores of students on the PISA reading and mathematics assessments. Rankings are in parenthesis. The PIRLS and TIMSS programs provide data for England, the PISA program provides data for the United Kingdom.

Table 7: Mean Student Scores and PISA Rankings for Reading and Mathematics

	2012	2009	2006	2003	2000
Level 6	1.9	2.1	0	0	0
Level 5	9.8	10.7	10.6	14.6	17.6
Level 4	23.3	24.1	24.9	26.9	25.3
Level 3	29.1	28.5	30.1	28.4	25.7
Level 2	21.6	20.4	21	18.3	19
Level 1 or below	14.2	14.3	13.4	11.8	12.4
Total below Level 3	35.8	34.7	34.4	30.1	31.4

Note. Data sources – OECD 2001; 2003b; 2004; 2007; 2010d; 2013a.

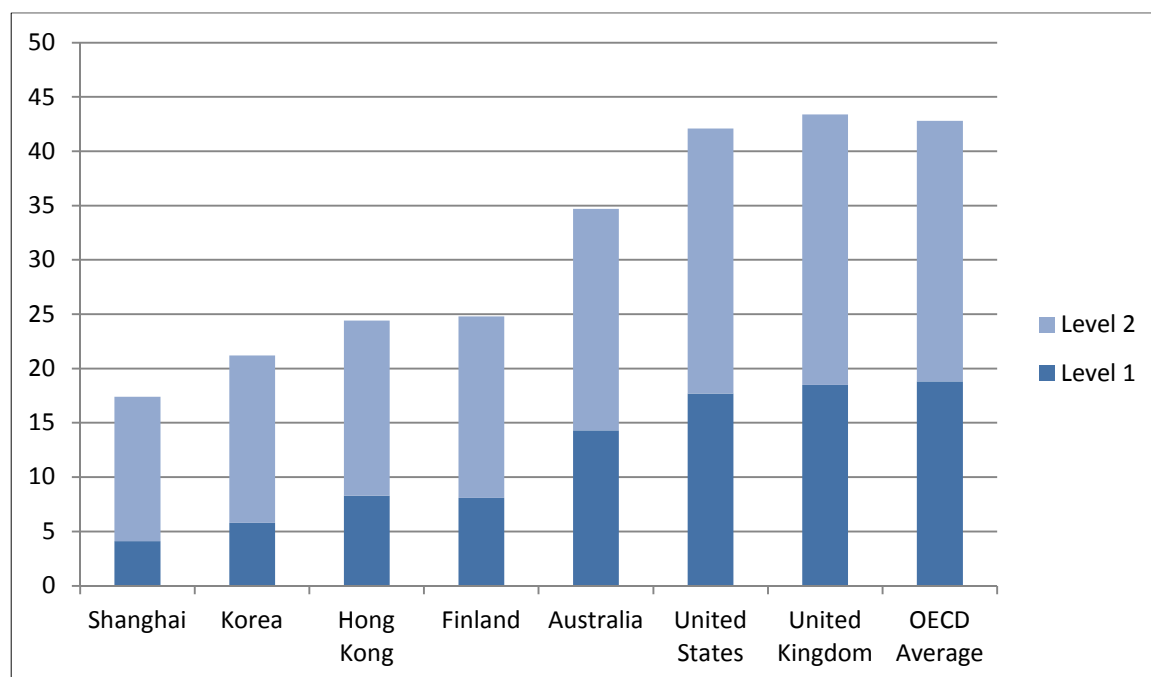
Table 8: Percentage of Australian Students at Each Proficiency Level in PISA Reading Assessments 2000-2012

	2012	2009	2006	2003
Level 6	4.3	4.5	4.3	5.8
Level 5	10.5	11.9	12.1	14
Level 4	19	21.7	23.2	23.3
Level 3	24.6	25.8	26.9	24
Level 2	21.9	20.3	20.5	18.6
Level 1 or below	19.6	15.9	13	14.3
Total below Level 3	41.5	36.2	33.5	32.9

Note. Data sources – OECD 2003b; 2004; 2007; 2010d; 2013a.

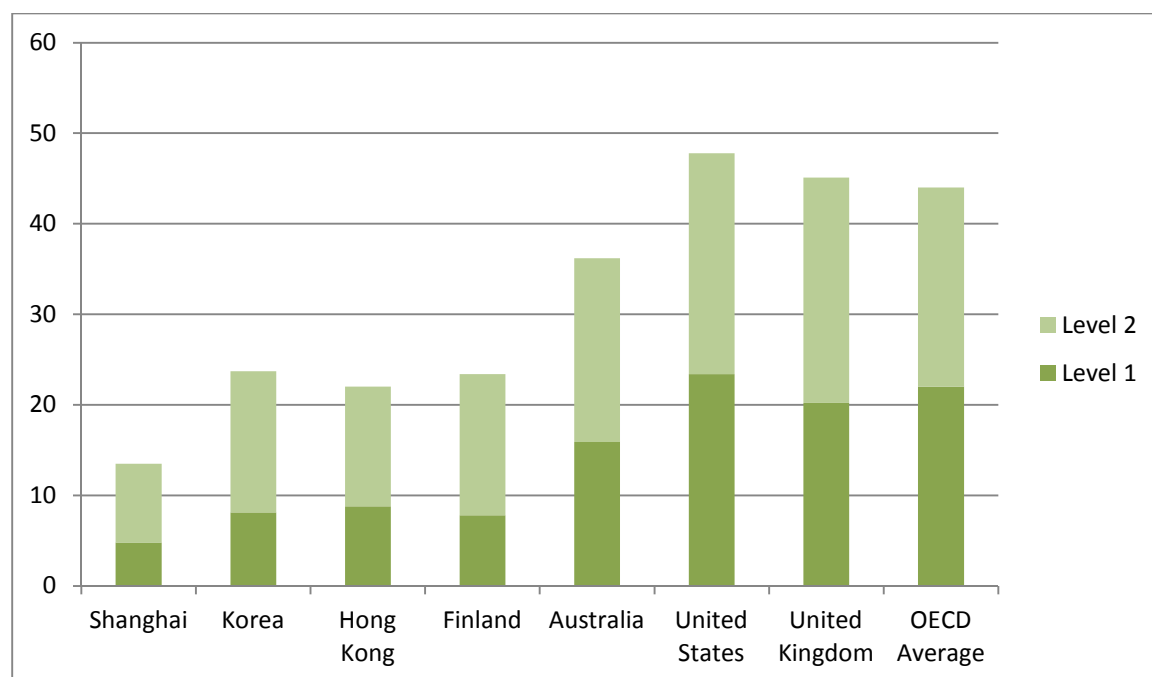
Table 9: Percentage of Australian Students at Each Proficiency Level in PISA Mathematics Assessments 2003-2012

In the PISA studies, reading literacy is defined as being able to understand, use, and reflect on written texts, and mathematical literacy is concerned with an individual's capacity to identify and understand the role that mathematics plays in the world (OECD, 2009b). For both domains, Level 2 is considered a minimum standard of proficiency, at which students begin to demonstrate the skills that will enable them to participate effectively and productively in life (OECD, 2009c). Using the 2009 data (Figs. 1 and 2) it is possible to compare the proportion of students demonstrating minimal competency in reading and mathematics across the seven PISA participating countries included in this paper. Although all countries compare favourably with the OECD average, it is quite clear that there is a wide range in the percentage of students operating at a minimum, and below minimum, level. Nearly 45% of students in the United States and the United Kingdom score in the lowest levels (1 and 2); approximately 35% of Australian students score at this level; whilst less than 25% of students in Finland, Hong Kong (China), Korea, and Shanghai perform at levels 1 and 2. A comparison of lower performing students across the countries of interest for 2012 (see Figs. 3 and 4) tells a similar story.



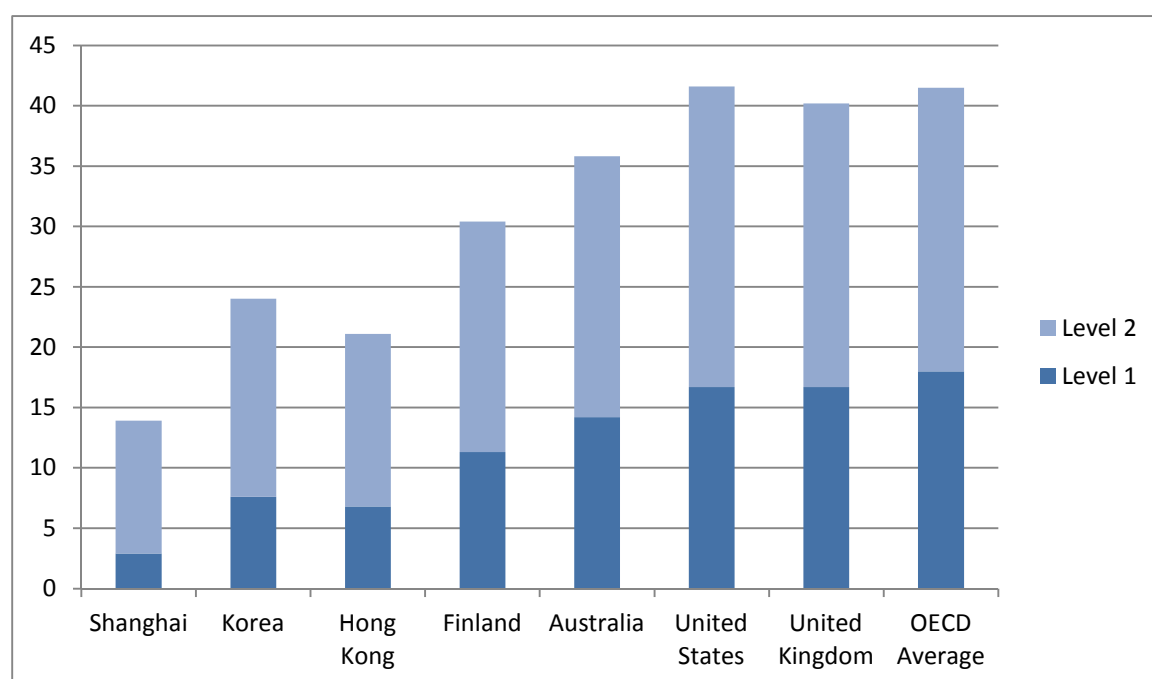
Note. Data sources – OECD 2010b.

Figure 1: Percentage of Students at Lowest Proficiency Levels 1 and 2 in PISA Reading Assessment 2009



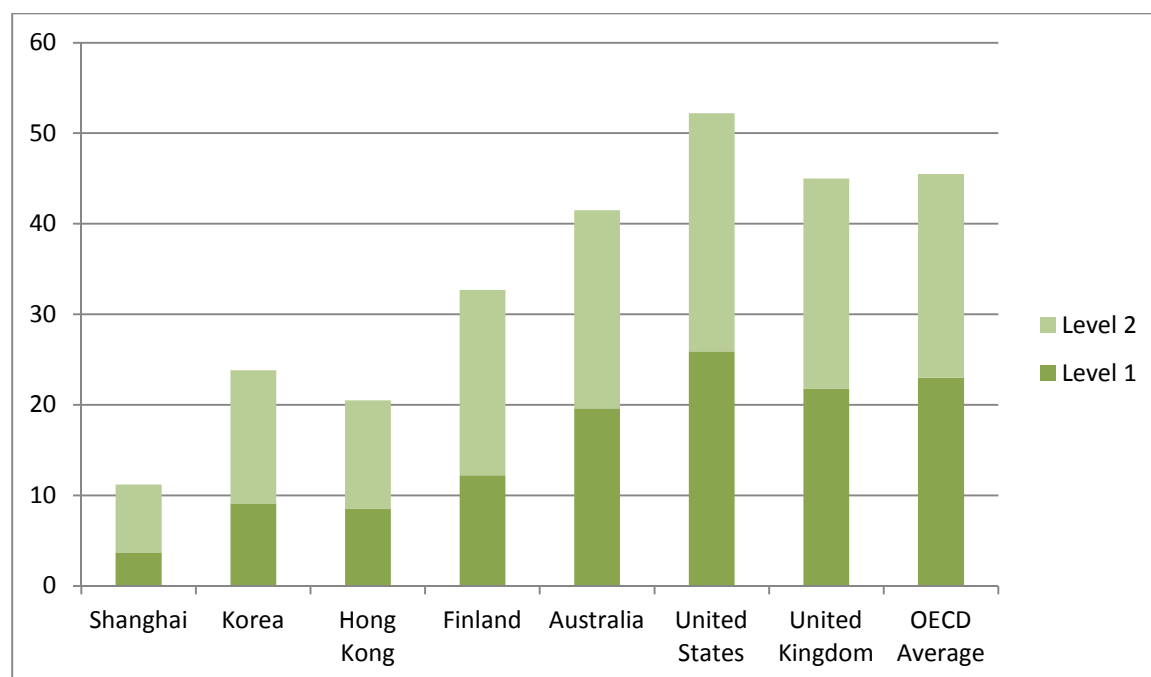
Note. Data sources – OECD 2010b.

Figure 2: Percentage of Students at Lowest Proficiency Levels 1 and 2 in PISA Mathematics Assessment 2009



Note. Data sources – OECD 2013a.

Figure 3: Percentage of Students at Lowest Proficiency Levels 1 and 2 in PISA Reading Assessment 2012



Note. Data sources – OECD 2013a.

Figure 4: Percentage of Students at Lowest Proficiency Levels 1 and 2 in PISA Mathematics Assessment 2012

It should be noted here that PISA Level 3 is identified in *Australia's Measurement Framework for Schooling* (ACARA, 2012, p. 5) as the proficient standard for reading, mathematics and science. Proficient standards represent a "challenging but reasonable expectation of student achievement at a year level with students needing to demonstrate more than elementary skills expected at that year level" (ACARA, 2012, p. 5). The data contained in Tables 8 and 9 indicate that more than 30% of Australian students do not reach the proficient standards for reading and mathematics as designated by ACARA, and that this percentage is increasing over time.

In order to determine the factors that contribute to the comparatively larger percentage of Australian students included at the minimal or low performing levels in PISA, PIRLS, and TIMSS, consideration should be given to those factors that potentially influence student literacy and numeracy achievement.

Potential Influences on Student Achievement

Over the last two decades a range of factors that may contribute to student academic success has been researched. These factors may be grouped into three general categories: national educational systems, teacher quality, and student attributes (including the home environment). On a national level, financial investment in education (including teacher salaries) and school organisation (including educational leadership, curricula, allocated instructional time, class size, and assessment programs) have been investigated (Biddle & Berliner, 2002; Hattie, 2009; OECD, 2012). Research topics concerning teacher quality include the selection of undergraduates for teaching programs, the quality and content of pre-service and in-service education courses, teaching approaches, and the provision of induction and mentoring programs (Darling-Hammond, 2000; Hattie, 2009; Ingersoll & Stronge, 2011; Langdon, 2011; Leigh & Ryan, 2008; Rowe, 2003; Stronge, Ward, & Grant, 2011).

Investigations into the impact of student dispositions and home environment on student achievement include prior academic success, motivation, and physical influences, as well as socio-economic status, parental involvement, parental background and education, and out of school coaching (CIEB, n.d.d.; Hattie, 2009; OECD, 2011b; OECD, 2012).

National Educational System Factors

Investment in Education

The national monetary investment in education of any country may be compared in two ways: the annual expenditure per school student and the percentage of a nation's Gross Domestic Product (GDP) spent on various levels of education. It would appear that two of the top performing countries in PISA, PIRLS and TIMSS (Finland and Korea) spend less per capita on education than Australia and the United States (See Tab. 10). Also, when comparing the percentage of GDP spent on schooling, Finland allocates the least amount and Hong Kong (China) allocates the most; this would suggest that, although a minimum investment might be required, student achievement is not necessarily dependent on financial investment.

	Percentage of GDP (Spent on Primary and Lower Secondary Institutions, 2009)	Annual Expenditure per Primary Student, 2009 □	Annual Expenditure per Secondary Student, 2009 □	Percentage of Students Achieving Levels 1 and 2 Reading Assessment, 2009
Finland	2.5	7,368	8,947	24.8
Hong Kong, China	3.5 □			24.4
Korea	3.1	6,658	9,399	21.2
Shanghai, China				17.4
United States	3.2	11,109	12,550	42.1
United Kingdom	3.0	9,088	10,013	43.4
Australia	3.3	8,328	10,137	34.7
OECD Average	2.6	7,719	9,312	42.8

Note. Data sources – OECD 2001, 2009c, 2010d, 2011a, 2012; <http://www.inca.org.uk>; <http://www.eacea.ec.europa.eu/education>; <http://www.education.gov.uk>. Blank cells indicate that no data are available for that year. □ Equivalent USD converted using PPPs.
□ <http://www.edb.gov.hk/en/about-edb/publications-stat/figures/gov-expenditure.html> 2006/7

Table 10: System Factors: Cost of Schooling and Percentage of Students Achieving Levels 1 and 2 in the 2009 PISA Reading Assessment

Teacher salary

A comparison of the 2005 salaries of physicians, engineers, accountants, nurses, and teachers in Finland, Hong Kong (China), Korea, Shanghai (China), the United States, the United Kingdom, and Australia showed that, generally, physicians and engineers are best paid, nurses earn the least, and teacher salaries fit in the middle of the range

(www.worldsalaries.org). When comparing teacher salaries across these same countries, high student achievement does not appear to be related to high teacher salaries: in 2005 beginning teachers in the United States earned the highest salary whereas beginning teachers in Korea were paid the lowest salary.

Curriculum

A national curriculum is provided in Finland, Korea, Shanghai (China), Hong Kong (China), and the United Kingdom (OECD, 2010c). In the United States, most states follow a common core curriculum; however, a national curriculum is not provided (OECD, 2010c). The Australian Curriculum Assessment and Reporting Authority (ACARA) recently developed a National Australian Curriculum for implementation in 2013 (<http://www.australiancurriculum.edu.au/>). Independence in the application of national curriculums is varied: in Finland, the government allows teachers, schools, and municipalities the freedom to determine the content of teaching programs and the manner in which programs will be taught (OECD, 2010c); school superintendents in Korea have the autonomy to add content and standards to address the needs of their schools (CIEB, n.d.c; www.english.mest.go.kr); the United Kingdom government gives schools and teachers choice in the application of the national curriculum; and in Australia the extent of school autonomy is varied across States and Territories, as well as across State, Catholic, and independent systems (Australian Productivity Commission, 2012). As the provision of a national curriculum and the amount of autonomy that teachers and schools enjoy in the implementation process vary across all systems considered in this paper, it is not possible to determine whether either factor is associated with student achievement.

Assessment programs

National assessment programs generally take two forms: (a) a monitoring system that tracks student progress at regular intervals; and (b) an end-of-compulsory-schooling assessment, which is often used to determine entry into tertiary study and/or employment. Formative national assessments are conducted in Korea (OECD, 2011a), Shanghai, Hong Kong, the United States, the United Kingdom, and Australia (OECD, 2010c), and on a sample of students in Finland (OECD, 2010c). End of secondary schooling examinations are held in Finland, Shanghai, Korea, Hong Kong, the United States, the United Kingdom, and Australia. Does a national assessment program influence student achievement? All of the countries included for discussion in this paper have both formative and summative national assessment programs. A comparison of the number of students in PISA Bands 1 and 2 for reading literacy and mathematics literacy and those in the Low benchmark and below categories for PIRLS and TIMSS for each country provides no evidence that the use of national assessments influences student achievement.

Minimum academic requirements for teachers

Across the countries included for discussion, the range of minimum academic requirements for entry into teaching is wide. All teachers in Finland must hold a master's degree. Teachers in Korea, the United States and the United Kingdom must hold a bachelor's degree and either a graduate diploma in education, or a master's degree. In Australia, teachers must have either a bachelor's degree in education, a bachelor's degree and a

postgraduate qualification in education, or a master's degree. In Hong Kong (China), primary teachers should hold an associate degree, and in Shanghai (China), primary school teachers are required to have a diploma (Center of International Educational Benchmarking, n.d.b., n.d.d., n.d.e., n.d.f.; OECD, 2011c; pearsonfoundation.org/oecd/china.html; www.education.gov.uk/publications). It appears, therefore, that level of minimum academic requirement for employment in the teaching profession does not make a critical contribution to student achievement.

Compulsory instructional time prior to the PISA assessments

Countries usually have statutory or regulatory requirements regarding hours of instruction. These are most often stipulated as the minimum number of hours of instruction a school must offer (OECD, 2008). The number of hours of instruction is generally divided into two categories: (a) total intended instruction time (which includes both compulsory and non-compulsory curriculum content); and (b) total compulsory instruction time (the estimated number of hours during which students are taught both the compulsory core curriculum and flexible parts of the compulsory curriculum) (OECD, 2011c). Between the ages of 7 and 15, Finnish students will have received 6323 hours of compulsory instruction, Korean students will have received 6930 hours and Australian students will have received 8889 hours (see Tab. 9) (OECD, 2012). A comparison of the percentage of students with PISA reading scores below level 2 (see Fig. 1) shows that students in Finland received the least number of compulsory instructional hours between the ages of 7 and 15, commenced formal school at age 6, and had an average total of 7% of students below Level 2 in the reading literacy scales. In Australia, students received the greatest number of compulsory instructional hours between the ages of 7 and 15, commenced formal schooling a year earlier than Finnish students, at age 5, and had 14.3% of students below Level 2 in the reading literacy scales (See Tab. 11). Whilst it would appear that fewer instructional hours are related to better student results, the data do not provide information regarding the number of hours of literacy instruction included in this total, nor the effectiveness of the instruction. There is no evidence, therefore, to indicate that the number of compulsory instructional hours accounts for variations in student achievement.

	Age range at which over 90% of the population are enrolled	Ages 7-8	Ages 9-11	Ages 12-14	Age 15	Total Ages 7-15
Finland	6-18	1216	1920	2331	856	6323
Korea	6-17	1224	2109	2577	1020	6930
England	4-16	1786	2697	2775	950	8208
Australia	5-16	1964	2952	2991	982	8889
OECD	4-16	1584	2463	2697	920	7628
Average						

Note. Data source – OECD 2012, p.435. Data is not provided for average number of hours per year of total compulsory instruction time before the age of 7 for any of the countries included in this table.

Table 11: Age Range at which over 90% of the Population are Enrolled and Total Compulsory Instruction Time between the Ages of 7-8, 9-11, 12-14 and 15 years

Class size

A recurrent theme in the literature has been the effect of class size on student achievement, suggesting that smaller class sizes lead to continued improvement over time in student performance (Biddle & Berliner, 2002; Mosteller, 1995; Nye, Hedges, & Konstanopoulos, 1999). Recent research has suggested that smaller class sizes make a small contribution to increased student achievement, but that the financial investment could be better used elsewhere (Altinok & Kingdon, 2012; Chingos, 2012; Department for Education [UK] n.d.; Galton & Pell, 2012; Hanushek, 2000; Hattie, 2005; Konstantopoulos, 2011; Stanford, 2011). The average lower secondary class sizes for five of the seven countries compared in this paper range from 19.6 to 35.1 students, with average student-teacher ratios ranging from 9.9:1 to 20.5:1. Comparing class size with the PISA ranking for reading literacy, across countries of interest in 2009, would indicate that there is not a strong relationship between these variables (see Tabs. 12 and 13). It should also be noted that Korea, which was one of the top ranking countries for TIMSS (ranked 1 for Grade 8 and 2 for Grade 4 in 2011), had the largest average class size across the countries included for both primary and lower secondary in 2010.

	Finland	Korea	United States	United Kingdom	Australia	OECD Average
Average Class Size	19.4	27.5	20	24.4	23.7	21.2
Student-Teacher Ratio	14	21.1	14.5	19.8	15.7	15.9
2009 Reading Rank	3	2	24	27	9	

Note. Data source – OECD 2011c, 2012.

Table 12: Average Primary School Class Size, Student-Teacher Ratio (2010) and 2009 PISA Reading Rank

	Finland	Korea	United States	United Kingdom	Australia	OECD Average
Average Class Size	20.3	34.7	23.2	19.4	23.7	23.4
Student-Teacher Ratio	9.8	19.7	14	17.1		15.9
2009 Reading Rank	3	2	24	27	9	

Note. Data source – OECD 2011c, 2012. Blank cells indicate that no data are available for that year.

Table 13: Average Lower Secondary School Class Size, Student-Teacher Ratio (2010) and 2009 PISA Reading Rank

Teacher Factors

Research has consistently linked teacher quality to student achievement (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2009; Darling-Hammond, 2000; Hayes, Noonan, & Heldsinger, 2010; McColskey et al., 2005; Rockoff, 2003; Rowe, 2003; Rubie-Davies, Hattie,

& Hamilton, 2006; Stronge et al., 2008; Stronge et al., 2011). Measures of teacher quality have included subject-matter knowledge, evidence-based pedagogical skills (Ingvarson & Rowe, 2007), teacher preparation, and qualifications (Darling-Hammond, 2000). Factors that have the potential to influence teacher quality include the ability of the students entering teacher preparation programs and teacher status. These factors are interrelated in that the status of the teaching profession is likely to influence the choice of teaching as a career and the quality of the teaching force is likely to affect the status of teaching as a profession. The quality of teacher preparation programs might also have an impact on the quality of classroom teaching, as might support for beginning teachers, ongoing professional development, and the retention of more able teachers.

Choice of undergraduates for teaching programs

It could be argued that social status of teachers within a community could be reflected in the career choices made by school leavers. Student results in PISA have shown higher student achievement in those countries where teaching is a preferred career choice. For example, in 2010 in Finland over 6,600 applicants applied for 660 primary school teacher training places (OECD, 2010c) even though the application and selection procedures were onerous: academic performance at matriculation; a written assessment; performance in practical teaching activities; and interviews (OECD, 2003a). Similarly, in Korea, only an estimated 5% of applicants are accepted into undergraduate degrees in primary education (Center on International Education Benchmarking (CIEB), n.d.c.). Entry into undergraduate teacher training programs in Australia, on the other hand, is less selective and shows a decline in the prior education achievement of applicants since 1980 (Australian Productivity Commission, 2012; Crowley, 1998; Leigh & Ryan, 2008). The 2013 Australian Institute for Teaching and School Leadership report indicates that the majority of school leavers entering teacher training programs have an Australian Tertiary Admission Rank (ATAR) of between 61 and 80 (ATAR range 30 - 99.95) (Mackay, 2013). If all undergraduate teachers receive high quality teacher education programs, higher standards for entry should result in more competent teachers.

In 2003, Rod Paige, the U.S. Secretary of Education, stated that "teachers' general cognitive ability is the attribute studied in the literature that is most strongly correlated with effectiveness" (U.S. Department of Education, p. 2). If less able students choose to train as teachers the impact on student performance in schools may well be significant. A comparison of the percentage of students performing at Level 1 in the 2009 PISA reading and mathematics literacy assessments (see Figs. 1 and 2) and at the Low benchmark in the 2011 PIRLS and TIMSS for Finland, Korea, and Australia would appear to support this view.

Teacher Preparation

Because it is beyond the scope of this paper to provide an in-depth evaluation of teacher preparation programs across countries participating in international assessments, it is not possible to determine the contribution of initial teacher training over and above the contribution of the quality of undergraduates accepted into teacher education programs. However, as important as it is to recruit able school leavers into teacher education, the content of tertiary programs offered to teacher trainees requires some scrutiny. Although examination of the content of pre-service teacher training has increased over the last decade (Carter, H., Amrein-Beardsley, & Hansen, 2011; Coalition for Psychology in Schools and

Education, 2006; Dyson, 2005; Ingvarson et al., 2004; Kwong Lee Dow, 2003; Levine, A., 2006; Liston, Whitcomb, & Borko, 2006; Louden et al., 2004; Louden et al., 2005; Murray, Nuttall, & Mitchell, 2008; Rohl & Greaves, 2004; Wilson et al., 2001), there still appears to be a lack of consensus of what constitutes quality teacher preparation. Generally, teachers combine two sets of knowledge: subject content knowledge and the practice of teaching (pedagogy) (Boe, Shin, & Cook, 2007; Gore et al., 2007; Hassan, Khaled, & Kaabi, 2010; Ingvarson et al., 2004; Kosnick & Beck, 2008; Wilson, Floden, & Ferrini-Mundy, 2001). However, there is a growing concern that pre-service teacher education does not provide novice teachers with the skills and knowledge necessary to be effective in the classroom (Greenberg et al., 2013; Rohl & Greaves, 2004; Wilson et al., 2001). In fact, Levine (2006) recommended that educational faculties needed to be transformed from ivory towers into professional schools focused on classroom practice. Walsh (2006) claimed that "the nation's leading teacher educators ... concede that there is presently very little empirical evidence to support the methods used to prepare the nation's teachers" (p. 1). It could be argued, therefore, that potential deficiencies in teacher preparation may have resulted, in part, from a disregard for evidence-based practices in favour of "beliefs, anecdotes, testimonials and ... expert opinions" (Carter, M. and Wheldall, 2008, p. 7).

Supporting teachers once they are in the system

Retaining quality teachers, besides being a financial imperative, is thought to be critical for improving student outcomes (Council of Australian Governments [COAG], 2009; Manuel, 2003; Plunkett & Dyson, 2011). In the United States, Ingersoll and Smith (2004) estimated that up to 50% of beginning teachers leave the profession in their first five years, and in the United Kingdom 30 - 50% of teachers leave within the first three to five years (Cooper & Alvarado, 2006). By comparison, the attrition rates for Korea are estimated to be 1% per annum, in Finland 10% per annum, and in Hong Kong (China) between 3.9% and 9.3%. Attrition rates in the first five years of teaching for Australian teachers have been estimated at between 20% and 25% (CIEB, n.d.a.; Kearney, 2011; Ramsey, 2000). However, data for the last five years in the state of New South Wales suggest the attrition rate for early career teachers is about 10% (NSW Government, n.d.).

In order to reduce the exit rate of teachers from the workforce, some countries (England and Wales, France, Greece, Israel, Italy, Japan, Korea, Northern Ireland, and Switzerland) have established formal induction programs that include additional training, mentoring by an experienced teacher, and classroom observations (Sclafani, 2011). In conjunction with this early support, a few countries also provide specific professional development programs that are designed to meet individual teacher needs. A study by Rockoff (2008), however, in which the relationship between a mentoring program and teacher attrition rates was measured, found only weak effects on teacher absences and retention. A white paper produced by the Friday Institute for Educational Innovation also suggested that a single initiative, such as a mentoring program, will not affect attrition rates and recommended a set of initiatives, including a comprehensive induction program and an increase in teacher salary, as the basis for retaining teachers in the classroom (Corbell, 2009).

It should be noted that attrition is inevitable within any profession or industry, and a low level of teacher attrition does not necessarily mean that all is well. In fact, levels of attrition could be seen as positive or negative depending on which teachers are staying and which teachers are leaving. It is also important to consider the factors that may influence teacher decisions to stay, or to leave, the profession (Henry, Bastian, & Fortner, 2011;

OECD, 2005a). At this point in time, it appears that there is no evidence either way to link teacher attrition with student performance.

In-class support, induction and mentoring

Following graduation, new teachers add to their basic pre-service training in a number of ways: in-class support in the form of observations and appraisals (of the novice teacher) with feedback, school induction programs, mentoring systems, and opportunities for novice teachers to observe experienced teachers operating in the classroom (Langdon, 2011). In his meta-analysis of effects on student achievement, Hattie found that the most effective method of influencing teacher knowledge and behaviour to be through the provision of feedback to teachers about what is happening in their classrooms. Observations and feedback concerning actual classroom teaching and the use of formative evaluation of student performance were found to have positive impact on the quality of teaching (2009). In 2008, 23 countries participated in the first cycle of the OECD's Teaching and Learning International Survey (TALIS), focusing on lower secondary education teachers. In the report that followed, appraisal and feedback were seen as important forms of support for novice teachers. The study found that more than 19% of new teachers surveyed had never received appraisal and feedback on their teaching, with a range of 5% in Belgium to over 32% in Spain. Only 7.3% of Australian teachers reported having never received such support (Jensen et al., 2012).

Ingersoll and Stronge (2011) reviewed 15 studies on induction and mentoring programs for beginning teachers. Four of these studies examined the relationship between beginning teachers' participation in induction and the academic achievement of their students. These authors acknowledged that all of the studies reviewed had limitations and weaknesses of one sort or another. However, the evidence generally supported the suggestion that students taught by beginning teachers who had participated in some kind of induction program had higher scores, or gains, on academic achievement tests.

Of the countries included for comparison, the United Kingdom is the only one that provides mandatory teacher induction programs, for a specified amount of time, as well as a reduced workload in the first year of teaching. By comparison, teachers in Finland do not receive an induction program or a reduced workload (see Tab. 14).

	Induction Program		Reduced Workload in First Year
	Mandatory	Length	
Finland	Not offered		No
Korea	Mandatory	7 months	No
United States	Varies	1 to 2 years	No
United Kingdom	Mandatory	1 year	Yes
Australia	Varies	Varies	Varies

Note. Data sources – OECD, 2005b. Blank cells indicate that no data are available for that parameter.

Table 14: Beginning Teachers: Induction Programs

In Australia, the State of Victoria developed “The Seven Principles of Highly Effective Professional Learning” (Victorian Government, 2005) which provide the basis for high-quality professional learning at the school, network and region levels, and the New South Wales Institute of Teachers Act, 2004, required the provision of induction programs for all newly-appointed teachers in government schools. A later survey, *Staff in Australia's Schools 2007*, indicated that 67% of early career primary teachers stated that they had been

provided with a mentor and 64% had taken part in an orientation program. It was interesting to note that, only 29% of novice teachers received any follow-up from their teacher education institution (McKenzie et al., 2008).

A novice in any field of employment would need assistance in the early stages of a career, and beginning teachers are no exception (Correa & Wagner, 2011; Gherke, 2001; Ingersoll & Smith, 2004; Ingersoll & Strong, 2011; Langdon, 2011; Le Cornu, 2013; Pillay, Goddard, & Wilss, 2005; Rieg, Paquette, & Chen, 2007; Stansbury & Zimmerman, 2000; Wong, 2004; Zimpher & Rieger, 2001). The success, or otherwise, of such assistance, however, must depend on the ability of the individuals providing the support, the quality of the support program itself, and the ability of the novice to implement recommendations.

Continuing professional development

It is generally considered that continuing professional development (CPD) needs to be maintained throughout a teaching career. It has been suggested that a coherent framework for the provision of quality CPD should be based on two requirements: the needs of individual teachers/schools, and the ability of a system to sustain the professional development program over time (Huber, 2011). In addition, the complexity involved in determining best-practice requires the consideration of a number of variables, including the effectiveness of CPD programs and their impact in the classroom (Lydon & King, 2009); the need for different approaches, such as collaborative enquiry (Fraser et al., 2007); an emphasis on embedding knowledge in practice, including the role of coaching, mentoring, and induction programs (Bezzina, 2006; Helmer, et al., 2010); and more sophisticated methods of evaluating professional development programs (Ingvarson et al., 2004). The 2008 TALIS survey sought to determine what type of professional development teachers undertook and what they perceived their future CPD needs to be. The results indicated that many teachers required training and support in three main areas: teaching students with special learning needs, student discipline and behaviour management, and ICT teaching skills (OECD, 2009a).

PISA provides data (see Tab. 15) on the minimum amount of time that beginning teachers are required to invest in professional development. As this information does not include program method, design, or content it is not possible to comment on the effect of continuing professional development on student achievement.

Continuing Professional Development		
	Minimum Requirement per Year	PD Required for Promotion or Recertification
Finland	Varies: 1-5 days	No
Korea	None	Yes, for promotion
United States	Varies – often 30 hours in first 2-5 years	Yes
United Kingdom	None	Yes, for promotion to principal
Australia	Varies – up to 5 days	Varies

Note. Data sources – OECD, 2005b.

Table 15: Beginning Teachers: Continuing Professional Development

Student Factors

What is it that students bring to the learning environment? Researchers have investigated a number of student factors that may be linked to academic achievement. These factors may be organised into two main categories: (a) the home environment, and (b) student ability, dispositions, and academic experiences (CIEB, n.d.d.; Hattie, 2009; OECD, 2011b; OECD, 2012).

Home environment

In PISA, socioeconomic background is measured by an index of Economic, Social and Cultural Status (ESCS), which is based on student responses to a number of questions (Thomson, De Bortoli, & Buckley, 2013, p.271). The physical home environment includes socio-economic status influences (parental education, parental income, and parental occupation), family structure (single or two-parent, number of children, extended families), and cultural influences (second-language learners, cultural values and beliefs) (Hampden-Thompson, G., 2009; Hattie, 2009; Ruiz et al., 2011; Thomson et al., 2013; Yamamoto, 2010). The Australian PISA results for 2009 indicate that the higher the level of socioeconomic background, the higher student performance is in all three domains: literacy, mathematics, and science (Thomson et al., 2010). The emotional, or socio-psychological, home environment is concerned with the attitudes towards, and the involvement of parents in, education and the school setting (Evans et al., 2010; Hattie, 2009; Park, 2008). In 2009, PISA collected information concerning parental involvement in education. Findings suggest that reading to children when they are young, engaging in discussions that promote critical thinking, and setting a good example are related to academic outcomes (Borgonovi & Montt, 2012). Hattie (2009, p.297-298), also found that socioeconomic status has a role in student achievement, but, of the top 30 influences on student success, 27 factors are linked to the teacher, teaching, school and curriculum, and 3 are related to the student. Home environment and socioeconomic status are ranked 31 and 32 respectively. Furthermore, home environment and socioeconomic status are not easily changed.

Student ability, dispositions, and academic experiences

Research has shown that student ability and disposition towards learning (concentration, perseverance, motivation, self-efficacy, prior achievement, and investment in learning) is related to academic success (Freiberger, Steinmayr, & Spinath, 2012; Medford & McGeown, 2012; Yeung, 2011). A study by Hornstra et al. (2013) found that, regardless of background, motivation is positively related to school success beyond what can be explained by cognitive ability. In addition, the research of Caprara et al. (2011), suggests that self-efficacy beliefs contribute to high-school success over the effects of socioeconomic status and prior achievement.

Academic experiences (attendance at pre-school, early intervention programs, and participation in out-of-school tutorial classes) have also been associated with better academic performance (Caprara et al., 2011; Lasser & Fite, 2011; OECD, 2012). Data provided by PISA 2012 indicate that 79% of 4-year-olds are enrolled in early childhood programs across OECD countries as a whole and that this experience is associated with better school performance. Attendance at out-of-school tutorial centres, however, does not appear to

guarantee later success. Of the top ranking countries considered in this paper, an estimated 80% of students in Shanghai (China), 75% in Hong Kong (China) and 79% in Korea attend out-of-school tutoring centres (CIEB, n.d.c.; OECD, 2011b), whereas only 23.5% of Finnish students, also among the top performers, attend after-school coaching (OECD, 2011b).

Research by Hattie (2009), has also indicated that student ability, dispositions, and attitudes to learning are the main student influences on student achievement. Based on the assumption that the range of student personalities and abilities is similar across countries and that other elements of the home environment appear to have less impact on student success, student factors that might be amenable to change (e.g., motivation, perseverance, and self-efficacy) could also be influenced by quality of instruction.

Factors with the Potential to Impact Student Achievement

The comparative data provided by PISA, PIRLS, and TIMSS do not indicate a clear relationship between the following factors and the percentage of students who fall in the lower levels of student achievement: (a) investment in education, (b) teacher salary, (c) curriculum, (d) assessment programs, (e) minimum academic requirements for entry into teacher education programs, (f) compulsory instruction time, and (g) class size. What is clear from international assessment data and the available research evidence, however, is that both teachers and the students themselves make the biggest contributions towards student achievement (Darling-Hammond, 2000; Hattie, 2009; Rowe, 2003). This position was strongly argued by Hattie at the ACER National Conference in 2003. He presented data that illustrated the major influences on student success. Of the six factors proffered, two accounted for 80% of the variance in student achievement: the students themselves (50%) and their teachers (30%) (Hattie, 2003, pp.1-3).

Student achievement is highly related to teacher quality (Rowe, 2003), and teacher quality appears to be linked to (a) the academic ability of students accepted into teacher preparation programs (U.S. Department of Education, 2003) and (b) the content and quality of teacher training programs (Begeny & Martens, 2006). Although it may not be possible to compare pre-service teacher education programs across countries that participate in the international assessment programs, it is possible to consider important components that have been suggested as core requirements, such as: subject content knowledge (Ingvarson et al., 2004; Loudén et al., 2005; Schleicher, 2012), pedagogy (Ingvarson et al., 2004; Schleicher, 2012), classroom management (Hartsuyker, 2007), meeting the needs of diverse learners (Louden et al., 2005), assessment and monitoring (Hattie & Timperley, 2007; Jensen, 2010), curriculum planning (Ingvarson et al., 2004), and practicum experiences (Hudson & Hudson, 2013; Ingvarson et al., 2004; Rowe, 2005).

The issues concerning the 'teacher factor' were neatly summed up by Cooper and Alvarado, (2006) who stated that "recruiting academically successful university students into teaching, preparing them well for the challenges of teaching, and retaining them in the profession have all become key goals in helping students achieve high academic standards" (p. 5). A fundamental issue, however, is the lack of evidence on the effectiveness of different approaches to teacher education and preparation for teaching in the classroom (Hartsuyker, 2007).

Implications for Teacher Education

The future of any nation rests on the quality of its education system. In order to increase student performance and to ensure that quality teaching occurs in the classroom, tertiary institutions and governments need to ensure that the best candidates are attracted to the teaching profession. In addition, they need to provide quality teacher training programs (with evidence-based content and pedagogy) designed to match the requirements of the 21st century (Boyd et al., 2009; Hanushek, 2010; Rowe, 2003; Walsh, 2006).

Several Australian reviews of teacher performance and teacher training have been commissioned over the last 25 years with the intent of improving the quality of teacher education, but little seems to change (Adey, 1998; Australian Education Union (AEU), 2007; A.E.U., 2008; DEST, 2003; Dyson, 2005; Hartsuyker et al, 2007; Ingvarson et al, 2004; Loudon et al, 2005; Ramsey, 2000; Rowe, 2005). In 2012, the Australian Government's Productivity Report still noted a decline in literacy and numeracy standards in Australian schools, and commented on the need to raise teacher quality by improving teacher training, induction, and mentoring (Australian Productivity Commission, 2012).

In 2000, Ramsey wrote:

The debate of the past 20 years about standards and how to improve the quality of teacher education has run its course. It is time to move forward. Most teacher educators and teachers are now at the point where they are disillusioned by seemingly endless debate and a repetitive chain of reviews which, in spite of their findings and recommendations in such critical areas as funding, standards of professional practice, accreditation of initial teacher education programs and teacher licensing, fail them (p. 31).

In Australia, there have been some initiatives: The New South Wales Institute of Teachers was established in 2004 and since that time has overseen a system of accreditation and recognition of a teacher's professional capacity against professional standards. It has also provided a process for the profession to influence the quality of teacher training and continuing professional development (Schuck et al., 2011). Similar organisations operate in other States and Territories: the ACT Teacher Quality Institute, the Teacher Registration Board of the Northern Territory, the Queensland College of Teachers, the Teachers Registration Board of South Australia, the Registration Board of Tasmania, The Victoria Institute of Teaching, and the Teacher Registration Board of Western Australia. For real change to occur, however, governmental policies and procedures need to be developed that will (a) promote the selection of top students into initial teacher education, and (b) ensure the provision of comprehensive, high-quality teacher preparation programs at tertiary institutions.

Conclusion

International assessment programs, such as PIRLS, TIMSS, and PISA provide opportunities for student performance to be compared over time, both within a given country and across countries. Perceptions of declining standards in literacy and numeracy have been noted in Australia, the United Kingdom, and the United States at the same time that Finland, Korea, Hong Kong (China), and Shanghai (China) have topped international rankings in both areas. Although the results of the international assessments do not provide clear evidence of declining literacy and numeracy standards in Australia, the number of students achieving at the lowest proficiency levels is unacceptably large and compares unfavourably with the highest performing countries participating in these assessments. In order to determine factors that may impact on student achievement, it is necessary to consider the contributions made by educational systems, students, and teachers. A comparison of organisational factors in

international educational systems, such as investment in education, teacher salary, curriculum provision, assessment programs, and class size, is inconclusive. Hattie (2009) has suggested that student ability and personal attitudes and dispositions towards learning, in conjunction with the quality of teaching that occurs in the classroom, are the main factors contributing to student success. As it is not possible to control the abilities, prior experiences, and attitudes that a student brings to the learning environment, the teacher must be considered the principal contributor to student achievement. Teacher quality, then, should be the primary concern of any educational system. Policy makers and course coordinators in tertiary institutions need to work together to develop selection processes for choosing the best candidates to undertake teacher training; the provision of relevant, evidence-based, pre-service teacher training programs; followed by coherent in-school coaching, mentoring, and continued professional development.

References

- Adey, K.C. (1998). *Preparing a profession: Report of the National Standards and Guidelines for initial teacher education project*. Canberra, ACT: ACDE.
- Altinok, N., & Kingdon, G. (2012). New evidence on class size effects: A pupil fixed effects approach. *Oxford Bulletin of Economics and Statistics*, 74, 203-234.
<http://dx.doi.org/10.1111/j.1468-0084.2011.00648.x>
- Auguste, N., Kihn, P., & Miller, M. (2010). *Closing the talent gap: Attracting and retaining top-third graduates to careers in teaching*. Retrieved from <http://www.mckinsey.com>
- Australian Curriculum, Assessment and Reporting Authority (ACARA). (2011). *NAPLAN Achievement in reading, persuasive writing, language conventions and numeracy: National report for 2011*. Sydney, NSW: Author.
- Australian Curriculum, Assessment and Reporting Authority (ACARA). (2012). *Measurement framework for schooling in Australia*. Sydney, NSW: Author.
- Australian Education Union. (2007). *Beginning teacher survey 2007: Results and report*. South Bank, Vic.: Australian Education Union. Retrieved from <http://www.aeufederal.org.au/Publications/2008/Btsurvey07res.pdf>
- Australian Education Union. (2008). *New educators survey 2008: Results and report*. South Bank, Vic.: Australian Education Union. Retrieved from: <http://www.aeufederal.org.au/Publications/2009/Nesurvey08res.pdf>
- Australian Productivity Commission. (2012). *Schools workforce: Key points*. Retrieved from <http://www.pc.gov.au/projects/study/education-workforce/schools/report/kep-points>
- Baer, J., Kutner, M., & Sabatini, J. (2009). *Basic reading skills and the literacy of America's least literate adults: Results from the 2003 National Assessment of Adult Literacy (NAAL) Supplemental Studies* (NCES 2009-481). Washington, DC: U.S. Department of Education.
- Bailey, J. (2010, May 9). You wouldn't read about it. *The Age*. Retrieved from <http://www.theage.com.au>
- Begeny, J.C., & Martens, B.K. (2006). Assessing pre-service teachers' training in empirically-validated behavioral instruction practices. *School Psychology Quarterly*, 21, 262-285. <http://dx.doi.org/10.1521/scpq.2006.21.3.262>
- Bezzina, C. (2006). Views from the trenches: Beginning teachers' perceptions about their professional development. *Journal of In-service Education*, 32, 411-430.
<http://dx.doi.org/10.1080/13674580601024515>
- Biddle, B.J., & Berliner, D.C. (2002). Small class size and its effects. *Educational Leadership*, 59, 12-23.
- Boe, E.E., Shin, S., & Cook, L.H. (2007). Does teacher preparation matter for beginning teachers in either special or general education? *The Journal of Special Education*, 41, 158-170.
- Bonnor, C. (2010, December 9). Misguided schools 'market' sees us slip down the ranks. *Sydney Morning Herald*. Retrieved from <http://www.smh.com.au>
- Borgonovi, F., & Montt, G. (2012). *Parental involvement in selected PISA countries and economies*. OECD Education Working Paper number 73. Paris, France: OECD.
<http://dx.doi.org/10.1787/5k990rk0jsjj-en>
- Boyd, D.J., Grossman, P.L., Lankford, H., Loeb, S., & Wyckoff, J. (2009). Teacher preparation and student achievement. *Educational Evaluation and Policy Analysis*, 31, 416-440. <http://dx.doi.org/10.3102/0162373709353129>
- Caprara, G.V., Vecchione, M., Alessandri, G., Gerbino, M., & Barbaranelli, C. (2011). The contribution of personality traits and self-efficacy beliefs to academic achievement: A

- longitudinal study. *British Journal of Educational Psychology*, 81, 78-96.
<http://dx.doi.org/10.1348/2044-8279.002004>
- Carter, H., Amrein-Beardsley, A., & Hansen, C.C. (2011). So NOT amazing! Teach for America corps members' evaluation of the first semester of their teacher preparation program. *Teachers College Record*, 113, 861-894.
- Carter, M., & Wheldall, K. (2008). Why can't a teacher be more like a Scientist? Science, pseudoscience and the art of teaching. *Australasian Journal of Special Education*, 32, 5-21. <http://dx.doi.org/10.1080/10300110701845920>
- Center on International Education Benchmarking. (n.d.a). *Australia – teacher and principal quality*. Retrieved from <http://www.ncee.org/programs-affiliates/center-on-international-education-benchmarking/top-performing-countries/australia-overview/australia-teacher-and-principal-quality/>
- Center on International Education Benchmarking. (n.d.b). *Finland – teacher and principal quality*. Retrieved from <http://www.ncee.org/programs-affiliates/center-on-international-education-benchmarking/top-performing-countries/finland-overview/finland-teacher-and-principal-quality/>
- Center on International Education Benchmarking. (n.d.c). *Korea – teacher and principal quality*. Retrieved from <http://www.ncee.org/programs-affiliates/center-on-international-education-benchmarking/top-performing-countries/south-korea-overview/south-korea-teacher-and-principal-quality/>
- Center on International Education Benchmarking. (n.d.d). *Shanghai-China –instructional systems*. Retrieved from <http://www.ncee.org/programs-affiliates/center-on-international-education-benchmarking/top-performing-countries/shanghai-china/shanghai-china-instructional-systems/>
- Center on International Education Benchmarking. (n.d.e). *Shanghai – teacher and principal quality*. Retrieved from: <http://www.ncee.org/programs-affiliates/center-on-international-education-benchmarking/top-performing-countries/shanghai-china/shanghai-china-teacher-and-principal-quality/>
- Center on International Education Benchmarking. (n.d.f). *South Korea – instructional systems*. Retrieved from <http://www.ncee.org/programs-affiliates/center-on-international-education-benchmarking/top-performing-countries/south-korea-overview/south-korea-instructional-systems/>
- Chingos, M.M. (2012). The impact of a universal class-size reduction policy: Evidence from Florida's statewide mandate. *Economics of Education Review*, 31, 543-562.
<http://dx.doi.org/10.1016/j.econedurev.2012.03.002>
- Coalition for Psychology in Schools and Education. (2006). *Report on the teacher needs survey*. Washington, D.C.: American Psychological Association, Center for Psychology in Schools and Education. Retrieved from http://www.tne.uconn.edu/Announcements/tns_execsummary.pdf
- Cooper, J.M., & Alvarado, A. (2006). *Preparation, recruitment and retention of teachers*. Paris, France: UNESCO.
- Corbell, K.A. (2009). *Strategies that can reduce new teacher attrition in North Carolina*. North Carolina: Friday Institute for Educational Innovation, North Carolina State University. Retrieved from https://www.fi.ncsu.edu/assets/podcast_episodes/white-paper-series/strategies-that-can-reduce-new-teacher-attrition-in-north-carolina.pdf
- Correa, V.I. & Wagner, J.Y. (2011). Principals' roles in supporting the induction of special education teachers. *Journal of Special Education Leadership*, 24, 17-25.
- Council of Australian Governments (COAG). (2009). *National partnership agreement on improving teacher quality*. Retrieved from

- http://www.federalfinancialrelations.gov.au/content/national_partnership_agreements/education.aspx
- Crowley, R., (1998). *A class act: Inquiry into the status of the teaching profession*. Canberra, ACT: Senate Employment, Education and Training References Committee, Australia Parliament Senate.
- Darling-Hammond, L. (2000). Teacher quality and student achievement: a review of state policy evidence. *Education Policy Analysis Archives*, 8, 1-44.
- Department for Education (UK). (n.d.) *Class size and education in England evidence report*. (Research Report No. DFE-RR169). Retrieved from <https://www.education.gov.uk/publications/eOrderingDownload/DFE-RR169.pdf>
- Department of Education, Science and Training (DEST). (1997). *Mapping literacy achievement: results of the 1996 National School English Literacy Survey*. Retrieved from <http://www.dest.gov.au/archive/schools/literacy&numeracy/summary.htm#PerformanceinReadingMainSample>
- Department of Education, Science and Training. (2003). *Australia's teachers: Australia's future: Advancing innovation, science technology and mathematics*. Retrieved from http://www.dest.gov.au/NR/rdonlyres/14C1A4EA-F405-4443-B6BB-395B5ACED1EA/1662/Main_Report.pdf
- Dyson, M. (2005). Australian teacher education: Although reviewed to the eyeball is there evidence of significant change and where to now? *Australian Journal of Teacher Education* 30, 37-54. <http://dx.doi.org/10.14221/ajte.2005v30n1.4>
- Evans, M.D.R., Kelley, J., Sikora, J., & Treiman, D.J. (2010). Family scholarly culture and educational success: Books and schooling in 27 nations. *Research in Social Stratification and Mobility*, 28, 171-197. <http://dx.doi.org/10.1016/j.rssm.2010.01.002>
- Ferrari, J. (2012, February 17). Lessons from Asia show way forward for schools. *The Australian*. Retrieved from <http://www.theaustralian.com.au>
- Fraser, C., Kennedy, A., Reid, L., & McKinney, S. (2007). Teachers' continuing professional development: Contested concepts, understandings and models. *Journal of In-service Education*, 33, 153-169. <http://dx.doi.org/10.1080/13674580701292913>
- Freiberger, V., Steinmayr, R., & Spinath, B. (2012). Competence beliefs and perceived ability evaluations: How do they contribute to intrinsic motivation and achievement? *Learning & Individual Differences*, 22, 518-522. <http://dx.doi.org/10.1016/j.lindif.2012.02.004>
- Galton, M., & Pell, T. (2012). Longitudinal effects of class size reductions on attainment: Results from Hong Kong primary classrooms. *International Journal of Educational Research*, 53, 360-369. <http://dx.doi.org/10.1016/j.ijer.2012.05.001>
- Gherke, N. (2001). Toward a definition of mentoring. *Theory into Practice*, 27(3), 190-194. <http://dx.doi.org/10.1080/00405848809543350>
- Gore, J., Ladwig, J., Griffiths, T., & Amosa, W. (2007, November). *Data-driven guidelines for high quality teacher education*. Paper presented at the Australian Association for Research in Education conference. Retrieved from <http://publications.aare.edu.au/07pap/gor07285.pdf>
- Greenberg, J., McKee, A., & Walsh, K. (2013). *Teacher Prep Review*. National Council on Teacher Quality. Retrieved from <http://media.npr.org/assets/news/2013/teacherprep.pdf>
- Hampden-Thompson, G. (2009). Are two better than one? A comparative study of achievement gaps and family structure. *Compare: A Journal of Comparative & International Education*, 39, 513-529. <http://dx.doi.org/10.1080/03057920802366372>
- Hanushek, E.G. (2000). Evidence, politics and the class size debate. In L. Mishel, & R. Rothstein, (Eds.), *The class size debate*. (pp. 37-66). Washington, DC: Economic Policy Institute.

- Hanushek, E.A. (2010). The difference is teacher quality. In K. Weber (Ed.), *Waiting for "Superman": How we can save America's failing public schools*. NY: Public Affairs. Retrieved from <http://hanushek.stanford.edu/sites/default/files/publications/Hanushek%202010%20Superman.pdf>
- Hartsuyker, L., Sawford, R., Bartlett, K., Bird, S., Corcoran, A., Fawcett, D., . . . Markus, L. (2007). *Top of the class: Report on the inquiry into teacher education*. Canberra, ACT: Commonwealth of Australia.
- Hassan, A. A., Khaled, A., & Kaabi, A.A. (2010). Perceived teacher preparation within a college of education teaching program. *International Journal of Applied Educational Studies*, 9, 10-32.
- Hattie, J.A. (2003, October). *Teachers make a difference: what is the research evidence?* Paper presented at the ACER Conference on Building Teacher Quality: What Does the Research Tell Us? Melbourne, Vic. Retrieved from http://research.acer.edu.au/research_conference_2003/4
- Hattie, J.A. (2005). The paradox of reducing class size and improving learning outcomes. *International Journal of Educational Research*, 43, 387-425. <http://dx.doi.org/10.1016/j.ijer.2006.07.002>
- Hattie, J.A. (2009). *Visible Learning: A synthesis of over 800 meta-analyses relating to achievement*. London, UK: Routledge.
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77, 81-112. doi: 10.3102/00346530298487
- Hayes, P., Noonan, P., & Heldsinger, S. (2010) *Linking teachers' knowledge with student performance*. Crawley, W.A.: Catholic Education Office of Western Australia.
- Helmer, J., Bartlett, C., Wolgemuth, J.R., & Lea, T. (2010). Coaching (and) commitment: Linking ongoing professional development, quality teaching and student outcomes. *Professional Development in Education*, 37, 197-211. <http://dx.doi.org/10.1080/19415257.2010.533581>
- Henry, G.T., Bastian, K.C., & Fortner, C.K. (2011). Stayers and leavers: Early-career teacher effectiveness and attrition. *Educational Researcher*, 40, 271-280. <http://dx.doi.org/10.3102/0013189X11419042>
- Hornstra, L., van der Veen, I., Peetsma, T., & Volman, M. (2013). Developments in motivation and achievement during primary school: A longitudinal study on group-specific differences. *Learning & Individual Differences*, 23, 195-204. <http://dx.doi.org/10.1016/j.lindif.2012.09.004>
- Huber, S.G. (2011). The impact of professional development: a theoretical model for empirical research, evaluation, planning and conducting training and development programmes. *Professional Development in Education*, 37, 837-853. <http://dx.doi.org/10.1080/19415257.2011.616102>
- Hudson, S., & Hudson, P. (2013). Re-structuring preservice teacher education: Introducing the school-community integrated learning (SCIL) pathway. *Journal of Education and Learning*, 2, 9-19. <http://dx.doi.org/10.5539/jel.v2n1p9>
- Industry Skills Council. (2011). *No more excuses: An industry response to the language, literacy and numeracy challenge*. Retrieved from http://www.isc.org.au/pdf/NoMoreExcuses_FINAL%20single%20page.pdf
- Ingersoll, R.M., & Smith, T.M. (2004). Do teacher induction and mentoring matter? *NASSP Bulletin*, 88, 28-40. <http://dx.doi.org/10.1177/019263650408863803>
- Ingersoll, R.M., & Stronge, M. (2011). The impact of induction and mentoring programs for beginning teachers: A critical review of the research. *Review of Educational Research*, 81, 201-233. <http://dx.doi.org/10.3102/0034654311403323>

- Ingvarson, L., Beavis, A., Kleinhenz, E., & Elliott, A. (2004). *Pre-service teacher education in Australia: A mapping study of selection processes, course structure and content, and accreditation processes*. Retrieved from http://research.acer.edu.au/teacher_education/3
- Ingvarson, L., & Rowe, K., (2007). *Conceptualising and evaluating teacher quality: Substantive and methodological issues*. Retrieved from http://research.acer.edu.au/learning_processes/8
- Jensen, B. (2010). *Measuring what matters: Student progress*. Grattan Institute. Retrieved from <http://grattan.edu.au/publications/reports/post/measuring-what-matters-student-progress/>
- Jensen, B., Sandoval-Hernandez, A., Knoll, S., & Gonzalez, E.J. (2012). *The experience of new teachers: Results from TALIS 2008*. Paris: OECD Publishing. Retrieved from <http://www.oecd.org/edu/school/49846877.pdf>
- Kearney, S. P. (2011, January). *The importance of induction programmes for beginning teachers in independent Catholic secondary schools in New South Wales*. Paper presented at the 9th Annual Hawaii International Conference on Education. Honolulu, Hawaii. Retrieved from http://researchonline.nd.edu.au/edu_conference/39/
- Kingston, P. (2009, January 29). 'Dismal picture' of adult literacy in UK. *The Guardian*. Retrieved from <http://www.guardian.co.uk>
- Konstantopoulos, S. (2011). How consistent are class size effects? *Evaluation Review*, 35, 71-92. <http://dx.doi.org/10.1177/0193841X11399847>
- Kosnik, C., & Beck, C. (2008). We taught them about literacy but what did they learn? The impact of a preservice teacher education program on the practices of beginning teachers. *Studying Teacher Education*, 4, 115-128.
- Kwong Lee Dow, (2003). *Australia's teachers: Advancing innovation, science, technology and mathematics*. Canberra, ACT: Committee for the Review of Teaching and Teacher Education.
- Langdon, F. (2011). Shifting perception and practice: New Zealand beginning teacher induction and mentoring as a pathway to expertise. *Professional Development in Education*, 37, 241-258. <http://dx.doi.org/10.1080/19415257.2010.509658>
- Lasser, J., & Fite, K. (2011). Universal preschool's promise: Success in early childhood and beyond. *Early Childhood Education Journal*, 39, 169-173. doi: 10.1007/s10643-011-0499-x
- Laurie, V. (2012, April 14). Back to school. *The Australian*. Retrieved from <http://www.theaustralian.com.au>
- 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>
- Leigh, A., & Ryan, C. (2008). *How has school productivity changed in Australia?* Canberra, ACT: Australian Department of Education Science and Training.
- Levine, A. (2006). *Educating school teachers*. The Education Schools Report. Retrieved from http://www.edschools.org/pdf/Educating_Teachers_Report.pdf
- Liston, D., Whitcomb, J., & Borko, H. (2006). Too little or too much: Teacher preparation and the first years of teaching. *Journal of Teacher Education*, 57, 351-358. <http://dx.doi.org/10.1177/0022487106291976>
- Louden, W., Rohl, M., Barratt-Pugh, C., Brown, T.C., Elderfield, J., House, H., . . . Rowe, K. (2004). In teachers' hands: Effective literacy teaching practices in the early years of schooling. *Australian Journal of Language and Literacy*, 28, 175-255.
- Louden, W., Rohl, M., Gore, J., McIntosh, A., Greaves, D., Wright, R., Siemon, D., & House, H. (2005). *Prepared to teach: An investigation into the preparation of teachers to*

- teach literacy and numeracy*. Canberra, ACT: Australian Department of Education, Science and Training.
- Lydon, S., & King, C. (2009). Can a single, short continuing professional development workshop cause change in the classroom? *Professional Development in Education*, 35, 63-82. <http://dx.doi.org/10.1080/13674580802264746>
- Mackay, A. (2013). *Initial teacher education: Data report*. Carlton South: Australian Institute for Teaching and School Leadership. Retrieved from http://www.aitsl.edu.au/verve/_resources/2013_AITSL_ITE_Data_Report.pdf
- Maher, S. (2011, April 4). Millions behind on basic skills, threatens Australia's international competitiveness. *The Australian*. Retrieved from <http://www.theaustralian.com.au>
- Manuel, J. (2003, January). Have we 'mistaken the symptom for the problem'?*: Exploring issues of early career teacher retention and attrition. *Curriculum Leadership: an Electronic Journal for Leaders in Education*. Retrieved from http://www.curriculum.edu.au/leader/have_we_mistaken_the_symptom_for_the_problem*_ex,4622.html?issueID=9691
- McColskey, W., Stronge, J.H., Ward, T.J., Tucker, P.D., Howard, B., Lewis, K., & Hindman, J.L. (2005). *A comparison of National Board certified teachers and non-National Board certified teachers: Is there a difference in teacher effectiveness and student achievement?* National Board for Professional Teaching Standards. Retrieved from <http://www.education-consumers.com/articles/W-M%20NBPTS%20certified%20report.pdf>
- McKenzie, P., Kos, J., Walker, M., & Hong, J. (2008). *Staff in Australia's schools 2007*. Camberwell, Vic: Australian Council for Educational Research.
- Medford, E. & McGeown, S.P. (2012). The influence of personality characteristics on children's intrinsic reading motivation. *Learning and Individual Differences*, 22, 786-791. <http://dx.doi.org/10.1016/j.lindif.2012.06.002>
- Micklewright, J., & Schnepf, S.V. (2006). *Response bias in England in PISA 2000 and 2003*. Research Report No. 771. Southampton Statistical Sciences Research Institute (S3RI), Southampton, UK: University of Southampton.
- Mosteller, F. (1995). The Tennessee study of class size in the early school grades. *Critical Issues for Children and Youths* 5, 113-127.
- Mullis, I.V.S., Martin, M.O., Beaton, A. E., Gonzalez, E.J., Kelly, D.L., & Smith, T.A. (1998). *Mathematics achievement in the primary school years: IEA's third international mathematics and science study (TIMSS)*. Chestnut Hill, MA: Boston College. Retrieved from <http://timssandpirls.bc.edu/timss1995i/TIMSSPDF/P1HiLite.pdf>
- Mullis, I.V.S., Martin, M.O., Foy, P., & Drucker, K.T. (2012). *The PIRLS 2011 international results in reading*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College. Retrieved from <http://timssandpirls.bc.edu/pirls2011/international-results-pirls.html>
- Mullis, I.V.S., Martin, M.O., & Foy, P. (with Olson, J.F., Preuschoff, C., Erberber, E., Arora, A., & Galia, J.). (2008). *TIMSS 2007 International mathematics report: Findings from IEA's trends in international mathematics and science study at the fourth and eighth grades*. Chestnut Hill, MA: Boston College. Retrieved from http://timss.bc.edu/timss2007/PDF/T07_M_IR_Chapter1.pdf 16/05/13
- Mullis, I.V.S., Martin, M.O., Gonzalez, E.J., & Chrostowski, S. J. (2004). *TIMSS 2003 international mathematics report findings from IEA's trends in international mathematics and science study at the fourth and eighth grades*. Chestnut Hill, MA: Boston College. Retrieved from http://timss.bc.edu/PDF/t03_download/T03_M_Chap1.pdf

- Mullis, I. V.S., Martin, M.O., Gonzalez, E.J., Gregory, K. D., Garden, R.A., O'Connor, K.M., Chrostowski, S.J., & Smith, T.A. (2000). *TIMSS 1999 international mathematics report findings from IEA's repeat of the third international mathematics and science study at the eighth grade*. Retrieved from http://timss.bc.edu/timss1999i/pdf/T99i_Math_1.pdf
- Murray, S., Nuttall, J., & Mitchell, J. (2008). Research into initial teacher education in Australia: A survey of the literature 1995-2004. *Teaching and Teacher Education*, 24, 225-239. <http://dx.doi.org/10.1016/j.tate.2007.01.013>
- NSW Government. (n.d.) *Submission to the Productivity Commission's Education and Training: schools*. Retrieved from www.pc.gov.au/__data/assets/pdf_file/0016/111652/sub014.pdf
- Nye, B., Hedges, L.V., & Konstantopoulos, S. (1999). The long-term effects of small classes: A five-year follow-up of the Tennessee class size experiment. *Educational Evaluation & Policy Analysis*, 21, 127-142. <http://dx.doi.org/10.3102/01623737021002127>
- OECD. (2001). *Knowledge and skills for life: First results from the OECD Programme for International Student Assessment (PISA) 2000*. Paris, France. Retrieved from: <http://www.oecd.org/edu/school/programmeforinternationalstudentassessmentpisa/33691596.pdf>
- OECD. (2003a). *Attracting, developing and retaining effective teachers: country background report for Finland*. Paris, France. Retrieved from <http://www.oecd.org/dataoecd/43/15/5328720.pdf>
- OECD. (2003b). *Learning for tomorrow's world: First results from PISA 2003*. Paris, France. Retrieved from <http://www.oecd.org/education/school/programmeforinternationalstudentassessmentpisa/34002216.pdf>
- OECD. (2004). *Education at a glance 2004*. Retrieved from <http://www.oecd.org/edu/highereducationandadultlearning/educationataglance2004-home.htm>
- OECD. (2005a). *Teachers matter: Attracting, developing and retaining effective teachers*. Paris, France.
- OECD. (2005b). *Attracting, developing and retaining effective teachers - final report: Teachers matter*. Retrieved from <http://www.oecd.org/edu/preschoolandschool/35004115.pdf>
- OECD. (2007). *The Programme for International Student Assessment (PISA)*. Paris, France. Retrieved from <http://www.oecd.org/pisa/pisaproducts/pisa2006/39725224.pdf>
- OECD. (2008). *Education at a glance 2008: Highlights. OECD indicators*. Paris, France: Author. Retrieved from <http://www.ict-21.ch/com-ict/IMG/pdf/EducationataGlanceOECDIndicators20089608041E.pdf>
- OECD. (2009a). *Creating effective teaching and learning environments: First results from TALIS*. Paris, France. Retrieved from <http://www.oecd.org/edu/school/43023606.pdf>
- OECD. (2009b). *PISA 2009 assessment framework: Key competencies in reading, mathematics and science*. Paris, France. Retrieved from <http://www.oecd.org/pisa/pisaproducts/44455820.pdf>
- OECD. (2009c). *PISA 2009 results: What students know and can do*. Paris, France. Retrieved from <http://www.oecd.org/pisa/pisaproducts/48852548.pdf>
- OECD. (2009d). *PISA Take the test: Sample questions from the OECD's PISA assessments*. Paris, France. Retrieved from <http://www.oecd.org/pisa/pisaproducts/pisa2006/pisatakethetestsamplequestionsfromoecdspisaassessments.htm>
- OECD. (2010a). *PISA 2009 at a glance*. Paris, France. Retrieved from <http://dx.doi.org/10.1787/9789264095298-en>

- OECD. (2010b). *The high cost of low educational performance: The long-run economic impact of improving PISA outcomes*. Paris, France. Retrieved from <http://www.oecd.org/dataoecd/11/28/44417824.pdf>
- OECD. (2010c). *Strong performers and successful reformers in education: lessons from PISA for the United States*. Paris, France. Retrieved from http://www.oecd.org/document/13/0,3746,en_2649_35845621_46538637_1_1_1_1,00.html
- OECD. (2010d). *PISA 2009 Results: What students know and can do – student performance in reading, mathematics and science*. Paris, France. Retrieved from <http://www.oecd.org/pisa/pisaproducts/48852548.pdf>
- OECD. (2011a). *Education at a glance 2011: Highlights. OECD indicators*. Paris, France: Author. Retrieved from <http://dx.doi.org/10.1787/eag-2011-en>
- OECD. (2011b). *Quality time for students: Learning in and out of school*. Paris, France. Retrieved from <http://dx.doi.org/10.1787/9789264087057-en>
- OECD. (2011c). *The learning environment and organisation of schools*. Paris, France. Retrieved from <http://www.oecd.org/education/highereducationandadultlearning/48631122.pdf>
- OECD. (2012). *Education at a glance 2012: OECD indicators*. Paris, France. <http://dx.doi.org/10.1787/eag-2012-en>
- OECD. (2013a). *PISA 2012 results: What students know and can do. Student performance in mathematics, reading and science. Vol. 1*. Paris, France. Retrieved from <http://www.oecd.org/pisa/keyfindings/pisa-2012-results-volume-I.pdf>
- OECD. (2013b). *PISA in focus n34*. Paris, France. Retrieved from [http://www.oecd.org/pisa/pisaproducts/pisainfocus/pisa-in-focus-n34-\(eng\)-FINAL.pdf](http://www.oecd.org/pisa/pisaproducts/pisainfocus/pisa-in-focus-n34-(eng)-FINAL.pdf)
- OECD. (2013c). *Programme for the International Assessment of Adult Competencies (PIACC)*. Paris, France. Retrieved from <http://www.oecd.org/site/piaac/surveyofadultskills.htm>
- Office for Standards in Education (OFSTED). (2011). *Tackling the challenge of low numeracy skills in young people and adults: Report summary*. Manchester, U.K.
- Office for Standards in Education (OFSTED). (2012). *Moving English forward*. Manchester, U.K.
- Park, H. (2008). Home literacy environments and children's reading performance: A comparative study of 25 countries. *Educational Research and Evaluation: An International Journal of Theory and Practice*, 14, 489-505. <http://dx.doi.org/10.1080/13803610802576734>
- Pillay, H., Goddard, R., & Wilss, L. (2005). Well-being, burnout and competence: Implications for teachers. *Australian Journal of Teacher Education*, 30(2), 22-33. <http://dx.doi.org/10.14221/ajte.2005v30n2.3>
- 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. *The Australian Journal of Teacher Education*, 36, 32-47. <http://dx.doi.org/10.14221/ajte.2011v36n1.3>
- Ramsey, G. (2000). *Quality matters revitalising teaching: Critical times, critical choices. Report of the Review of Teacher Education*. Sydney, NSW: New South Wales Government.
- Reading decline triggers alarm. (2012, April 23). *Sydney Morning Herald*. Retrieved from <http://www.smh.com.au>
- Rieg, S.A., Paquette, K.R., & Chen, Y. (2007). Coping with stress: An investigation of novice teachers' stressors in the elementary classroom. *Education*, 128(2), 211-256.

- Rockoff, J.E. (2003). *The impact of individual teachers on student achievement: evidence from panel data*. Cambridge, MA: Harvard University: Kennedy School of Government.
- Rockoff, J. (2008). *Does mentoring reduce turnover and improve skills of new employees? Evidence from teachers in New York City*. Retrieved from http://www.immagic.com/eLibrary/ARCHIVES/GENERAL/NBER_US/N080312R.pdf
- Rohl, M., & Greaves, D. (2004). How are pre-service teachers in Australia being prepared for teaching literacy and numeracy to a diverse range of students? *Australian Journal of Learning Disabilities*, 10, 3-8. <http://dx.doi.org/10.1080/19404150509546780>
- Rosenberg, J. (2012, January 24). NAPLAN results show top students' standards drop. *Sydney Morning Herald*. Retrieved from <http://www.smh.com.au>
- Rowe, K. (2003). *The importance of teacher quality as a key determinant of students' experiences and outcomes of schooling*. Retrieved from http://research.acer.edu.au/research_conference_2003/3
- Rowe, K.J. (2005). *Teaching reading. National inquiry into the teaching of literacy*. Canberra, ACT: Australian Government. Department of Education, Science and Training.
- Rubie-Davies, C., Hattie, J., & Hamilton, R. (2006). Expecting the best for students: teacher expectations and academic outcomes. *British Journal of Educational Psychology*, 76, 429-444. <http://dx.doi.org/10.1348/000709905X53589>
- Ruiz, G.R., Arrebola, I.A., & Gomez, M.M.O. (2011). Influence of family factors in school drop-out: A study within a multicultural context. *Electronic Journal of Research in Educational Psychology*, 9, 1377-1402.
- Schuck, S., Aubusson, P., Buchanan, J., Prescott, A., Louviere, J., & Burke, P. (2011). *Retaining Effective Early Career Teachers in NSW Schools*. Lindfield, NSW: UTS: Centre for Research in Learning and Change and Centre for Study of Choice. Retrieved from http://www.rilc.uts.edu.au/pdfs/Beginning_Teacher_Retention_Report.pdf
- Schleicher, A. (2012), (Ed.), *Preparing Teachers and Developing School Leaders for the 21st Century: Lessons from around the world*. OECD Publishing. doi: 10.1787/9789264xxxxxx-en
- Sclafani, S.K. (2011, March). *Recruiting, training and supporting a 21st century teaching profession*. Paper presented at the International Summit on the Teaching Profession. Retrieved from <http://hub.mspnet.org/index.cfm/22821>
- Stanford, P. (2011, August 28). Achieving excellence with a class of 71. *The Telegraph*. Retrieved from <http://www.telegraph.co.uk>
- Stansbury, K. & Zimmerman, J. (2000). *Designing support for beginning teachers*. WestEd, 1-15.
- Stronge, J.H., Ward, T.J., & Grant, L.W. (2011). What makes teachers good? A cross-case analysis of the connection between teacher effectiveness and student achievement. *Journal of Teacher Education*, 62, 339-355. <http://dx.doi.org/10.1177/0022487111404241>
- Stronge, J.H., Ward, T.J., Tucker, P.D., & Hindman, J.L. (2008). What is the relationship between teacher quality and student achievement? An exploratory study. *Journal of Personnel Evaluation in Education*, 20, 165-184. <http://dx.doi.org/10.1007/s11092-008-9053-z>
- Thomson, S. (2008, February). International league: Australia's standing in international tests. *Teacher*. Retrieved from http://works.bepress.com/sue_thomson/36
- Thomson, S., De Bortoli, L., Nicholas, M., Hillman, K., & Buckley, S. (2010). *Challenges for Australian education: Results from PISA 2009*. Camberwell, Victoria: Australian Council for Educational Research. Retrieved from <http://www.acer.edu.au/documents/PISA-Report-2009.pdf>

- Thomson, S., De Bortoli, L., & Buckley, S. (2013). *PISA in brief: Highlights from the full Australian report: PISA 2012: How Australia measures up*. Camberwell, Victoria: Australian Council for Educational Research. Retrieved from <http://www.acer.edu.au/documents/PISA-2012-In-Brief.pdf>
- Thomson, S., Hillman, K., Wernert, N., Schmid, M., Buckley, S., & Munene, A. (2012). *Highlights from TIMSS & PIRLS 2011 from Australia's perspective*. Camberwell, Victoria: Australian Council for Educational Research. Retrieved from http://www.acer.edu.au/documents/TIMSS-PIRLS_Australian-Highlights.pdf
- Toppo, G. (2009). Literacy study: 1 in 7 US adults are unable to read this story. *USA Today*. Retrieved from http://www.usatoday.com/news/education/2009-01-08-adult-literacy_N.htm
- U.S. Department of Education, Office of Policy Planning and Innovation. (2003). *Meeting the highly qualified teachers challenge: The Secretary's second annual report on teacher quality*. Washington, DC.
- Victorian Government. (2005). *The Seven Principles of Highly Effective Professional Learning*. Melbourne, Vic: Department of Education and Training.
- Walsh, K. (2006). *Teacher education: Coming up empty*. Retrieved from www.nctg.org/p/publications/docs/Teacher_Education_fwd_20080316034429.pdf
- Wilson, S.M., Floden, R.E., & Ferrini-Mundy. (2001). *Teacher preparation research: Current knowledge, gaps, and recommendations. An executive summary of the research report*. Washington, DC: Center for the Study of Teaching and Policy, University of Washington.
- Wong, H.K. (2004). Induction programs that keep new teachers teaching and improving. *NASSP Bulletin*, 88(638), 41-58. <http://dx.doi.org/10.1177/019263650408863804>
- Yamamoto, Y. & Holloway, S.D. (2010). Parental expectations and children's academic performance in sociocultural context. *Educational Psychology Review*, 22, 189-214. doi: 10.1007/s10648-010-9121-z
- Yeung, A.S. (2011). Student self-concept and effort: Gender and grade differences. *Educational Psychology*, 31, 749-772. <http://dx.doi.org/10.1080/01443410.2011.608487>
- Zimpher, N.L., & Rieger, S.R. (2001). Mentoring teachers: What are the issues? *Theory into Practice*, 27(3), 175-182. <http://dx.doi.org/10.1080/00405848809543348>

CHAPTER 3: HOW WELL PREPARED ARE PRE-SERVICE TEACHERS TO TEACH EARLY READING? A SYSTEMATIC REVIEW OF THE LITERATURE.

Chapter Overview

This chapter is a systematic literature review, published in the *Australian Journal of Learning Difficulties* (Meeks, Stephenson, Kemp, & Madelaine, 2017)¹. It is the only systematic literature review of the preparation of preservice teachers to teach early reading skills. The aims of the review were to examine the knowledge, preparedness, and preferred teaching approach of early childhood and primary preservice teachers for the teaching of early literacy, which in turn would provide information concerning the extent to which science-based early literacy content is included in teacher preparation programs. As data specific to the preparation of preservice teachers in Australia are limited, the contents of this chapter provided a basis for the survey research described in Chapter 4.

¹ A summary of this paper was published in *Nomanis*, Issue 3, August 2017. Retrieved from <https://www.nomanis.com.au/single-post/2017/08/22/Volume-1-Issue-3-August-2017>

Due to copyright restrictions pages 68-98 have been omitted from this thesis. Please refer to the following citation for details of the article contained in these pages.

Linda Meeks, Jennifer Stephenson, Coral Kemp & Alison Madelaine (2016) How well prepared are pre-service teachers to teach early reading? A systematic review of the literature, *Australian Journal of Learning Difficulties*, 21:2, 69-98, DOI: 10.1080/19404158.2017.1287103

<https://doi.org/10.1080/19404158.2017.1287103>

CHAPTER 4: HOW WELL PREPARED ARE AUSTRALIAN PRE-SERVICE TEACHERS TO TEACH EARLY READING SKILLS?

Chapter Overview

The results from an online survey study, published in the Australian Journal of Teacher Education (Meeks & Kemp, 2017)² are reported in this chapter. The survey was designed to investigate the early reading subject-specific knowledge of final-year preservice teachers enrolled in Australian primary and early childhood teacher education programs and included both closed and open-ended questions. Twenty-five questions were organised under four headings, with the results for one of the sections *knowledge of research-based practices for teaching early reading and spelling* being the subject of a separate paper (see Chapter 5). The data collected from three sections: demographics; perceptions of preparedness and ability to teach early literacy; and knowledge of components of early reading are reported in Chapter 4. The content of the survey was based on previous, similar surveys and included the concepts of phonological awareness, phonemic awareness and phonics. The questions concerning knowledge of spelling had not been included in previous surveys. Only four Australian studies into preservice teacher knowledge of beginning reading had previously been conducted. Although 43 Australian tertiary institutions offering teacher preparation programs in early childhood and primary education were sent invitations to participate in the survey process, the survey was finally conducted across 16 tertiary institutions. While the response rate from universities and preservice teachers was low, the findings are consistent with previous national and international studies. Recommendations for future research are provided.

² A summary of this paper has been accepted for publication in Nomanis, 2018. <https://www.nomanis.com.au/>

2017

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Recommended Citation

Meeks, L. J., & Kemp, C. R. (2017). How Well Prepared are Australian Preservice Teachers to Teach Early Reading Skills?. *Australian Journal of Teacher Education*, 42(11).

Retrieved from <http://ro.ecu.edu.au/ajte/vol42/iss11/1>

This Journal Article is posted at Research Online.

<http://ro.ecu.edu.au/ajte/vol42/iss11/1>

How Well Prepared are Australian Final-Year Preservice Teachers to Teach Early Reading and Spelling?

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Abstract: Preservice early childhood and primary teachers from teacher preparation institutions across five Australian states were surveyed regarding their perceptions of preparedness and ability to teach early reading and spelling skills, as well as their knowledge of components of early reading, such as phonemic awareness, alphabet knowledge and early spelling patterns. Surveys were conducted in the final year of the teacher training courses and targeted students attending teacher education institutions providing teacher training in the area of early literacy. Although preservice teachers generally rated themselves as prepared to teach early reading, most demonstrated minimal to very poor knowledge of the components of early reading, indicating a substantial discrepancy between the general confidence of preservice teachers to teach, and their limited content knowledge of beginning reading skills. The return rates from institutions (16) and students (160) were low; however the results of this study support previous research findings, suggesting that there may be a need for reform in teacher preparation programs, especially in the area of early reading instruction.

Introduction

There has been a limited amount of research into the knowledge and skills of Australian preservice teachers in relation to early literacy in general and beginning reading instruction in particular. The purpose of the study reported here was to extend this research by collecting information from final-year preservice teachers enrolled in every early childhood and primary teacher education program in Australia.

Existing studies of preservice teachers' knowledge and skills concerning early reading instruction were located for only two English-speaking countries (Australia and the United States of America) and, apart from one state-wide project, each study was based on participants from a single teacher-education institution. The Australian studies were conducted in four different states: Queensland (Fielding-Barnsley, 2010), Victoria (Mahar & Richdale, 2008; Stark, Snow, Eadie & Goldfeld, 2015), Western Australia (Meehan & Hammond, 2006), and New South Wales (Tetley & Jones, 2014). The findings from these studies would suggest that many primary preservice teachers have limited content and pedagogical knowledge concerning effective early/beginning reading instruction (Stark, Snow, Eadie & Goldfeld, 2015). Furthermore, general ratings of preparedness to teach early reading ranged from *not prepared* to *moderately prepared*, with very low ratings for preparedness to teach students who struggle to learn to read.

As with any area of learning, reading included, it is the beginning instruction that supplies the foundation on which to build more complex skills and knowledge. Initial reading instruction needs to be organised and delivered according to the research base that delineates

best practice. The report of the National Reading Panel published by the National Institute of Child Health and Human Development (NICHD, 2000) listed five critical components of reading instruction: phonemic awareness (a subset of phonological awareness), phonics, vocabulary, comprehension and fluency. Two of these components, phonemic awareness and phonics, are the major skills necessary for initial decoding instruction (McGeown & Medford, 2014).

Phonological awareness is a metacognitive skill concerned with the sound structures of language, rather than the meaning of language. Component skills include awareness of speech sounds at syllable, onset-rime and phoneme levels. Phonemic awareness focuses on the smallest units of speech sounds and includes the ability to locate and process individual sounds within a word (essential for encoding) and the ability to blend sounds together to make a word (essential for decoding) (Stuart & Stainthorp, 2016). The findings of the research are quite clear. Students will struggle to learn to read and spell if their phonemic awareness skills are limited (Spear-Swerling, 2015; Ehri et al., 2001; Foorman et al., 2003; Moats, 2004; Washburn & Mulcahy, 2014). Phonics knowledge is based on the relationship between the alphabet letters and their corresponding sounds. Research has shown that phonics knowledge is significant to learning to read and spell and that it is best taught using a systematic and explicit approach (Fielding-Barnsley & Purdie, 2005; Hatcher, Hulme, & Snowling, 2004; Hattie, 2009; Konza, 2014). In addition, “there is also evidence to support the transfer effects of early encoding instruction on later reading, writing, and spelling performances” (Weiser & Mathes, 2011). In New South Wales, Australia, however, it has been noted that “not all graduate teachers have the skills to provide explicit and systematic instruction in phonemic awareness and phonics despite unequivocal evidence supporting this approach to literacy instruction in the early years” (Board of Studies, Teaching and Education Standards, NSW, 2014, p. 13).

According to national and international reports, Australian students' performance in reading has shown a steady decline. The results from the 2016 National Assessment Program for Literacy and Numeracy (NAPLAN) indicated that 11.5% of Year 3 students scored *below* (3.1%) or *at* (8.4%) the minimum standard, and 15.5% of Year 5 students scored *below* (5.2%) or *at* (10.3%) the minimum standard (Australian Curriculum, Assessment and Reporting Authority (ACARA, 2016), demonstrating very little change from the 2015 NAPLAN results when 11% of Year 3 students scored below (3.6%) or at (7.4%) the minimum standard, and 18.1% of Year 5 students scored below (4.9%) or at (13.2%) the minimum standard (ACARA, 2015).

Every three years, since 2000, 15-year-old Australian students have participated in the Programme for International Student Assessment (PISA). In 2015, a sample of 14530 students across Australia completed the survey, with a range of 20 - 30 students, *and* all age-eligible Indigenous students, being sampled per school (Thomson, De Bortoli, & Underwood, 2016, p.6). The Australian results reported for the PISA 2015 assessments have shown that 18% of 15 year-old Australian students were considered to be low-performing (at and below Level 1a) (Thomson, De Bortoli, & Underwood, 2017, p. 106), an increase of nearly 4% from the PISA 2012 results (Thomson et al., 2016, p.16), and also demonstrating a ‘significant decline’ between 2009 and 2015. (Thomson et al., 2017, p. 195).

Student achievement may be influenced by a number of factors, including national educational systems, student attributes, and teacher quality (Meeks, Kemp, Stephenson, 2014). Research into teacher quality has identified a number of issues including the academic competence of preservice student teachers (Wright, 2015), and the quality of the content and delivery of initial teacher education courses (Hattie, 2009). The quality of content and delivery will strongly influence teacher implementation of research-based practice. If current research regarding the content and pedagogy of reading is not being included in teacher preparation courses, research into reading instruction may not be reaching Australian

classrooms (Coltheart & Prior, 2006; Fielding-Barnsley & Purdie, 2005) resulting in a research-practice divide (Spear-Swerling, 2007) that continues after graduation. Unfortunately, a study carried out by Ohi, based in the State of Victoria, found that “the majority of the teachers interviewed had limited access to educational research. Educational research was not explicitly identified by them as a major source of their professional knowledge for the teaching of reading” (2007, p.68). Similar findings have been reported in the United States (Joshi, Binks, Hougen, Dahlgren, Ocker-Dean & Smith, 2009; Kilpatrick, 2015; Spear-Swerling, 2007) and in Canada (Kosnik & Beck, 2008).

The fact that most of the teacher knowledge surveys cited above were conducted in single institutions may be seen to limit the application of the findings to a wider population. Surveys of preservice teachers in the last year of their teacher education programs from multiple institutions could provide important information regarding the knowledge, skills and self-rating of students’ preparedness to teach early reading skills across a broader population.

Three specific research questions were posed:

- How do preservice teachers rate their preparedness and ability to teach beginning reading and spelling?
- What content knowledge and skills do preservice teachers have regarding early reading and spelling instruction?
- Is there a correlation between preservice teacher rating of preparedness to teach early reading and spelling and their early reading and spelling content knowledge and skills?

Method

Preservice teachers in their final year of an early childhood, or primary, teacher education course were surveyed regarding both the extent of their knowledge of the content and skills required for the teaching of beginning reading, and their perceptions of their preparedness to implement such teaching.

Procedure

At the beginning of 2013, the Australian Institute for Teaching and School Leadership (AITSL) website was used to identify those tertiary institutions offering early childhood and/or primary teaching courses. A total of 43 institutions were located: 14 in New South Wales (NSW), 10 in Victoria (VIC), eight in Queensland (QLD), five in Western Australia (WA), three in South Australia (SA), one in Tasmania (TAS), one in the Northern Territory (NT), and one in the Australian Capital Territory (ACT). A search of university websites was used to locate the names and email addresses of Deans or Heads of School of the Education faculty in each university. On receipt of approval by the Human Research Ethics Committee, information about the survey process, a copy of the survey, an invitation to participate, and a consent form were sent by email to the Deans or Heads of School of all 43 institutions. Once an institutional consent form had been received, the student invitation email was forwarded to the nominated contact person for distribution on the student email system. A student reminder invitation was posted approximately one month later. Due to the limited number of respondents in 2013 ($N = 81$), the survey was repeated in 2014. In order to encourage participation in the survey, respondents were able to enter a draw for one of four monetary prizes. Respondents were also invited to register their interest in participating in a follow-up telephone interview.

Participants

A total of 178 participants, enrolled in 16 tertiary institutions in five states of Australia, completed the survey. Preservice teachers were studying at undergraduate or postgraduate level, were enrolled in early childhood and/or primary courses of study, and were completing their final year of study.

Survey

Preservice teachers responded to an online Qualtrics survey, with twenty-five questions organised under four headings: demographics; perceptions of preparedness and ability to teach early literacy; knowledge of research-based practices for teaching early reading and spelling; and knowledge of components of early reading (see Appendix). Surveys designed by Al Otaiba, Lake, Greulich, Folsom and Guidry (2012), Binks-Cantrell, Joshi and Washburn (2012), Bos, Mather, Dickson, Podhajski and Chard (2001), Mather, Bos and Babur (2001), Moats, (1994), and Washburn, Joshi and Binks-Cantrell (2011) provided the basis for the development of the survey. Author-developed questions on spelling mirrored the existing items on reading. The responses for three of the questions: Question 8 (teaching strategies), Question 10 (components of literacy instruction) and Question 12 (practices supported by research) are reported in a subsequent paper.

Part 1 of the survey collected basic preservice teacher demographics. Part 2 was divided into two sections: (a) preservice teachers' perceptions of their *preparedness* to teach early literacy, and (b) preservice teachers' perceived *ability* to instruct Kindergarten-Year 2 students in phonological awareness, phonics and spelling. Knowledge of recommended instructional practices (NICHHD, 2000; Rowe, 2005) for the teaching of early literacy formed the basis of Part 3, and two types of questions were included in Part 4 in order to assess preservice teachers' knowledge of early reading and spelling skills. Five multiple-choice questions tested students' declarative knowledge (definitions) of terms such as *phoneme*, *deletion*, and *consonant blend*. Of the questions included for analysis, 12 were worth 1 point each, 1 question was worth 5 points and 1 question was worth 7 points (maximum score of 24).

As too few respondents answered Question 25 regarding the definition of a morpheme, (it was unanswered in 58 surveys), all responses to this question were deleted. Responses to question 21 were also deleted because, after consideration of the responses, the question was deemed to be ambiguous. The question required the respondent to select the word(s) that did not have a silent letter. Choices included three words that clearly had silent letters (bamb, wrin, knam), one without a silent letter (phop), and one word ending in 'e' where the 'e' could be regarded as a silent letter or as part of a split vowel digraph (shipe).

Incomplete surveys were also deleted from the database. These included surveys where the respondents had: (a) completed fewer than three knowledge questions (1 from the 2014 group), or (b) failed to answer any of the questions in Parts 2-4 of the survey (14 from the 2013 group and 3 from the 2014 group). The total number of surveys removed from the database was 18 (10%) (14 from the 2013 group and 4 from the 2014 group), leaving a total of 160 surveys that went forward for analysis.

Data Analysis

A two-tailed t-test was used to calculate whether there was a significant difference between the two groups' scores on the knowledge/skills test. As the difference between the

groups was found to be non-significant ($p = 0.116$), the data were combined and exported to SPSS (version 21) for analysis.

Correlation statistics were used to investigate the relationship between preservice teachers' rating of preparedness in relation to the teaching of early reading and their skills and knowledge. The Likert ratings were entered into SPSS as rank order data. In order to calculate a rank order correlation, the knowledge scores of the participants were also ordered from 1-5. Arbitrary performance classifications and ranks were developed as follows: scores of 8 or less were given a rank of 1 and a classification of very poor; scores from 9 to 11 were given a rank of 2 and a classification of poor; scores from 12 to 16 were given a rank of 3 and a classification of minimal; scores from 17 to 19 were given a rank of 4 and a classification of good; and scores from 20 to 24 were given a rank of 5 and a classification of very good.

Results

Forty-three invitations were issued in 2013. Acceptances were received from nine institutions (20.9%), ten declined to participate (two of these institutions did not have final year students), and 24 institutions did not respond at all. According to the information provided by participating institutions, the total number of potential respondents was 1555. Eighty-one preservice teachers completed the survey (response rate = 5.2%), with data for 67 of the respondents included in the data analysis. In 2014, 13 of the 44 institutions accepted the invitation (29.5%), 11 declined, and 21 did not reply. The potential total of respondents from the thirteen institutions was 2344. Ninety-seven preservice teachers completed the survey (response rate = 4.14%) with the data for 93 included in the data analysis. Six institutions (three in New South Wales, one in Queensland, one in Tasmania, and one in Victoria) participated in both years. Tables 1 and 2 provide details of location of the institutions attended by respondents for each of the two cohorts (2013, 2014) and the courses in which the two cohorts were enrolled.

Cohort	NS	VI	TA	QL	S	N
t	W	C	S	D	A	R
2013	31 (46.2)	28 (41.8)	5 (7.5)	3 (4.5)	0	0
2014	45 (48.4)	19 (20.4)	11 (11.8)	11 (11.8)	2 (2.2)	5 (5.4)
Total	76 (47.5)	47 (29.3)	16 (10)	14 (8.6)	2 (1.3)	5 (3.1)

Note: Percentages in brackets. NSW: New South Wales; VIC: Victoria; TAS: Tasmania; QLD: Queensland; SA: South Australia; NR: nil response.

Table 1: Number and Percentage of Preservice Teachers in Each State

Cohort	G	B	B	B.	B	P	N
ort	D	EC	P	Ed.	O	G	R
2013	7 (10.4)	9 (13.4)	1 (26.9)	23 (34.4)	2 (2.9)	2 (2.9)	6 (9)
2014	7 (7.5)	3 (3.2)	2 (30.1)	25 (26.9)	1 (11.8)	3 (3.2)	1 (17.2)
Total	14 (8.8)	12 (7.5)	4 (28.8)	48 (30)	1 (8.1)	5 (3.1)	2 (13.7)

Note: Percentages in brackets. GD: graduate diploma; BEC: Bachelor (Early Childhood); BP: Bachelor (Primary); BE: Bachelor of Education; BO: Bachelor - Other; PG: postgraduate; NR: nil response.

Table 2: Number and Percentage of Preservice Teachers in Each Course Type

Preservice Teachers' Perceptions of their Preparedness and Ability to Teach Reading and Spelling

The mean rating for preparedness to teach beginning reading was 3.03 on a five-point scale ($SD = 1.03$) and 3.09 ($SD = 1.03$) for teaching spelling. This indicates that, on the whole, teachers perceived that they were prepared to teach both reading and spelling. Ratings of preservice teachers' perception of preparedness are included in Table 3.

Rating	Preparedness to Teach Reading (N=158)	Preparedness to Teach Spelling (N=158)
1. Not prepared at all	7 (4.4%)	7 (4.4%)
2. Somewhat prepared	49 (31.2%)	45 (28.5%)
3. Prepared	47 (29.7%)	44 (27.9%)
4. Well prepared	43 (27.2%)	50 (31.7%)
5. Very well prepared	12 (7.5%)	12 (7.5%)

Table 3: Preservice Teachers' Ratings of Preparedness to Teach Reading and Spelling

The mean score for preservice teachers' rating of ability to teach phonological awareness was 3.36 ($SD = 0.83$). For ability to teach phonics to this population, the mean score was 3.28 ($SD = 0.84$) and for ability to teach spelling the mean score was 3.46 ($SD = 0.82$). Preservice teachers indicated, therefore, that they were prepared to teach each of these early literacy components. Ratings of preservice teachers' perception of preparedness and ability are included in Table 4.

Rating	Ability to Teach Phonological Awareness (N=157)	Ability to Teach Phonics (N=156)	Ability to Teach Spelling (N=157)
No experience	9 (5.7%)	10 (6.4%)	7 (4.5%)
No ability	6 (3.8%)	5 (3.2%)	5 (3.2%)
Minimal	65 (41.4%)	77 (49.3%)	60 (38.2%)
Proficient	74 (47.1%)	60 (38.5%)	78 (49.6%)
Expert	3 (1.9%)	4 (2.6%)	7 (4.5%)

Table 4: Preservice Teachers' Ratings of Ability to Teach Phonological Awareness, Phonics and Spelling

Preservice Teachers' Knowledge and Skills Regarding Phonological Awareness and Phonics

Respondents' scores on the survey of knowledge and skills ranged from 3 to 24 out of a maximum score of 24. More than 76% of the preservice teachers were ranked as having skills that were minimal to very poor, with fewer than 24% having skills that were good or very good. Table 5 provides an overview of respondents' knowledge scores and the frequency and percentage of respondents scoring within each of the five ranks.

Rank	Classification	Knowledge Score	Number of Respondents (N=160)
1	Very poor	3-8	17 (10.6%)
2	Poor	9-11	28 (17.5%)
3	Minimal	12-16	77 (48.1%)
4	Good	17-19	27 (16.9%)
5	Very good	20-24	11 (6.9%)

Table 5: Preservice Teachers' Knowledge and Skills Related to Phonological Awareness and Phonics

The correct definition of phonological awareness was identified by 34.8% of respondents; 47.1% identified the correct definition of phonemic awareness; 38.8% identified a word that contained a closed syllable; and 11.3% were able to identify a word containing an open syllable. The correct definition for the term *phoneme* was identified by 77.4% of respondents; 57.5% of preservice teachers could reverse the order of sounds in *ice*; 61.9% could reverse the sounds in *enough*; and 91.8% correctly identified the pair of words that began with the same sound (*chef* and *shoe*). *Deletion* was identified as the correct term for the task, 'Say the word 'cat'. Now say the word 'cat' without the /k/ sound' by 36.9% of the preservice teachers. The majority of respondents correctly counted the number of phonemes in the words *ship* (84%), *moon* (82%), and *knee* (86%); approximately 60% of respondents were able to count the phonemes in *through* and fewer than 50% of respondents were able to correctly count the number of phonemes in *box*, *grass*, and *brush*.

Fewer than 40% of respondents could identify a word that contained two closed syllables; 11% correctly identified a word that contained an open syllable; and fewer than half of respondents could correctly define the term '*consonant blend*'. Two multiple-choice questions tested preservice teachers' knowledge of the same spelling generalisation: (a) A soft 'c' is in the word: *Chicago*, *cat*, *chair*, *city* (a selection task), and (b) What is the rule that governs the use of 'k' in the initial position of a word for the /k/ sound? (an application task). The soft 'c' in *city* (the selection task), was correctly identified by 70% of respondents, with 29.4% correctly identifying the correct spelling generalisation (the application task).

The Relationship Between Preservice Teachers' Perception of Preparedness and Ability to Teach Beginning Reading and Spelling and Measures of their Content Knowledge and Skills

As illustrated in Table 6, moderately strong statistically significant relationships were found between perceived preparedness and perceived ability to teach early reading and spelling. The relationship between the perception of ability to teach beginning reading and the overall measure of knowledge and skill was small and statistically nonsignificant. The relationship between the measure of knowledge and skill and perceived ability to teach spelling was also small and statistically nonsignificant. There were statistically significant relationships between the measure of knowledge and skill and the perceptions of (a) preparedness to teach spelling, (b) ability to teach phonological awareness, and (c) ability to teach phonics, but these relationships were relatively weak.

1. Perceived preparedness to teach beginning reading					
2. Perceived preparedness to teach spelling	723**				
3. Perceived ability to teach phonological awareness	549**	560**			
4. Perceived ability to teach phonics	565**	558**	799**		
5. Perceived ability to teach spelling	561**	620**	690**	687**	
6. Measure of knowledge and skill	101	124	205**	179*	095

Notes:*. Correlation is significant at the 0.05 level.**. Correlation is significant at the 0.01 level.

Table 6: Relationship Between Preservice Teachers' Ratings of Preparedness and Measures of Content Knowledge for the Teaching of Beginning Reading and Spelling

Discussion

If the purpose of teacher education is seen as the development of effective and competent classroom teachers capable of improving student performance, then preservice course content must be based on solid research findings (NICHHD, 2000). Research has consistently identified the importance of phonemic awareness and synthetic phonics instruction in the early stages of learning to read. Preservice teachers' perceptions of their ability to teach phonological awareness and phonics revealed an almost even split between *minimal ability* and *proficient*. However, very few scored at or above the 80% cut-off point for having sufficient knowledge to teach these early reading skills, and more than 76% had rankings of *minimal* to *very poor* knowledge and skills. Given that more than 64% of the preservice teachers rated themselves as *prepared* to *very well prepared* to teach early reading and more than 67% of them rated themselves as *prepared* to *very well prepared* to teach spelling, this indicates that there was a discrepancy between confidence and competence.

The term *preparedness* was used to describe how well preservice teachers felt that an institution had provided them with the knowledge and skills necessary to teach beginning reading and spelling. On average, preservice teachers perceived themselves as being prepared. However, when questioned about their ability to teach the *content* of phonological awareness and phonics skills, up to 50% of preservice teachers indicated that they were not confident in their ability to teach these particular components of early literacy.

Part three of the survey assessed preservice teachers' content knowledge. If we use the proposition that, "A score of 80% can be taken as an indication of reliable explicit ability to identify the phonemic structure of words" (Stainthorp, 2004, p. 760) and apply it to all knowledge questions, then only 6.9% of respondents reached this criterion for explicit early literacy knowledge and skills. Fewer than half of respondents could (a) correctly define the term *consonant blend*, or (b) identify a word, out of a list of five, as containing two closed syllables (*napkin*). Total knowledge scores indicated that more than three-quarters of preservice teachers scored fewer than 66%, and only 11 students (6.9%) scored 80% or above.

Preservice teachers' knowledge of specific components of early reading instruction, such as phonemic awareness and phonics, was highly variable. For example, although most preservice teachers chose the correct definition for the word *phoneme*, fewer than half chose the correct definition for the term *phonemic awareness*, and fewer still could identify a deletion task. Furthermore, the skill of selecting a pair of words that had the same initial sound was correctly answered by most preservice teachers, but many were unable to reverse the sounds in *ice* and *enough*, or count phonemes in words. Variable results were also

reported by Bos et al. (2001) who found that “Whereas more than 50 percent of the preservice and inservice teachers were able to segment the phonemes in a two-phoneme word, they were unable to do this for more complex four-phoneme words.” (p.114), and Washburn et al. (2011) who reported that, as a group, preservice teachers had a varied range of knowledge concerning these basic skills. This variability might be explained by the way in which this knowledge was assessed.

Two types of questions were used to assess preservice teachers’ knowledge: (a) declarative (definitions), and (b) application (skills). Noting the distinction between explicit knowledge and implicit knowledge is important. Explicit knowledge is formal, systematic and can be easily shared. Implicit knowledge, on the other hand, is not easily articulated and is typified by not knowing how you know what you know. Once you become skilled or automatic at a task, explicit knowledge generally becomes implicit (Stainthorpe, 2004). This explanation may well clarify the variability in preservice teacher knowledge scores. Two examples from the survey results may be used to demonstrate this point. Being able to *select* the correct definition for the word *phoneme* may be regarded as implicit knowledge, whereas being able to count phonemes in words could be perceived as explicit knowledge. Also, being able to identify a word containing a soft ‘c’ may be seen as implicit knowledge, but being able to identify the rule regarding the use of ‘k’ in the initial position of words could be labelled explicit knowledge. If the techniques of explicit instruction are recommended in the research, then explicit knowledge of the components of early reading is equally important. As Washburn et al. have emphasised “... teachers cannot rely on their implicit skill/ability alone to teach reading, explicit teaching requires explicit understanding” (2011, p. 38).

The purpose of this study was to examine the extent of early childhood and primary preservice teachers’ content knowledge concerning important components of early reading and spelling, as well as their perceptions of both their preparedness and ability to provide research-based beginning reading instruction. All tertiary institutions offering early childhood and primary teacher education courses across Australia were invited to participate by distributing the survey through their student email system. Nine institutions (out of 43) participated in 2013, and 13 (out of 44) participated in 2014, resulting in a total of 178 student responses, 160 of which were included in the analysis. This low response rate from tertiary institutions, and from the students themselves, is cause for concern. Two issues need to be considered: first, the question of why such a large number of deans, or heads of school, declined to participate in this study (or simply did not reply); and second, whether a participation bias exists based on the student nonresponse rate. Nonresponse bias occurs when some of the respondents invited to participate in a survey do not take part, and may result in data that do not represent the target population. Considering the results from this study, a nonresponse bias could occur if the survey was completed mostly by students who were confident in their ability, knowledge and skills, whether or not this confidence was warranted.

Feedback was received from some of the institutions that declined to participate as follows: their students were already over-surveyed; other surveys had already been booked in for the year; government and institutional surveys of quality control research needed to be conducted; conflicting priorities and projects; too much pressure on staff and students; and the need to protect response rates for their own research surveys. With so much media attention on education, and the recent public discussions and debates concerning best practice for early reading instruction, education may be seen as a sensitive issue. Implicit nonresponse factors may include: conflict of ideology; concerns over the quality and/or content of specific units within an early literacy course; the possibility of negative course feedback from students; and perceptions that students may not be able to answer knowledge and skill questions correctly.

Because of the low student response rates, it is important to note that a nonresponse bias might exist in the data collected. However, the highly variable range of perceptions of preparedness and ability, and of knowledge and skills, may suggest that nonresponse bias may not have had a significant impact on the results of the survey. Interpretation of the results must therefore be considered within the context of the study.

Implications for Teacher Preparation

There may be many reasons why students fail to learn to read, but the issue of inadequately prepared teachers must be considered as a possible cause. It should be noted, however, that general inadequacies in preservice teacher responding might be due to factors other than non-coverage of important component skills for teaching early reading and spelling in course content, but this needs further investigation. What is clear, however, is that the systematic and explicit instruction of phonemic awareness and phonics is an essential component of an early reading and spelling program and that, in order to provide this instruction to their students, pre-service teachers need to have acquired explicit and detailed content knowledge. In order to implement the early literacy content of the F-10 Curriculum English (ACARA, n.d.) it is important that providers of primary and early childhood preservice teacher preparation programs include, in sufficient quantity and detail, information on research-based instruction in early literacy content and the knowledge pedagogy, supported by appropriate practice teaching opportunities.

Limitations and Future Research

Data were collected from final-year preservice teachers from 16 universities across Australia. Given the small number of institutions that supported this study, and the subsequent limited participation by students, consideration must be given to any factors that might influence the interpretation of the results. First, it is unclear whether the institutions that did forward the invitation on to students are representative. For example, were the participating tertiary institutions those that were confident about the content of their courses, and believed that their students would report favourably? Second, the small number of survey completions by preservice teachers may suggest that the student cohort is not representative of all final-year preservice teachers.

In light of these limitations, further research investigating preservice teachers' perceptions, knowledge and skills is needed. Such research might clarify the causes of the disparity between preservice teachers' confidence and competence to teach early reading. It should include a more representative sample of participating institutions and final-year preservice teachers. Given the small number of institutions willing to participate in the survey, alternative approaches such as an investigation of the content of early literacy units offered to early childhood and primary preservice teachers at tertiary institutions across Australia may be required.

Conclusion

In spite of international concern about stagnating and declining standards of literacy, the research base related to preservice teachers' knowledge of language structure, as well as their perceptions of preparedness and ability for early reading instruction, is limited. The

results from the current study are comparable to those reported in the existing small body of available research. As a group, preservice teachers demonstrated a substantial discrepancy between their general confidence to teach early reading and spelling, and their content knowledge of this area, leading to the conclusion that few preservice teachers had sufficient expertise to be effective teachers of early reading and spelling.

Given that competent literacy skills contribute to the well-being of individuals and society in general, and that poor reading skills may influence one's quality of life, it is important that preservice teachers are armed with exceptional knowledge and teaching ability in order to support beginning readers on their literacy journey. This study may have obtained limited participation, but when it is considered with the results of previous studies, it is clear that preservice teachers generally possess highly variable levels of knowledge about language structure and unwarranted perceptions of their ability and preparedness to teach early literacy.

References

- Al Otaiba, S., Lake, V. E., Greulich, L., Folsom, J.S., & Guidry, L. (2012). *Reading and Writing Quarterly*, 25, 109-209. doi: 10/10072/11145-010-9250-2.
- Australian Curriculum Assessment and Reporting Authority (ACARA). (2016). *National report for 2016*. Retrieved from <http://www.nap.edu.au/docs/default-source/default-document-library/2016-naplan-national-report.pdf?sfvrsn=2>.
- Australian Curriculum Assessment and Reporting Authority (ACARA). (2015). *National report for 2015*. Retrieved from https://www.nap.edu.au/_resources/2015_NAPLAN_national_report.pdf.
- Australian Curriculum Assessment and Reporting Authority (ACARA). (n.d.) *F-10 Curriculum English*. Retrieved from <http://www.australiancurriculum.edu.au/english/curriculum/f-10?layout=1>.
- Binks-Cantrell, E., Joshi, R.M., & Washburn, E.K. (2012). Validation of an instrument for assessing teacher knowledge of basic language constructs of literacy. *Annals of Dyslexia*, 62, 153-171. <https://doi.org/10.1007/s11881-012-0070-8>
- Board of Studies, Teaching and Education Standards NSW. (2014). *Literacy learning in the early years*. Sydney: Author. Retrieved from https://www.google.com.au/?gfe_rd=cr&ei=GUT0WOH-CIzp8wfA-Y64Aw#q=Literacy+learning+in+the+early+years.+BOSTES.
- Bos, C., Mather, N., Dickson, S., Podhajski, B., & Chard, D. (2001). Perceptions and knowledge of preservice and inservice educators about early reading instruction. *Annals of Dyslexia*, 51, 97-120. <https://doi.org/10.1007/s11881-001-0007-0>
- Coltheart, M. & Prior, M. (2006). Learning to read in Australia. *Australasian Journal of Learning Disabilities*, 11(4), 157-164. doi: 10.1080/195041150609546820.
- Ehri, L. C., Nunes, S. R., Willows, D. M., Schuster, B. V., Yaghoub-Zadeh, Z., & Shanahan, T. (2001). Phonemic awareness instruction helps children learn to read: Evidence from the National Reading Panel's meta-analysis. *Reading Research Quarterly*, 36, 250-287 <https://doi.org/10.1598/RRQ.36.3.2>
- Fielding-Barnsley, R. (2010). Australian pre-service teachers' knowledge of phonemic awareness and phonics in the process of learning to read. *Australian Journal of Learning Difficulties*, 15, 99-110. <https://doi.org/10.1080/19404150903524606>
- Fielding-Barnsley, R., & Purdie, N. (2005). Teachers' attitude to and knowledge of metalinguistics in the process of learning to read. *Asia-Pacific Journal of Teacher Education*, 33, 65-75. <https://doi.org/10.1080/1359866052000341133>

- Foorman, B. R., Chen, D., Carlson, C., Moats, L., Francis, D. J., & Fletcher, J. M. (2003). The necessity of the alphabetic principle to phonemic awareness instruction. *Reading and Writing: An Interdisciplinary Journal*, 16, 289-324. <https://doi.org/10.1023/A:1023671702188>
- Hatcher, P. J., Hulme, C., & Snowling, M. J. (2004). Explicit phoneme training combined with phonic reading instruction helps young children at risk of reading failure. *Journal of Child Psychology and Psychiatry*, 45, 338-358. doi: 10.1111/j.1469-7610.2004.00225.x.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. London: Routledge.
- Joshi, R. M., Binks, E., Hougen, M., Dahlgren, M. E., Ocker-Dean, E., & Smith, D. L. (2009). Why elementary teachers might be inadequately prepared to teach reading. *Journal of Learning Disabilities*, 42, 392-402. <https://doi.org/10.1177/0022219409338736>
- Kilpatrick, D. A. (2015). *Essentials of assessing, preventing, and overcoming reading difficulties*. Hoboken, NJ: John Wiley & Sons Inc.
- Konza, D. (2014). Teaching reading: Why the "Fab Five" should be the "Big Six". *Australian Journal of Teacher Education*, 39(12), 153-169. <https://doi.org/10.14221/ajte.2014v39n12.10>
- Kosnik, C. & Beck, C. (2008). We taught them about literacy but what did they learn? The impact of a preservice teacher education program on the practices of beginning teachers. *Studying Teacher Education*, 4, 115-128. <https://doi.org/10.1080/17425960802433603>
- Mahar, N. E., & Richdale, A. L. (2008). Primary teachers' linguistic knowledge and perceptions of early literacy instruction. *Australian Journal of Learning Difficulties*, 13, 17-37. doi: 10.1080/19404150802093703.
- Mather, N., Bos, C., & Babur, N. (2001). Perceptions and knowledge of preservice and inservice teachers about early literacy instruction. *Journal of Learning Disabilities*, 34, 472-482. <https://doi.org/10.1080/19404150802093703>
- McGeown, S. P., & Medford, E. (2014). Using method of instruction to predict the skills supporting initial reading development: Insight from a synthetic phonics approach. *Reading & Writing*, 27, 591-608. <https://doi.org/10.1007/s11145-013-9460-5>
- Meehan, R., & Hammond, L. (2006). Walking the talk: Western Australian teachers' beliefs about early reading and spelling instruction and their knowledge of metalinguistics. *Australian Journal of Learning Disabilities*, 11, 17-24. doi: 10.1080/194041506095468.
- Meeks, L., Kemp, C., & Stephenson, J. (2014). Standards in literacy and numeracy: Contributing factors. *Australian Journal of Teacher Education*, 39(7), 106-139. <https://doi.org/10.14221/ajte.2014v39n7.3>
- Moats, L. (2004). Science, language, and imagination in the professional development of reading teachers. In P. McCardle & V. Chhabra (Eds.), *The voice of evidence in reading research* (pp. 269-288). Baltimore, MD: Brookes.
- Moats, L. C. (1994). The missing foundation in teacher education: Knowledge of the structure of spoken and written language. *Annals of Dyslexia*, 44, 81-102. <https://doi.org/10.1007/BF02648156>
- National Institute of Child Health and Human Development (NICHD). (2000). *Report of the National Reading Panel. Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (NIH Publication No. 00-4769). Washington, DC: U.S. Government Printing Office.

- Ohi, S. (2007). Teachers professional knowledge and the teaching of reading in the early years. *Australian Journal of Teacher Education*, 32(2), 57-70.
<https://doi.org/10.14221/ajte.2007v32n2.5>
- Rowe, K. (2005). *Teaching reading: Report and recommendations*. Canberra: Australian Government, Department of Education, Science and Training.
- Spear-Swerling, L. (2015). *The power of RTI and reading profiles: A blueprint for solving reading problems*. Baltimore, MA: Paul H Brookes Publishing Co.
- Spear-Swerling, L. (2007). The research-practice divide in beginning reading. *Theory into Practice*, 46(4), 301-308. <https://doi.org/10.1080/00405840701593881>
- Stainthorp, R. (2004). W(h)ither Phonological Awareness? Literate trainee teachers' lack of stable knowledge about the sound structure of words. *Educational Psychology: An International Journal of Experimental Educational Psychology*, 24, 753-765.
<https://doi.org/10.1080/0144341042000271728>
- Stark, H. L., Snow, P. C., Eadie, P. A., & Goldfeld, S. R. (2015). Language and reading instruction in early years' classrooms: The knowledge and self-rated ability of Australian teachers. *Annals of Dyslexia*, 66, 28-54. <https://doi.org/10.1007/s11881-015-0112-0>
- Stuart, M. & Stainthorp, M. (2016). *Reading development & teaching*. London, UK: Sage Publications Ltd. <https://doi.org/10.4135/9781473920170>
- Tetley, E., & Jones, C. (2014). Teachers' acquisition of knowledge about English word structure, *Annals of Dyslexia*, 53, 72-103.
<https://doi.org/10.1080/19404158.2014.891530>
- Thomson, S., De Bortoli, L., & Underwood, C. (2017). *PISA 2015: Reporting Australia's results*. Camberwell, VIC: Australian Council for Educational Research Ltd.
Retrieved from <http://research.acer.edu.au/ozpisa/22/>.
- Thomson, S., De Bortoli, L., & Underwood, C. (2016). *PISA 2015: A first look at Australia's results*. Camberwell, VIC: Australian Council for Educational Research Ltd.
Retrieved from <http://research.acer.edu.au/cgi/viewcontent.cgi?article=1021&context=ozpisa>.
- Washburn, E. K., Joshi, R. M., & Binks-Cantrell, E. (2011). Are preservice teachers prepared to teach struggling readers? *Annals of Dyslexia*, 61, 21-43.
<https://doi.org/10.1007/s11881-010-0040-y>
- Washburn, E. K. & Mulcahy, C. A. (2014). Expanding preservice teachers' knowledge of the English language: Recommendations for teacher educators. *Reading & Writing Quarterly: Overcoming Learning Difficulties*, 30, 328-347.
<https://doi.org/10.1080/10573569.2013.819180>
- Weiser, B., & Mathes, P. (2011). Using encoding instruction to improve the reading and spelling performances of elementary students at risk for literacy difficulties: A best-evidence synthesis. *Review of Educational Research*, 81(2), 170-220.
<https://doi.org/10.3102/0034654310396719>
- Wright, V. J. (2015). Is ATAR useful for predicting the success of Australian students in initial teacher education? *Australian Journal of Teacher Education*, 40(9), 1-15. doi: 10.14221/ajte.2015.v40n9.1.

Appendix

Perceptions and Knowledge of Final Year Education Students on Early Literacy Instruction

Part 1 Demographics

1. Which teaching course are you enrolled in? (e.g. Bachelor of Education, Bachelor of Teaching, B.A. Special Education, Master of Teaching, etc.)
2. In which Australian State or Territory are you completing / have you completed your course?
 - Australian Capital Territory
 - New South Wales
 - Northern Territory
 - Queensland
 - South Australia
 - Tasmania
 - Victoria
 - Western Australia

Part 2 Perceptions of preparedness to teach early literacy

3. How well prepared do you feel to teach *beginning* reading?
(Fielding-Barnsley, 2010)

Not prepared at all	Somewhat prepared	Prepared	Well prepared	Very well prepared
------------------------	----------------------	----------	---------------	-----------------------
4. How well prepared do you feel to teach spelling?

Not prepared at all	Somewhat prepared	Prepared	Well prepared	Very well prepared
------------------------	----------------------	----------	---------------	-----------------------
5. How would you rate your ability to instruct Kindergarten-Year 2 students on phonological awareness?
(Al Otaiba, Lake, Greulich, Folsom, & Guidry, 2012)

No experience	No ability	Minimal ability	Proficient	Expert
---------------	------------	-----------------	------------	--------
6. How would you rate your ability to instruct Kindergarten-Year 2 students on all aspects of phonics, including consonant blends, digraphs, etc.?
(Washburn, Joshi & Binks-Cantrell, 2011)

No experience	No ability	Minimal ability	Proficient	Expert
---------------	------------	-----------------	------------	--------
7. How would you rate your ability to instruct Kindergarten-Year 2 students on spelling generalisations/rules?

No experience	No ability	Minimal ability	Proficient	Expert
---------------	------------	-----------------	------------	--------
8. Please list the FIVE most important literacy teaching strategies that you learnt in your preservice teacher education course.
 - 1.
 - 2.
 - 3.
 - 4.
 - 5.

Part 3 Knowledge of research-based practices for teaching early literacy

9. Phonological awareness is: (mark **one** response only)
(Mather, Bos & Babur, 2001)
- ☐ the ability to use letter-sound correspondences to decode words
 - ☐ *the understanding of how spoken language is broken down and manipulated*
 - ☐ a teaching method for decoding skills in reading
 - ☐ the same as phonics
 - ☐ unsure
10. Which of the following are the five main components of literacy instruction? (mark **five** of the options only)
- ☐ *vocabulary*
 - ☐ *fluency*
 - ☐ *comprehension*
 - ☐ context
 - ☐ *phonics*
 - ☐ spelling
 - ☐ *phonemic awareness*
 - ☐ accuracy
 - ☐ unsure
11. Phonemic awareness is: (mark **one** response only)
(Washburn, Joshi & Binks-Cantrell, 2011)
- ☐ the same as phonological awareness
 - ☐ the understanding of how letters and sounds are put together to form words
 - ☐ *the ability to break down and manipulate the individual sounds in spoken language*
 - ☐ the ability to use sound-symbol correspondences to read words
 - ☐ unsure
12. Which of the following practices have support in the literacy research? (mark as many responses as apply)
- ☐ teaching invented spelling
 - ☐ *the systematic teaching of phonics*
 - ☐ *ensuring that all children have good phonemic awareness skills*
 - ☐ encouraging the use of picture cues in early reading
 - ☐ *using phonics-based readers in the early grades*
 - ☐ providing a rich language environment rather than systematically teaching component skills
 - ☐ using a whole-language approach for students who are having difficulty learning to read
 - ☐ *using a direct instruction approach for the teaching of reading*
 - ☐ unsure

Part 4 Knowledge of early literacy skills

13. A phoneme refers to: (mark one response)
(Mather, Bos & Babur, 2001)
- ☐ a single letter
 - ☐ *a single speech sound*
 - ☐ a single unit of meaning
 - ☐ a morpheme
 - ☐ unsure

14. A combination of two or three consonants, pronounced so that each letter keeps its own identity is called: (mark one response)
(Moats, 1994)
- ☐ silent consonant
 - ☐ consonant digraph
 - ☐ diphthong
 - ☐ *consonant blend*
 - ☐ unsure
15. How many speech sounds are in each of the following words? For example, the word 'cat' has three speech sounds 'k'-'a'-'t'. Speech sounds do not necessarily equal the number of letters.
(Moats, 1994)
- ☐ box 4
 - ☐ grass 4
 - ☐ ship 3
 - ☐ moon 3
 - ☐ brush 4
 - ☐ knee 2
 - ☐ through 3
16. What kind of task would the following be
"Say the word 'cat. Now say the word 'cat' without the /k/ sound." (mark one response)
(Binks-Cantrell, Joshi & Washburn, 2012)
- ☐ blending
 - ☐ rhyming
 - ☐ segmentation
 - ☐ *deletion*
 - ☐ unsure
17. A soft 'c' is in the word: (mark one response)
(Bos, Mather, Dickson, Podhajski & Chard, 2001)
- ☐ Chicago
 - ☐ cat
 - ☐ chair
 - ☐ *city*
 - ☐ unsure
18. Identify the pair of words that begin with the same sound: (mark one response)
(Binks-Cantrell, Joshi, & Washburn, 2012)
- ☐ joke - goat
 - ☐ *chef - shoe*
 - ☐ quiet - giant
 - ☐ chip - chemist
 - ☐ unsure
19. The next two questions involve saying a word and then reversing the order of the sounds. (For example, the word "back" could be "cab".)
If you say the word, and then reverse the order of the sounds, 'ice' would be: (mark one response)
(Mather, Bos & Babur, 2001)
- ☐ easy
 - ☐ sea
 - ☐ size
 - ☐ *sigh*

- unsure
20. If you say the word, and then reverse the order of the sounds, 'enough' would be:
(mark one response)
(Mather, Bos & Babur, 2001)
- fun
○ phone
○ *funny*
○ one
○ unsure
21. All of the following nonsense words have a silent letter, except: (mark one response)
(Binks-Cantrell, Joshi, & Washburn, 2012)
- bamb
○ wrin
○ shipe
○ knam
○ *phop*
○ unsure
22. Which of the following words has 2 closed syllables? (mark one response)
(Moats, 1994)
- wave
○ bacon
○ paddle
○ *napkin*
○ unsure
23. Which of the following words has an open syllable? (mark one response)
(Moats, 1994)
- wave
○ *bacon*
○ paddle
○ napkin
○ unsure
24. What is the rule that governs the use of 'k' in the initial position of a word for the /k/
sound? (mark one response)
(Moats, 1994)
- *'k' is used for /k/ in the initial position before e, i, or y*
○ the use of 'k' for /k/ in the initial position is random and must be memorised
○ 'k' is used for /k/ in the initial position before a, o, u, or any consonant
○ unsure
25. A morpheme refers to: (mark one response)
(Moats, 1994)
- a single speech sound
○ *a single unit of meaning*
○ a grapheme
○ a single letter
○ unsure

Thank you for taking part in this survey.
Your participation is much appreciated!

Note: *Answers are in italics.*

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CHAPTER 5: HOW WELL PREPARED ARE AUSTRALIAN PRE-SERVICE TEACHERS TO TEACH EARLY READING SKILLS?

Chapter Overview

This is a study submitted for publication to a peer-reviewed journal (Meeks, Madelaine, & Kemp, under review). The findings from three questions included in the survey described in chapter 4 are presented. The purpose of the two multiple-choice questions was to examine Australian final-year preservice primary, and early childhood, teachers' knowledge of the early literacy components and research-based strategies for early literacy instruction. The purpose of the open-ended question was to determine preservice teachers' preferred teaching strategies for early literacy instruction. These topics have not been included in previous surveys and are explored further in Chapter 7. Results indicate that preservice teachers may be unaware of the content and recommendations of current literacy research and of the recommended practices for the teaching of early literacy. Suggestions for future research are included.

Research and Theory into Practice: Australian Preservice Teachers’ Knowledge of Evidence-Based Early Literacy Instruction

Empirical Research and Conceptual Studies

Date of submission 08 November, 2017

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Abstract

Preservice teacher responses to three survey questions regarding their knowledge of early literacy components and research-based strategies for early literacy instruction are reported. The questions were part of a larger survey of the knowledge and skills of preservice teachers in relation to early reading and spelling instruction. Responses provided both quantitative and qualitative data. Results suggest that preservice teachers have a notional idea of early reading terms and concepts but are less knowledgeable about the subject-specific pedagogical strategies necessary for implementing research-based practices.

Keywords

early literacy; early reading; preservice teachers; teaching strategies, evidence-based research

Introduction

Learning to teach is a difficult and demanding process for novice teachers. Within a primary school setting, complexity is inherent in the combining of subject content knowledge and pedagogical knowledge with the requirements of a number of syllabus or curriculum documents (Goulding, Rowland, & Barber, 2002; Jensen, Roberts-Hull, Magee, & Ginnivan, 2016; Shulman, 1987). This is complicated by the expectation that teachers assess and monitor the progress of all students in a given classroom, develop and provide programs that meet the particular needs of a group of young learners, and maintain an appropriate learning environment through the careful management of student behaviour. In addition, teachers are expected to keep up to date with various institutional policies, such as child protection; attend staff meetings and parent-teacher meetings; foster school, parent and community relationships; and maintain professional knowledge through professional development programs and the reading of current research (Australian Institute for Teaching and School Leadership, 2013).

If “learning to read is one of the most challenging proficiencies to acquire” (Jensen, Roberts-Hull, Magee, & Ginnivan, 2016, p. 5), then preservice early-childhood and primary teacher preparation courses should include evidence-based content that helps graduates to develop a deep understanding of early and beginning reading instruction. Following a four-year Australian study, Mayer (2015) found that preparation for primary teaching tended to focus “on teaching reading, with a range of models, including instruction on how to teach phonemic awareness, phonics, fluency, vocabulary knowledge and text comprehension, and writing (including grammar and spelling), speaking, and listening” (p. 33). However, as the study was not designed to include an evaluation of preservice educators’ knowledge of basic language constructs, it was not possible to comment on the quality or extent of course content.

Content of Early Reading Instruction

This has been the focus of research for many years. In 1998, Snow, Burns, and Griffin recommended that literacy instruction for Grade 1 students should include explicit instruction in phonemic awareness, spelling-sound correspondences and sight recognition of frequently used words. In 2000, the National Reading Panel (NRP) in the United States published the results of a meta-analysis of research into the effectiveness of various approaches to the teaching of reading. The final recommendations included the teaching of phonemic awareness (the ability to break words into phonemes); phonics (matching phonemes to graphemes); fluency (the ability to read texts accurately and automatically); and comprehension (including vocabulary) (National Institute of Child Health and Human Development, 2000). Five years later the Rowe Report was published in Australia. The findings from this Australian study reinforced the findings of the National Reading Panel and recommended that direct and systematic instruction in phonics and phonemic awareness be included in the early years of schooling (Rowe, 2005). In 2006, the Independent Review of the Teaching of Early Reading Report published in the United Kingdom, included similar recommendations (Rose, 2006), and in 2008 one of the conclusions reported in the National Early Literacy Panel Report stated that code-focused interventions in early reading "consistently demonstrated positive effects directly on children's conventional literacy skills" and had a moderate to large effect on later success in reading and writing (National Institute for Literacy, 2008, p. ix). One of the major conclusions from these reports was that even though reading involves more than the simple decoding of words, phonics is a necessary component of early and beginning reading. Since their publication, researchers across the world have continued to support the findings outlined in these reports (Coltheart & Prior, 2006; Ehri, 2004; Foorman et al., 2003; Moats, 2009; Taylor, Davis, & Rastle, 2017).

Teaching Strategies

The term *teaching strategies* has been defined as ‘a broad range of processes, from the organisation of classrooms and resources to the moment-by-moment activities teachers engage in to facilitate learning’ (Organization for Economic Cooperation and Development (OECD, 2010, p.20). Generally, the strategies used for early reading and spelling instruction may be categorised in two ways: a meaning-based approach or a phonics based approach. Teaching strategies recommended for a meaning-based approach may include the analytic, or incidental, teaching of phonics; the use of picture cues; the provision of a rich language environment; prioritising the meaning of text over the sounds of letters (Goodman, 1967; Hunt, Carper, Lasley, & Raisch, 2010); and using a whole-language approach for students who struggle to learn to read (Chapman & Tunmer, 2016). Teaching strategies recommended for an explicit, systematic approach to teaching early reading and spelling may include the teaching of synthetic phonics and phonemic awareness skills, the use of phonics-based readers in the early grades, and the use of a direct instruction model of teaching. (Clark, Kirschner, & Sweller, 2012; Moats, 2007; Stahl, 1989; Taylor et al., 2017).

Research into best practice for teaching early reading has emanated from the field of education and other disciplines, such as psychology, cognitive neuroscience (Berninger & Richards, 2002; Dehaene, 2009; Taylor et al., 2017) and speech pathology (Wilson, McNeill, & Gillon, 2016). When combined with investigations into the classroom practices of master teachers, and the use of cognitive supports to help students learn complex tasks (Rosenshine, 2012), the resultant body of research provides a proven set of instructional practices for the teaching of beginning reading. In contrast, there is a lack of research support for Whole Language approaches, with Hattie (2009) concluding that meta-analysis has demonstrated that Whole Language programs have negligible effects on learning to read.

Purpose of the Research

The purpose of the research reported in this paper was to determine the extent of Australian preservice teachers' knowledge about the current evidence-base relating to pedagogical practice for literacy instruction. Three research questions were posed:

- To what extent are preservice teachers informed about the five main components of reading instruction recommended by the National Reading Panel report?
- To what extent are preservice teachers aware of the content of current research, and the recommended practices for the teaching of early literacy?
- What do preservice teachers consider are the most important teaching strategies for early literacy instruction?

Method

Participants

Participants were pre-service teachers enrolled in 16 tertiary institutions in five states of Australia (New South Wales, Queensland, South Australia, Tasmania, and Victoria). All participants were in their final year of an early childhood, or primary, teacher education course.

Materials

Preservice teachers responded to an online survey using the Qualtrics platform containing 25 questions divided into four parts: demographics; perceptions of preparedness to teach early literacy; knowledge of research-based practices for teaching early literacy; and knowledge of components of early literacy. The work of Moats (1994), Bos, Mather, Dickson, Podhasjski, and Chard (2001), and Joshi, Binks, Hougen, Dahlgren, Ocker-Dean, and Smith (2009) provided the basis for the survey design. Three of the questions included in the third part of the survey form the basis of this study. All other results from the survey are reported in Authors (2017).

Procedure

For two consecutive years the Australian Institute for Teaching and School Leadership (AITSL) website was used to identify those tertiary institutions offering early childhood and/or primary teaching courses. On receipt of approval by the Human Research Ethics Committee, information about the survey process, a copy of the survey, an invitation to participate, and a consent form were sent by email to the Deans or Heads of School of education of all 43 institutions. In the first year, acceptances were received from the Deans of nine institutions (20.9%). In the second year, invitations to participate in the survey were again sent to the Deans of Education of 44 institutions and 13 institutions agreed to participate (29.5%). Six institutions participated in both years. Once an institutional consent form had been received, the student invitation email was forwarded to a nominated contact person for distribution on the student email system. A student reminder invitation was posted approximately one month later.

Survey Questions

The responses to two multiple choice questions and one open-ended question provided the data for this study. One question was used to assess knowledge of the five main components of reading instruction as recommended by the report of the National Reading Panel (NICHHD, 2000). Respondents were asked to identify the five main components of reading instruction from a list of nine possibilities, including an *unsure* option. A second question was used to assess preservice teachers' awareness of current research and recommended practices for the teaching of early literacy. Respondents were asked to select teaching practices that have support in the literacy research from a list of eight brief descriptions with the option of nominating 'unsure' as a response. The third question was included to investigate which teaching strategies preservice teachers considered to be the most important for literacy instruction and whether they reflected current research.

Data Analysis

Quantitative data were analysed for the question regarding the five main components of literacy recommended by the National Reading Panel, and for the question regarding knowledge of evidence-based instructional strategies. For the open-ended question on instructional strategies, a set of criteria for the coding of statements into broader categories was developed by the first author. In addition, a glossary was constructed in order to provide information concerning any acronyms and to assist in the categorisation of specific terms, such as *multimodal*. The criteria were reviewed and revised during a trial coding-by-consensus between the first and second authors of 20% of the responses. In this first step, agreed criteria for each of the categories were established for coding each response as describing a teaching strategy, as describing something other than a teaching strategy, or as uncodable. Following the initial classification, sub-categories were developed by consensus between the first and second authors.

The ‘strategy’ category was divided into two sub-categories: a) the moment-by-moment *instruction* that occurred in the classroom; and b) the *organisation* of instruction, classrooms and resources. At this point, a decision was made to assume that, unless specifically stated otherwise, teachers (rather than the school students) were implementing the strategies. For example, the word *prediction* could be seen as a strategy that teachers might use to help students read unknown words in text, or it could be a strategy that students might use as part of a comprehension activity.

Responses relating to instruction were further sorted into five categories: reading (for example, guided reading, shared reading, modelled reading, phonemic awareness, decoding strategies, teach in context, chunking words, and reading roles); comprehension (for example, questioning, prediction, inferences, hear/hidden/head, summarising, and clicks to clunks); spelling for example, bossy ‘e’, invented spelling, and spelling techniques; writing, (for

example, joint construction of text, independent writing, explicit scaffolds for writing); and general, which included visual literacy, critical literacy, display of printed material, and rapid recall routines.

The instructional strategies were also categorised to determine the number of responses that corresponded to the five components of reading as recommended by the National Reading Panel (NICHHD, 2000) as follows: *phonemic awareness* included any references to phonological awareness, first sound, and segmenting; *phonics* included references to the alphabetic principle, blending, c-v-c words, decoding, encoding, letter-sound relationships and sounding out; and *fluency* included guided reading. *Comprehension* and *vocabulary* strategies are shown in Table 2.

Organisational responses were sub-divided into five categories: type of instruction, (for example, explicit instruction, strategy instruction, differential instruction, gradual release of responsibility, and the teaching and learning cycle); classroom organisation, (for example, grouping of students, writing corners, literacy rotations); program organisation, (for example, practice/time to revise, integrate with other KLAs, and 'incorporate the arts into literacy programs'); lesson organisation, (for example, 'start with outline of lesson and end with a summary of lesson/recap to assist memory'); and 'other', (for example, 'refer students with low literacy to literacy support staff in your school'). All statements were categorised by the first and second authors, followed by a final categorisation check by the third author. Inconsistencies were noted and resolved through discussion.

Table 1 about here.

Results

Nine of the 43 institutions participated in the survey in the first year. Eighty-one preservice teachers completed the survey out of a total of 1555 potential respondents (response rate of 5.2%). After the removal of invalid responses, data from 69 respondents were included in the data analysis. In the second year a total of 97 respondents out of a potential total of 2344 completed the survey (response rate of 4.14%). Data for 91 respondents were included in the data analysis.

Preservice Teachers' Knowledge of the Five Main Components of Literacy Instruction

A total of 160 preservice teachers provided answers to the question, *Which of the following are the five main components of literacy instruction?* by selecting responses from a list of eight items and an *unsure* option. The percentage of preservice teachers who nominated each of the five main components of literacy instruction identified in the National Reading Panel report is provided in Table 1. The correct identification of vocabulary, fluency, comprehension and phonemic awareness was made by more than 70% of respondents. However, phonics was correctly identified by fewer than 55% of respondents.

Table 2 about here.

Preservice Teachers' Knowledge of Instructional Practices Supported by Research

A total of 158 preservice teachers completed the question *Which of the following practices have support in the literacy research?* Respondents were asked to select any number of responses from a total of nine options. As shown in Table 2, fewer than 60% of respondents selected phonemic awareness, phonics, and phonics-based readers as having support in the research into early literacy instruction and only 37% selected direct instruction as a research-based instructional practice. However, nearly 70% of respondents supported the use of a rich language environment rather than systematic instruction, as well as the use of

picture cues, and 54.4% indicated a preference for a whole-language instructional approach for those students who struggle to learn to read.

Table 3 about here.

Preservice Teachers' Nominated Literacy Teaching Strategies

A total of 113 preservice teachers (50 in the first year and 63 in in the second year) provided a listing of their preferred literacy teaching strategies. Twenty-one respondents provided more than five strategies, 46 respondents supplied five strategies and 46 respondents listed fewer than five strategies. The resultant 474 strategy items were sorted into three major categories as described in the method: *strategy* (226 items); *other responses* (141 items); and *uncodable* (107 items). It should be noted that, even though a response may have been categorised as a strategy, this does not necessarily indicate quality. In fact, many strategies were vague and limited in application, for example, ‘look, say, cover, write, check’, and ‘use kinaesthetic learning activities when possible’.

Strategies.

Of the strategy items, 176 were categorised as instructional strategies and 50 were categorised as organisational strategies. Two groups, reading and comprehension, accounted for 82% of the total responses for instructional strategies. All other items had four or fewer counts (see Table 3). Twenty-four percent of strategies (42 items) were nominated by one respondent only and included: ‘using full stops instead of *and*’; ‘stretch out words like bubble gum’; ‘hear/hidden/head’; and ‘literature through drama strategies’. These strategies are not included in Table 3.

Table 4 about here.

Fifty responses were categorised as organisational strategies with explicit instruction (9), practice/time to revise (7), the use of rich and wide range of literature and texts (4), and integration with other KLAs (3) receiving the highest number of nominations (see Table 4). Thirty-four percent of strategies (17 items) were nominated by one respondent only and included: ‘group students by reading strategy’; ‘incorporate the arts into literacy programs’; and ‘gradual release of responsibility’.

Table 5 about here.

Other Responses and Uncodable Elements.

The 141 responses classified as ‘other responses’ were sorted into six groups: content (66); programs (29); assessment (13); activities (13); resources (11); and no strategies provided in literacy units (9). Nine respondents stated that they had not learnt any teaching strategies during their literacy units, for example, ‘I honestly can't say I've learnt a specific teaching strategy. We have adopted many activity ideas but not much else.’ and ‘I'm really ashamed to say that I don't feel that I have any at all, at least not any that I learned at uni. Only two units dealt with literacy, and the 4th year one is dealing more with my own writing, not how to teach or improve children's writing.’ One hundred and seven responses were classified as uncodable. Examples included ‘being compassionate’, ‘literacy is a daily occurrence’, ‘onomatopoeia’, and ‘know students and how they learn’.

Links to the National Reading Panel Recommendations.

The data from the open-ended question regarding instructional strategies (*Please list the five most important literacy teaching strategies that you learnt in your preservice teacher education course*) were also analysed to determine the number of responses that corresponded to the five components of reading (phonemic awareness, phonics, fluency, comprehension and vocabulary) as recommended by the National Reading Panel (NICHD,

2000). Fifty of the 113 respondents who answered this question included one or more of the five components. The concept of phonemic awareness was mentioned 33 times, phonics was mentioned 36 times, fluency was mentioned 27 times, comprehension 41 times, and vocabulary 3 times, making a total of 140 references to the five components out of a total of 474 items (see Table 5).

Table 6 about here.

Discussion

Although there has been some research into the knowledge and skills of Australian preservice teachers in relation to beginning reading instruction (Fielding-Barnsley, 2010; Mahar & Richdale, 2008; Meehan & Hammond, 2006; Tetley & Jones, 2014), few researchers have investigated the extent of preservice teachers' knowledge of the *research* that underpins best practice for the teaching of beginning reading. Only one Australian study was found in which final-year preservice teachers' knowledge of research-based evidence in relation to a range of instructional practices, including beginning reading, was surveyed (Carter, Stephenson, & Hopper, 2015). In this study, preservice teachers were asked to rate the strength of the research evidence for both *Whole Language reading* and *phonics instruction*, given definitions of each of these terms. No difference was found between the mean ratings for Whole Language and phonics, despite the lack of evidence supporting the use of a Whole Language approach. The purpose of the current study was to survey final year preservice teachers enrolled in early childhood and primary teacher education courses across Australia in order to investigate the extent of preservice teachers' knowledge of a broader range of research-based practice in the teaching of early literacy.

Preservice Teachers' Knowledge of the Five Main Components of Literacy Instruction

The National Reading Panel identified phonemic awareness, phonics, fluency, comprehension and vocabulary as being particularly important for the teaching of reading. Most survey respondents selected comprehension as one of the five main components of reading instruction, followed closely by phonemic awareness. One of the recommendations reported in the National Reading Panel report was that instruction in phonemic awareness and phonics is beneficial for all students, including those who struggle to learn (NICHD, 2000). Phonics, however, was nominated by just over half of respondents. Interestingly, only three of the 160 respondents nominated the 'unsure' category for this question, suggesting that most respondents had high levels of confidence in their knowledge of this research. Carter et al. (2015) reported similarly high levels of confidence of preservice teachers in their judgements about the research base for educational practices.

The response to the questions relating to the identification of research-based practice, and the reporting of important early literacy instructional strategies learnt in pre-service training, revealed some interesting findings. Just over half of the respondents identified practices involving phonics and phonemic awareness as research-based practice. The remainder would appear to be unaware of the research supporting the teaching of these skills. In the nomination of important early literacy strategies, confusion was also evident regarding the terminology for the phonics and phonemic awareness content areas: for example, *phonic awareness*, *phonetics for decoding*, *phonology*, and *creating phonological awareness*. These responses suggest that although preservice teachers may be familiar with the terms, they do not necessarily have a deep understanding of them.

Similar results have been reported in previous studies. In Australia, Meehan and Hammond (2006) observed a confusion in preservice teacher knowledge of the terms phonemic awareness and phonological awareness. Results of studies conducted internationally revealed that: preservice teachers had limited knowledge of terminology

related to instruction in sound-symbol relationships, and that two-thirds of preservice teachers thought that phonological awareness was a method of reading instruction that included individual letters and sounds (Mather, Bos, & Babur, 2001); first-year teachers had limited knowledge of phonological awareness and confused it with phonics (Cheesman, McGuire, Shankweiler, & Coyne, 2009); and results from a study by Washburn, Joshi, and Binks-Cantrell (2011) indicated that fewer than 60% of preservice teachers could correctly select the definition of phonemic awareness.

Preservice Teachers' Knowledge of Instructional Practices Supported by Research

Explicit instruction in phonemic awareness and phonics has stronger research support than a Whole Language approach. Results from Hattie's three meta-analyses of influences on learning and achievement (2009, 2011, and 2015) found an effect size of 0.06 for Whole Language programs (Hattie, n.d.). This effect size is below the cut-off point of 0.4 for practices that are considered likely to be effective. Hattie's presentation of meta-analytic data has indicated that phonics and phonemic awareness instruction combined with a direct instruction approach to teaching is a powerful model for reading instruction, which, in turn, also improves reading comprehension performance (2009). Fewer than 60% of the respondents in the current study selected *ensuring that all children have good phonemic awareness skills*, and *using phonics-based readers in the early grades* as research-based practice. Further, the percentage of respondents selecting the systematic teaching of phonics as a research-based practice (57.6%), was similar to the percentage selecting a Whole Language approach (54.4%). These findings support the results of the Carter et al. study (2015) in which no significant difference was found between the ratings preservice teachers gave for the research evidence supporting Whole Language compared with the evidence

supporting phonics. It is of particular concern that over half of the respondents endorsed Whole Language approaches for teaching students who struggle to learn to read.

As both phonemic awareness and phonics have been the subject of decades of research and are considered to be essential components of early reading instruction, it is interesting to note an inconsistency in responses. More than 80% of preservice teachers nominated phonemic awareness as one of the five main components of literacy instruction, but fewer than 60% nominated 'ensuring all children have good phonemic awareness skills' as having support in the literacy research. Responses were more consistent, even if unsupported, regarding the research support for phonics. When these results are compared with the greater number of nominations for partial guidance practices such as 'providing a rich language environment rather than systematically teaching component skills', as well as the higher rate of instructional strategy nominations focusing on comprehension and meaning-making compared to phonics and phonological awareness, there is cause for concern regarding the inclusion of evidence-based research in preservice teacher preparation courses. These results reflect the findings from studies in other countries. In the United States, for example, Bos, Mather, Podhajski, and Chard noted that current research and national initiatives into the teaching of evidence-based reading instruction did not appear to be promoted by teacher educators (2001). Ten years later, Washburn, Joshi, and Binks-Cantrell (2011) reached similar conclusions, finding that preservice teachers were not being provided with the basic language constructs necessary for the implementation of scientifically based reading instruction. Finally, an Australian study published in 2005, reported that the preparation of preservice teachers to teach reading was uneven across universities, that many compulsory literacy courses devoted less than ten percent of teaching time to preparing teachers to teach reading, and that there was a need for an evidence-based approach to be adopted (Rowe, 2005).

Preservice Teachers' Nominated Literacy Teaching Strategies

Nearly a quarter of the total strategies listed were nominated by one respondent only and covered a wide range of topics, suggesting that a core knowledge base is not uniform across institutions.

Instructional strategies.

Most of the literacy instructional strategies were reading or comprehension categories, with almost half relating to comprehension. Guided reading, modelled reading and shared reading received the highest number of nominations. However, as reading for meaning is seen as the primary goal of guided reading (Ford & Opitz, 2011), shared reading is seen to contribute to oral language skills and print knowledge (National Institute for Literacy, 2008) and comprehension (Gosen, Berenst, & Glopper, 2013), and modelled reading requires the teacher to demonstrate the process of reading by 'thinking aloud', it would appear that the main aim of these three *reading* instructional strategies is to have children understand text rather than learn basic decoding skills.

Although comprehension is critical, in order to comprehend a text it is necessary for the reader to decode words on a page fluently and automatically (Foorman, Herrera, Petscher, Mitchell, & Truckenmiller, 2015). Phonics and phonological awareness instruction provide the essential foundational skills for decoding (National Institute for Literacy, 2008; NICHHD, 2000; Rose, 2006; Rowe, 2005), but of the 176 literacy instructional strategies nominated by preservice teachers, only 24 referred to phonics instruction and 11 referred to components of phonological awareness instruction (around 20% of responses). These results parallel the findings of Mahar and Richdale (2008) that, although the Australian teachers in their study said they were supportive of explicit phonics-based instruction, the majority did not use this approach in their classrooms. The preponderance of responses relating to comprehension and the relative lack of responses regarding phonics and decoding, suggest

preservice teachers are not learning how to teach the fundamental components of early reading.

Organisational strategies.

Two organisational strategies, explicit instruction and practice/time to revise, received the highest number of nominations and accounted for 32% of the responses. However, given the extensive research base that supports explicit instruction, this result must be considered less than satisfactory. In addition, a number of important and effective organisational strategies were not nominated at all by respondents. Some of these strategies were originally researched more than thirty years ago (Rosenshine, 1982) and continue to be considered best practice. The strategies include diagnostic assessment (Kilpatrick, 2015) and the monitoring of progress (Carnine, Silbert, Kame'enui, Slocum, & Travers, 2017); the presentation of new material in small steps with student practice after each step (Rosenshine, 2012); brisk lesson pacing (Archer & Hughes, 2011); cumulative practice and review (Mayfield & Chase, 2002); immediate affirmative and corrective feedback (Kluger & Denisi, 1996); and mastery learning (Kulik, Kulik, Bangert-Downs, & Slavin, 1990). Considered together, these strategies provide a solid foundation on which to build a teaching approach that facilitates learning and promotes achievement, not only for those students who struggle, but for all students. The absence of any mention of these strategies suggests that these practices may not be included in preservice teaching programs.

Other Responses and Uncodable Elements.

Just over half the items suggested in response to the question relating to important literacy teaching strategies were not teaching strategies or were uncodable. Uncodable elements revealed respondents' confusion with literacy terminology, such as 'Cloze and Open Activities', 'open or short sounds', and 'practice single and double sounds', as well as the interchangeable use of the terms *phonology*, *phonetics*, *phonics*, *phonological* and

phoneme. These results are disturbing, as they suggest a lack of knowledge of the literacy strategies with which teachers should be familiar, which in turn suggests that preservice teachers may not be aware of the content and recommendations of current literacy research and the recommended practices for the teaching of early literacy.

Limitations and Future Research

In the first year, only 20.9% of universities agreed to take part in the survey process with a student response rate of 5.2%. Similarly, in the following year, 29.5% of universities supported the survey process with a student response rate of 4.14%. Low response rates from both universities and final-year education students have been reported in previous Australian research (Carter, Stephenson, & Hopper, 2015; O'Neill & Stephenson, 2012; Stephenson, 2017). As the reasons for such low return rates in this study are unknown, there may well be an inherent response bias in the results making it difficult to generalise the results to the population of preservice teachers. It could be that only those institutions that were confident about their preservice teacher preparation courses were willing to participate. If that is the case, the findings of inadequate knowledge are even more concerning.

A limitation exists regarding the use of two terms: Whole Language and 'balanced literacy'. Although knowledge of Whole Language was canvassed, the term 'balanced literacy' was not specifically targeted. However, no participants volunteered the term, even though opportunities existed for participants to do so.

The findings suggest important topics for future research. These areas might include the use of student interviews in order to collect more in-depth information about preservice teachers' early literacy knowledge, and an investigation into the content of early literacy units included in preservice teacher preparation courses, in particular the inclusion of evidence-based research into the teaching of early literacy skills.

Conclusion

The research evidence is quite clear that preservice teachers need to be equipped with the most up-to-date research concerning early literacy content and pedagogical knowledge in order to bridge the research-practice divide (Louden & Rohl, 2006; Rowe, 2005; Spear-Swerling, 2007). The results from this study suggest that this is not the case for many graduating preservice teachers, indicating that there may be a need for providers of teacher education programs to review the content of their courses. This lack of knowledge may be one factor contributing to the declining results of Australian students in international assessment programs. Knowledge of the recommendations made by the National Reading Panel (NICHHD, 2000), and the Australian Teaching Reading report (Rowe, 2005), is an ideal basis on which to build and develop teacher practice.

References

- Archer, A. L., & Hughes, C. A. (2011). *Explicit instruction: Effective and efficient teaching*. New York, NY: The Guildford Press.
- Australian Institute for Teaching and School Leadership. (2013). *Australian professional standards for teachers*. Melbourne, VIC: Author. Retrieved from <https://www.aitsl.edu.au/australian-professional-standards-for-teachers/standards/list>.
- Berninger, V. W., & Richards, T. L. (2002). *Brain literacy for educators and psychologists*. San Diego, CA: Elsevier Science.
- Bos, C., Mather, N., Dickson, S., Podhajski, B., & Chard, D. (2001). Perceptions and knowledge of preservice and inservice educators about early reading instruction. *Annals of Dyslexia*, 51, 97-120. Retrieved from <http://www.jstor.org/stable/23765365>.
- Carnine, D. W., Silbert, J., Kame'enui, E. J., Slocum, T. A., & Travers, P. (2017). *Direct instruction reading*, (6th ed.). Upper Saddle River, NJ: Pearson Education Inc.
- Carter, M., Stephenson, J., & Hopper, T. (2015). Factors in instructional decision-making, ratings of evidence and intended instructional practices of Australian final year teacher education students. *Australian Journal of Teacher Education*, 40(6), 85-103. doi: 10.14221/ajte.2015v40n6.5.
- Chapman, J. W., & Tunmer, W. E. (2016). Is Reading Recovery an effective intervention for students with reading difficulties? A critique of the i3 scale-up study. *Reading Psychology*, 37, 1025-1042. doi: 10.1080/02702711.2016.1157538.
- Cheesman, A. E., McGuire, J. M., Shankweiler, D., & Coyne, M. (2009). First-year teacher knowledge of phonemic awareness and its instruction. *Teacher Education and Special Education*, 32, 270-289. doi: 10.1177/0888406409339685.
- Clark, R. E., Kirschner, P.A., & Sweller, J. (2012). Putting students on the path to learning: The case for fully guided instruction. *American Educator*, 6-11.

- Retrieved from <https://www.aft.org/sites/default/files/periodicals/Clark.pdf>.
- Coltheart, M., & Prior, M. (2006). Learning to read in Australia. *Australasian Journal of Learning Disabilities*, 11(4), 157-164. doi: 10.1080/195041150609546820.
- Dehaene, S. (2009). *Reading in the brain*. New York, NY: Viking.
- Ehri, L. C. (2004). Teaching phonemic awareness and phonics. In P. M. McCardle & V. Chhabra (Eds.), *The voice of evidence in reading research* (pp. 153-186). Baltimore: Paul Brookes Publishing Co.
- Fielding-Barnsley, R. (2010). Australian pre-service teachers' knowledge of phonemic awareness and phonics in the process of learning to read. *Australian Journal of Learning Difficulties*, 15, 99-110. doi: 10.1080/19404150903524606.
- Foorman, B. R., Chen, D. S., Carlson, C., Moats, L. C., Francis, D. J., & Fletcher, J. M. (2003). The necessity of the alphabetic principle to phonemic awareness instruction. *Reading and Writing: An Interdisciplinary Journal*, 16, 289-324. doi: 10.1023/A:1023671702188.
- Foorman, B. R., Herrera, S., Petscher, Y., Mitchell, A., & Truckenmiller, A. (2015). The structure of oral language and reading and their relation to comprehension in Kindergarten through Grade 2. *Reading & Writing: An Interdisciplinary Journal*, 28, 655-681. doi: 10.1007/s11145-015-9544-5.
- Ford, M. P., & Opitz, M. F. (2011). Looking back to move forward with guided reading. *Reading Horizons*, 50, 225-240.
- Goodman, K. (1967). Reading: A psycholinguistic guessing game. *Literacy Research and Instruction*, 6, 126-135. doi: 10.1080/19388076709556976.
- Gosen, M. N., Berenst. J., & Glopper, K. (2013). The interactional structure of explanations during shared reading at kindergarten. *International Journal of Educational Research*, 62, 62-74. doi: 10.1016/j.ijer.2013.06.006.

- Goulding, M., Rowland, T., & Barber, P. (2002). Does it matter? Primary teacher trainees' subject knowledge in mathematics. *British Educational research Journal*, 28, 689-704.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Abingdon, OX: Routledge.
- Hattie, J. (n.d.). *Hattie ranking: 195 influences and effect sizes related to student achievement*. Retrieved from <https://visible-learning.org/hattie-ranking-influences-effect-sizes-learning-achievement/>.
- Hunt, T. C., Carper, J. C., Lasley II, T. J., & Raisch, C. D. (Eds.). (2010). *Encyclopedia of Educational Reform and Dissent*. Thousand Oaks, CA: Sage Publications Inc. doi: 10.4135/9781412957403. Retrieved from <http://sk.sagepub.com.simsrad.net.ocs.mq.edu.au/reference/educationalreform>.
- Jensen, B., Roberts-Hull, K., Magee, J., & Ginnivan, L. (2016). *Not so elementary: Primary school teacher quality in top-performing systems*. Washington, DC: National Center on Education and the Economy. Retrieved from http://ncee.org/wp-content/uploads/2016/05/169726_Not_So_Elementary_Report_FINAL.pdf
- Joshi, M. R., Binks, E., Hougen, M., Dahlgren, M. E., Ocker-Dean, E., & Smith, D. L. (2009). Why elementary teachers might be inadequately prepared to teach reading. *Journal of Learning Disabilities*, 42, 392-402. doi: 10.1177/0022219409338736.
- Kilpatrick, D. A. (2015). *Essentials of assessing, preventing, and overcoming reading difficulties*. Hoboken, NY: John Wiley & Sons, Inc.
- Kluger, A. N., & Denisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, 119, 254-284. doi: 10.1037/0033-2909.119.2.254.
- Kulik, C. L. C., Kulik, J. A., Bangert-Downs, R. L., & Slavin, R. E. (1990). Effectiveness of mastery learning programs: A meta-analysis. *Review of Educational Research*, 60, 265-

299. Retrieved from
<http://www.ic.unicamp.br/~wainer/cursos/2s2004/impactos2004/kulik90.pdf>.
- Louden, W., & Rohl, M. (2006). 'Too many theories and not enough instruction': Perceptions of preservice teacher preparation for literacy teaching in Australian schools. *Literacy*, 40, 66-78. doi: 10.1111/j.1467-9345.2006.00440.x
- Mahar, N. E., & Richdale, A. L. (2008). Primary teachers' linguistic knowledge and perceptions of early literacy instruction. *Australian Journal of Learning Difficulties*, 13, 17-37. doi: 10.1016/j.ijer.2016.03.010.
- Mather, N., Bos, C., & Babur, N. (2001). Perceptions and knowledge of preservice and inservice educators about early literacy instruction. *Annals of Dyslexia*, 51, 97-120.
- Mayer, D. (2015). *Studying the effectiveness of teacher education – Final report*. Burwood, VIC: Deakin University. Retrieved from http://www.setearc.com.au/wp-content/uploads/2013/08/SETE_report_FINAL_30.11.152.pdf.
- Mayfield, K. H., & Chase, P. N. (2002). The effects of cumulative practice on mathematics problem solving. *Journal of Applied Behavior Analysis*, 35, 105-123. doi: 10.1901/jaba.2002.35-105.
- Meehan, R., & Hammond, L. (2006). Walking the talk: Western Australian teachers' beliefs about early reading and spelling instruction and their knowledge of metalinguistics. *Australian Journal of Learning Disabilities*, 11, 17-24. doi: 10.1080/19404150609546804.
- Moats, L. C. (1994). *Teaching reading is rocket science: What expert teachers of reading should know and be able to do*. Washington, DC: American Federation of Teachers.
- Moats, L. (2007). *Whole-language high jinks: How to tell when 'scientifically-based reading instruction' isn't*. Washington, DC: Thomas B. Fordham Institute.

- Moats, L. (2009). Knowledge foundations for teaching reading and spelling. *Reading and Writing: An Interdisciplinary Journal*, 22, 379-399. doi: 10.1007/s11145-009-9162-1.
- National Institute for Literacy. (2008). *Report of the National Early Literacy Panel: Developing Early Literacy*. Retrieved from <https://www.nichd.nih.gov/publications/pubs/documents/NELPReport09.pdf>.
- National Institute of Child Health and Human Development (NICHD). (2000). *Report of the National Reading Panel. Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (NIH Publication No. 00-4769). Washington, DC: U.S. Government Printing Office.
- O'Neill, S., & Stephenson, J. (2012). Exploring Australian pre-service teachers' sense of efficacy, its sources, and some possible influences. *Teaching and Teacher Education: An International Journal of Research and Studies*, 28, 535-545. doi: 10.1016/j.tate.2012.01.008.
- Organization for Economic Cooperation and Development. (2010). *Mathematics teaching and learning strategies in PISA*. Paris, France: Author. Retrieved from <http://www.oecd.org/edu/school/programmeforinternationalstudentassessmentpisa/mathematicsteachingandlearningstrategiesinpisa.htm>.
- Rose, J. (2006). *Independent review of the teaching of early reading: Final report*. Nottingham, UK: Department for Education and Skills.
- Rosenshine, B. (1982). Teaching functions in successful teaching programs. *The Elementary School Journal* (83), 335-351. doi: 10.1086/461321.
- Rosenshine, B. (2012). Principles of instruction: Research-based strategies that all teachers should know. *American Educator*, 36(1), 12-19, 39.

- Rowe, K. (2005). *Teaching reading: Report and recommendations*. Canberra: Australian Government, Department of Education, Science and Training.
- Shulman, L. S. (1987). Knowledge and teaching: Foundations of the New Reform. *Harvard Educational Review*, 57, 1-22.
- Snow, C. E., Burns, M. S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Spear-Swerling, L. (2007). The research-practice divide in beginning reading. *Theory into Practice*, 46, 301-308. doi: 10.1080/00405840701593881.
- Stahl, S. A., & Miller, P. D. (1989) Whole language and language experience approaches for beginning reading: A quantitative research synthesis. *Review of Educational Research*, 59, 87-116.
- Stephenson, J. (2017). An overview of survey-based research carried out with Australian preservice teachers (1995–2015). *Teaching and Teacher Education*, 63, 159-167. doi: 10.1016/j.tate.2016.12.016.
- Taylor, J. S. H., Davis, M. H., & Rastle, K. (2017). Comparing and validating methods of reading instruction using behavioural and neural findings in an artificial orthography. *Journal of Experimental Psychology: General*, Advance online publication. doi: 10.1037/xge0000301.
- Tetley, D., & Jones, C. (2014). Pre-service teachers' knowledge of language concepts: Relationships to field experiences. *Australian Journal of Learning Difficulties*, 14, 17-32. doi: 10.1080/19404158.2014.891530.
- Washburn, E. K., Joshi, R. M., & Binks-Cantrell, E. S. (2011). Teacher knowledge of basic language concepts and dyslexia. *Dyslexia*, 17, 165-183. doi: 10.1002/dys.426.
- Wilson, L., McNeill, B., & Gillon, G. T. (2016). A comparison of inter-professional education programs in preparing prospective teachers and speech and language

pathologists for collaborative language-literacy instruction. *Reading and Writing: An Interdisciplinary Journal*, 29, 1179-1201. doi: 10.1007/s11145-016-9631-2.

Appendix

Survey Questions

Question 8

Please list the five most important literacy teaching strategies that you learnt in your preservice teacher education course.

Question 10

Which of the following are the five main components of literacy instruction? (mark five of the options only)

- vocabulary
- fluency
- comprehension
- context
- phonics
- spelling
- phonemic awareness
- accuracy
- unsure

Question 12

Which of the following practices have support in the literacy research? (mark as many responses as apply.)

- teaching invented spelling
- the systematic teaching of phonics
- ensuring that all children have good phonemic awareness skills
- encouraging the use of picture cues in early reading
- using phonics-based readers in the early grades
- providing a rich language environment rather than systematically teaching component skills
- using a whole-language approach for students who are having difficulty learning to read
- using a direct instruction approach for the teaching of reading
- unsure

Table 1.

Sorting of responses into categories and sub-categories including sample topics

Categories	Sub-Categories	Topics
Strategies		
a. Instructional	<ul style="list-style-type: none"> • Reading <ul style="list-style-type: none"> • Guided, modelled, shared • Phonics • Phonological awareness • Pictures as cues • Comprehension <ul style="list-style-type: none"> • Questioning • Prediction • Re-reading • Visualising • Spelling <ul style="list-style-type: none"> • Spelling techniques • Invented spelling /approximations • Writing <ul style="list-style-type: none"> • Modelled writing • General <ul style="list-style-type: none"> • Think aloud strategies 	<ul style="list-style-type: none"> • Letter-sounds • Readers Theatre • Build vocabulary • Teach in context • Inferences • Summarising • Prior knowledge • Break up words into sections and sound out each section • Grammar
b. Organisational	<ul style="list-style-type: none"> • Type of instruction <ul style="list-style-type: none"> • Explicit instruction • Differential instruction • Strategy instruction • Classroom organisation <ul style="list-style-type: none"> • Group work • Literature circles • Group by reading strategy • Program organisation <ul style="list-style-type: none"> • Practice/revision • Wide range literature and texts • Integrate with KLAs • Lesson organisation <ul style="list-style-type: none"> • Exciting tasks • Activities to introduce new concepts • Classroom discussion 	<ul style="list-style-type: none"> • Gradual release of responsibility • Teaching and learning cycle • Group in mixed ability • Literacy rotations • Writing corners • Picture books • Incorporate the arts • Oral language to develop writing/reading skills • Uncomplicated layout • Start with outline of lesson and end with summary of lesson
Other Responses	<ul style="list-style-type: none"> • Content • Programs • Assessment • Activities • Resources 	
Uncodable Responses		

Table 2.

Preservice teachers' knowledge of the five main components of literacy instruction recommended by the National Reading Panel.

Knowledge of National Reading Panel components (<i>N</i> = 160)	
<i>Vocabulary</i>	116 (72.5%)
<i>Fluency</i>	114 (71.25%)
<i>Comprehension</i>	146 (91.25%)
Context	57 (35.6%)
<i>Phonics</i>	88 (55%)
Spelling	85 (53.1%)
<i>Phonemic awareness</i>	134 (83.75%)
Accuracy	41 (25.6%)
Unsure	3 (1.88%)

Note: Correct answers are in italics.

Table 3.

Knowledge of instructional practices supported by research.

Knowledge of instructional practices (<i>N</i> = 158)	
Teaching invented spelling	27 (17%)
<i>The systematic teaching of phonics</i>	91 (57.6%)
<i>Ensuring that all children have good phonemic awareness skills</i>	95 (60%)
Encouraging the use of picture cues in early reading	107 (67.7%)
<i>Using phonics-based readers in the early grades</i>	86 (54.4%)
Providing a rich language environment rather than systematically teaching component skills	110 (69.6%)
Using a whole-language approach for students who are having difficulty learning to read	86 (54.4%)
<i>Using a direct instruction approach for the teaching of reading</i>	58 (36.7%)
Unsure	19 (12%)

Note: Answers that have strong research support are in italics.

Table 4

Instructional Strategies Nominated by Two or More Respondents

Instructional strategies (N = 176)									
Reading (n = 101)		Comprehension (n = 40)		Spelling (n = 11)		Writing (n = 10)		General (n = 14)	
Guided	21	Questioning	7	Spelling techniques	3	Modelled writing	2	Think aloud strategies	2
Modelled	12	Prediction	7	Invented spelling/ approximations	3				
Shared	11	Comprehension strategies	4	Break up words into sections and sound each section	2	Grammar	2		
Sounding out	7	Re-reading	3						
Phonics instruction	7	Visualising	3						
Phonological awareness	5	Inferences	2						
Phonemic awareness	4	Before, during and after	2	-	-				
Use pictures as cues	3	Making connections	2	-	-				
Teach letter-sound correspondences	3	Summarising	2	-	-	-	-		
Readers Theatre	2	Activation of prior knowledge	2	-	-	-	-		
Independent reading	2			-	-	-	-	-	-
Little words in big words	2			-	-	-	-	-	-
Read to children	2			-	-	-	-	-	-
Build vocabulary for fluent reading	2			-	-	-	-	-	-
Teach in context	2			-	-	-	-	-	-

Table 5

Organisational Strategies

Organisational strategies (N = 50)									
Type of instruction (n = 14)		Classroom organisation (n = 8)		Program organisation (n = 17)		Lesson organisation (n = 6)		Other (n = 5)	
Explicit instruction	9	Group work	2	Practice/time to revise	7	Engage through exciting tasks	2	Consider student interests	2
Differential instruction	2	Literature circles	2	Use of rich and wide range of literature and texts	4	Use of activities to introduce new concepts	1	Challenge students appropriate to their individual reading and writing levels	1
Strategy instruction	1	Group students by reading strategy	1	Integrate with other KLAs	3	Have classroom discussion on areas that would cause concern within a task	1	Ensure readers that are taken for independent reading are at right reading levels	1
Gradual release of responsibility	1	Group students in a mixed reading ability level	1	Picture books associated with unit of work	1	Use of uncomplicated layout to allow for understanding to occur	1	Refer students with low literacy to literacy support staff in your school (secondary)	1
The teaching and learning cycle	1	Literacy rotations	1	Incorporate the arts into literacy programs	1	Start with outline of lesson and end with a Summary of lesson/ recap to assist memory	1		
		Writing corners	1	Using oral language competencies to develop writing and reading skills	1				

Table 6

Preservice teachers' nominations of strategies that related to the five essential reading components as recommended by the National Reading Panel, 2000.

Number of nominations of reading components recommended by the National Reading Panel (N = 140)									
Phonemic Awareness (n = 33)		Phonics (n = 36)		Fluency (n = 27)		Comprehension (n = 41)		Vocabulary (n = 3)	
Phonological awareness	18	Sounding out	11	Guided reading	22	Questioning	7	Build vocabulary for fluent reading	2
Phonemic awareness	7	Phonics	9	Fluency	5	Prediction	7	Developing vocab and spelling	1
Sounding out	7	Letter-sound relationships	7			Comprehension strategies	4		
Segmenting	1	Blending	3			Visualising	3		
		Decoding	3			Re-reading	3		
		Encoding	1			Inferences	2		
		C-v-c words	1			Before, during, after	2		
		Alphabetic principle	1			Making connections	2		
						Summarising	2		
						Activation of prior knowledge	2		
						On the lines, between the lines, beyond the lines	1		
						Reading on	1		
						Discussing the texts and students' ideas	1		
						Reading for comprehension	1		

Clicks to clunks	1
Here/hidden/head	1
Teaching comprehension skills	1

CHAPTER 6: NEW TEACHERS TALK ABOUT THEIR PREPARATION TO TEACH EARLY LITERACY

Chapter Overview

This chapter, a qualitative study based on telephone interviews, has been re-submitted for publication to a peer-reviewed journal following feedback from reviewers (Meeks, Madelaine, & Stephenson, under review). Telephone interviews were conducted with eleven Australian recently graduated teachers in four Australian states with the purpose of exploring in more depth the responses, and reasons for responses, to three questions included in the online survey described in Chapter 4. Interviewees were asked to provide self-ratings of preparedness and ability to teach early reading, discuss the adequacy of their knowledge of early reading instruction, and provide opinions of the quality and content of their teacher education courses in relation to the teaching of beginning reading. Interviews took between 25 and 54 minutes to complete. Only one other Australian study has included interviews with preservice teachers; however, all students in that study were enrolled at the same tertiary institution. Results show that the recently graduated teachers who participated in the interview process have inadequate knowledge of phonological awareness and phonics, but consider themselves well, or somewhat, prepared to teach early reading skills. Suggestions for future research are included.

New Teachers Talk About Their Preparation to Teach Early Literacy

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Abstract

Although several theoretical approaches to the teaching of early reading exist, all approaches include some reference to phonics and phonemic awareness instruction. The scientific research base includes many studies which recommend the inclusion of synthetic phonics in early reading instruction. Individual telephone interviews with eleven Australian recently graduated teachers were used to explore their perceptions of their preparation to teach early reading. Interviewees provided information about their perceptions of preparedness and ability to teach early reading, their knowledge of early reading instruction, and their opinions of the quality and content of their teacher education courses in relation to the teaching of beginning reading. Responses were analysed using a consensual qualitative approach. The results indicate that most of the interviewees demonstrated inadequate knowledge of the subject-specific content of beginning reading and that they were generally critical of their preservice preparation, especially with regard to translating theory into classroom practice.

Introduction

The teaching of literacy, including instruction in early reading, remains a contentious and contested area in education, with a range of philosophies espousing different pedagogies with different emphases on the importance of code-breaking (Foorman, Chen, Carlson, Moats, Francis, & Fletcher, 2003; Moats, 2009) and meaning-making (Clark, 2016; Freebody, Luke & Gilbert, 1991). Similarly, there are different approaches to the preparation of teachers to teach literacy and early reading (Joshi, et al., 2009; Maloch, et al., 2003).

All approaches to the teaching of early reading acknowledge that phonics has a role in early reading instruction whether it is synthetic, analytic or embedded (Clark, 2016; Stahl, Duffy-Hester, & Stahl, 2006). The main difference in these approaches rests in the degree of emphasis given to phonics instruction. The synthetic approach begins by teaching students to link letters (graphemes) to speech sounds (phonemes) and, once students have acquired a small number of letter-sound correspondences, they learn to blend those sounds together into words (Johnston, McGeown, & Watson, 2012). The analytic approach teaches students to analyse letter-sound correspondences in previously learned whole words, rather than teaching sounds in isolation, with an emphasis on initial sounds, onset/rime and word families (Konza, 2011). In an embedded approach, students are taught letter-sound relationships incidentally during the reading of engaging and connected texts (Stahl, Duffy-Hester, & Stahl, 2006). Regardless of the approach, however, it is important that preservice teachers are provided with knowledge of phonics instruction based on scientific research, which favours a synthetic phonics approach to the teaching of beginning reading instruction (National Institute of Child Health and Human Development [NICHD], 2000; Rose, 2006; Rowe, 2005; Taylor, Davis, & Rastle, 2017). The focus of this study is on recently graduated teachers' knowledge and skills in

the areas of phonics and phonemic awareness for early reading instruction as drawn from scientific research.

Reports on the perceptions of Australian recently graduated teachers regarding their satisfaction with teacher education literacy programs suggest that, on average, only 50% considered their courses to be adequate in developing an understanding of spelling, phonics and grammar (Bostock & Boon, 2012; Louden & Rohl, 2006; Rowe, 2005). Studies have also indicated that recently graduated teachers have limited knowledge of phonological awareness, phonics and language structure (Fielding-Barnsley, 2010; Hammond, 2015; Rowe, 2005). Furthermore, feedback obtained from school executive staff include comments concerning the poor personal literacy of graduates, the questionable quality of their preparation for teaching literacy (Louden et al., 2005; Louden & Rohl, 2006; Rohl & Greaves, 2005; Rowe, 2005), as well as inadequate preparation for the realities of teaching generally (Teacher Education Ministerial Group, [TEMAG], 2014). Despite decades of research that has linked the quality of teachers' subject-specific content and pedagogical knowledge to student achievement (Darling-Hammond, 2000), a recent investigation into the content of teacher preparation programs in New South Wales, Australia, found a lack of clarity and considerable variation in approaches to the teaching of reading (Centre for Education Statistics and Evaluation, 2017).

Three categories of content knowledge described by Shulman (1986) could provide a framework for exploring the knowledge of recently graduated teachers about literacy instruction. Subject content knowledge refers to the amount, organisation and structure of subject matter. Pedagogical content knowledge refers to the methods that teachers choose when representing concepts in order to make the content comprehensible and the understanding of what makes learning a particular topic easy or difficult. Curricular

knowledge refers to the content of the full range of programs designed for the teaching of a particular subject, including the ability to link the content to the preceding and following years' instruction.

Subject Content Knowledge

Reading requires the application and combination of two sets of fundamental knowledge and skills: decoding and the construction of meaning. Research has consistently demonstrated the need for beginning readers to learn the alphabetic principle in order to learn to read and write (Gersten, et al., 2009; National Institute of Child Health and Human Development [NICHD], 2000; Rose, 2006; Rowe, 2005). Early decoding (reading) skills may be organised under two main headings: phonemic awareness and phonics. Phonemic awareness skills (one of the sub-skills of phonological awareness) assist students to blend phonemes together to read a word, and to isolate phonemes in order to spell a word. Phonics knowledge includes grapheme-phoneme relationships and whole word recognition. The integration of phonemic awareness and phonics skills enables students to link spoken language to written language (Hulme & Snowling, 2013; Moats, 2009; Seidenberg, 2017).

Pedagogical Content Knowledge

Research clearly demonstrates that novice learners benefit from direct, explicit instruction and are generally unlikely to work out new concepts and relationships for themselves (Archer & Hughes, 2011; Kirschner, Sweller, & Clark, 2006; Rose, 2006; Stockard, Wood, Coughlin & Khoury, 2018). Pedagogical content knowledge for early reading includes instructional planning (including the development and use of scope and sequences); assessment (including the monitoring of progress); instructional delivery (direct instruction, explicit instruction, systematic instruction); corrective feedback

processes; re-teaching (Bellert, 2015; Carnine, Silbert, Kame'enui, & Tarver, 2010) and massed and distributed practice (Sayeski, Earle, Eslinger, & Whitenton, 2017).

Curricular Knowledge

Shulman (1986) described four specific types of curricular knowledge: a) programs and corresponding materials and resources; b) the effectiveness and implications of programs and materials to suit given contexts; c) lateral curricular knowledge; and d) vertical curricular knowledge. Lateral curricular knowledge refers to the content and corresponding materials of other subject areas being studied at the same time as the target curriculum area. Vertical curricular knowledge refers to the scope and sequence across grades and years of a given program. For example, a Year 1 teacher in Australia may be expected to teach students to 'manipulate sounds in spoken words, including phoneme deletion and substitution', but also be aware that prior knowledge (from the Foundation year) should include 'recognise rhymes, syllables and sounds (phonemes) in spoken words', and that the following Year 2 curriculum requires students to 'recognise most sound-letter matches including silent letters, vowel/consonant digraphs and many less common sound-letter combinations' (Australian Curriculum, Assessment and Reporting Authority [ACARA], n.d.). These four types of curricular knowledge require teachers to have a deep specific subject knowledge base, in-depth knowledge of associated curriculum areas, and the ability to combine these areas of knowledge in order to accommodate student needs.

Between 2005 and 2017, there have been 12 Australian studies into preservice teacher knowledge and perceptions of preparedness to teach early reading. Eight studies reported on surveys alone (Authors, 2017; Bostock & Boon, 2012; Fielding-Barnsley, 2005; Fielding-Barnsley, 2010; Mahar & Richdale, 2008; O'Neill & Geoghegan, 2011; Stark, Snow, Eadie & Goldfeld, 2016; Tetley & Jones, 2014), one survey was followed

by observations (Hammond, 2015), two surveys were supplemented with focus group interviews (Harper, & Rennie, 2009; Louden et al., 2005); and one survey was followed by individual interviews (Meehan & Hammond, 2006). There is thus a need for an in-depth examination of recently graduated teachers' perspectives on their knowledge and preparedness to teach early reading that goes beyond survey responses. Individual interviews with recently graduated teachers designed to collect rich qualitative data to extend and explore the survey data reported in Authors (2017) are reported in this paper. The interview questions were designed to address into the following research questions:

- What are recently graduated teachers' perceptions of their preparedness and ability to teach early reading, particularly phonological and phonics skills?
- How well do recently graduated teachers' perceptions of preparedness and ability to teach early reading match their stated knowledge and skills?
- How do recently graduated teachers view the quality and content of their teacher education courses related to teaching literacy?

Method

Participants

Participants were initially recruited through online surveys, described in Authors (2017), designed to determine final-year early childhood and primary preservice teachers' perceptions of preparedness and ability to teach early reading skills, as well as their knowledge of components of early reading, such as phonemic awareness and alphabet knowledge. Respondents were asked to indicate if they were interested in participating in a follow-up interview. Of the 19 students who expressed interest in the interview process after completing the online surveys, only five students finally agreed to do so. In order to recruit additional participants for the interview process, and after receiving approval from the Human Research Ethics Committee, an email was sent to each of the five

interviewees attaching an invitation to be forwarded on to any recent graduates with whom they were still in touch and who may be interested in completing the interview process. A further six recent graduates agreed to participate, thus eleven recent graduates from teacher education programs were interviewed by telephone regarding their views of personal preparedness and ability to teach early literacy skills. In order to maintain interviewee confidentiality, each of the eleven interviewees was given an identifying code (ID01-ID11). All interviewees had completed a bachelor-level early childhood or primary teacher education course at the time of interview. Seven of the graduates were employed in their first year of teaching and the remaining four were looking for employment. See Table 1 for course descriptions, location of institutions and modes of study.

Table 1 near here

Materials

A semi-structured interview protocol was developed based on a sample provided by the National Center for Postsecondary Improvement (2003) (see Appendix). The authors of the protocol drew on the research of Creswell (1994) and Weiss (1994). Questions were organised into four sections. First, demographic information was collected (state, degree, employment). Second, open-ended introductory questions explored the interviewees' experiences in relevant early literacy units and practicum. Next, interviewees responded to three questions related to their *preparedness* to teach beginning reading and perceived *ability* to teach phonological awareness skills and phonics skills to Kindergarten-Year 2 students. These questions required participants to choose a description, or to provide their own description, of their perceived levels of preparedness and ability to teach beginning reading skills, and were followed by open-ended probe questions designed to explore their actual knowledge of early reading instruction (subject content knowledge, pedagogical content knowledge and curricular knowledge). The

probe questions included asking interviewees to provide their own definitions of phonological awareness and phonics and to describe how they would structure a beginning reading program. Finally, a general, open-ended question was asked relating to the content of literacy units completed. The interview protocol was trialled face-to-face with a preservice, final-year student who was completing a final practicum, and a beginning teacher, at a state school in NSW. No changes to the interview protocol were deemed necessary.

Procedures

Information about the interview process, a copy of the interview outline, an invitation to participate and a consent form were sent to the final eleven recently graduated teachers. Once formal consent was obtained the telephone interviews took place on a date and time nominated by each participant. The interviews took between 25 and 54 minutes to complete and were audio recorded. All recordings were transcribed by the first author. A transcription was sent to each interviewee for validation (Braun & Clarke, 2006). Only one respondent required changes - the removal of some names of individuals and some school names.

Interview Data Analysis

Interviewees were asked to give a 1-5 rating in response to both preparedness and ability questions. Descriptive information was also given for each of the numerical ratings. As many participants gave a descriptive answer to these questions, and some did not give a numerical rating at all, these data have been analysed qualitatively. Using a consensual qualitative research approach, in which a few cases are studied intensively, open-ended questions are used to gather data, and the data is analysed by consensus (Hill et al., 2005), the data were analysed based on the procedure described by Lofgren (2013). This process has a number of steps. In step one the first and second authors read through a

set of three interview transcriptions, chosen at random, and identified and highlighted relevant units of information (words, phrases or sentences). Following this, the first and second authors developed a set of preliminary category headings in order to sort and group the units of information. A discussion followed in order to compare category headings, resolve any disagreements, and to establish an initial set of categories. Next, using the category headings, the first and second authors coded the remaining interviews by consensus. During this process, the categories were reviewed and revised as necessary. Very similar content was combined, some categories were separated into multiple headings in order to better represent data, and new categories were created in order to include unexpected information. The final list of categories is provided in Table 2.

Table 2 near here

The coded data were then collated by category across all transcriptions by the first author. The first and second authors used the collated data and worked together to link the categories to the research questions. The first and third authors then collated comments concerning *knowledge* of the content of early reading for each interviewee, using the categories *beginning reading*, *phonological awareness*, and *phonics*. An overall rating of ‘adequate’ or ‘inadequate’ was assigned to each respondent’s early reading knowledge using the following criteria: an ‘adequate’ rating required mention of research-based practices, for example, phonemic awareness, blending, phoneme counting, digraphs, syllables, and the alphabetic principle. An ‘inadequate’ rating included failure to mention research-based practices, or mention of practices that did not have a research base; responses that indicated an interviewee did not know anything about the subject content; indications that interviewees could not recall subject matter; responses that demonstrated confusion; and interviewee admissions of having forgotten content taught in university courses (see Table 3).

Table 3 near here

Finally, the data were analysed in two different ways: a) internal consistency within *individual* interviews between recently graduated teachers' perceptions of preparedness and their early reading knowledge; and b) an analysis of *group* responses for recently graduated teachers' perceptions of preparedness and their knowledge for similarity of statements and for contrary cases (Burnard, Gill, Stewart, Treasure & Chadwick, 2008). The iterative and constant-comparison nature of this procedure is seen to contribute to the reliability of the data analysis.

Results

Interviewees' Perceptions of Preparedness Compared with Knowledge of Early Reading Instruction, Phonological Awareness and Phonics

Two participants (ID02 and ID05) described themselves as well prepared or proficient to teach early reading, two (ID04 and ID09) described themselves as somewhat prepared and seven believed they were not well prepared. Both of the interviewees who described themselves as *proficient* to teach early reading demonstrated inadequate knowledge for both phonological awareness and phonics. One of the two respondents who described herself as *somewhat prepared* to teach beginning reading, also described herself as being *not* well prepared to teach either phonological awareness or phonics and demonstrated inadequate knowledge. The other interviewee, however, described himself as having average phonics knowledge, but was, in fact, the only interviewee to demonstrate adequate knowledge. Of the seven respondents who described themselves as being not well prepared to teach beginning reading, four also described themselves as having minimal ability to teach both phonological awareness and phonics. One of these seven respondents described himself as having limited ability to teach phonological awareness, but just 'a bit below proficient' for ability to teach phonics, and two described

themselves as being either proficient or average to teach both phonological awareness and phonics. All seven of these respondents demonstrated inadequate knowledge.

Views of Course Content and Practicum Experiences

An analysis of the responses concerning course content and practicum experiences revealed three major areas: preparation for early reading instruction; gaps in knowledge; and theory-into-practice issues.

Preparation for early reading instruction. Generally, these comments referred to units, university staff and practicum supervising staff, practicum placements and the provision of resources. Comments associated with types of units referred to early-childhood, primary, English curriculum and literacy units and comments regarding the content of units included reference to phonics, reading development, text types, writers' and readers' workshops, and primary literacy. One interviewee commented on elective linguistic units, rather than core education units (ID02), and although a fifth interviewee indicated that she was well prepared to teach beginning reading, phonics and phonemic awareness it was not clear whether she gave credit to her preservice literacy units or to her prior knowledge (ID05). Two interviewees made favourable comments about course staff, rather than the course itself, for example, "That was the same – first year. The course when [tutor's name] taught us everything." (ID06). Similarly, practicum supervising staff were favourably described: "... my mentor was absolutely amazing. She went beyond her means to make sure that I was getting the support I needed." (ID11). Favourable comments about practicum placements were made by three interviewees, for example, "And it was K-6. That was brilliant. The dynamics and the programming, I just found it amazing." (ID09). Finally, two interviewees referred to helpful resources provided during a unit.

Gaps in knowledge. Gaps in interviewees' knowledge of early reading instruction were determined in four ways: by interviewees specifically stating that they had limited knowledge of aspects of early literacy instruction; commenting that they would need to access other sources of information in order to be able to construct or teach an early reading program; by being unable to answer questions regarding specific subject content knowledge; or by giving confused or incorrect answers. The cause of these gaps in knowledge may be due to the inability of the interviewees to recall information, "... the beginning primary English course wasn't very practical. There was a lot of theory, but not a lot of practice, and so I don't really remember a lot of what we learnt on the theory side of things (ID10)", or because certain topics were not included, or covered in depth, in preservice literacy units.

Subject content knowledge and pedagogical knowledge. Ten of the eleven interviewees were rated as having inadequate subject content knowledge. Indeed, many interviewees acknowledged that they had gaps in subject-specific and/or pedagogical knowledge. Examples of subject-specific comments included: a) beginning reading, "No, I need to know how this is done. And that was one of the main reasons why I went that one step further [to do four linguistics units]. And I think I still don't know how to do it." (ID09); b) phonological awareness, "I'm not too sure what it means. I'm not confident. ... I'm thinking about sounds." (ID08); and c) phonics, "We didn't actually ... and this is where I'm struggling at the moment ... cover them with actually all of the letters, it was just *this is what a digraph is*, not *here are the digraphs*." (ID10). Such comments suggest that these preservice teachers may not have mastered the essential foundational skills of early reading instruction.

Comments concerning pedagogical knowledge demonstrated interviewees' concern for the implementation of early reading instruction, suggesting that these recently

graduated teachers may not have an integrated overview of early reading instruction, for example: "... *how* do you start with a child and *where* do you start ..." (ID06), and [beginning reading] "I would not know where to start." (ID10). These comments demonstrate deficits in instructional planning knowledge including the inability to program for early literacy instruction: "So, I've got all the stuff there, but I don't have how you'd set your program up, and that's the thing that I thought was really missing. (ID07).

Forgotten content. Many of the participants acknowledged that subject-specific information had been included in their preservice preparation, but that it had been forgotten or was difficult to recall. Interviewee comments included [phonemic awareness] "I'd probably have to go and look it up again. I did it four years ago, so it's a long time, but, yes, I could probably look it up and it would probably return to me pretty quickly." (ID01); [phonological awareness] "Oh, that's going back to the last trimester ... and I'm just trying to remember the distinction!" (ID02); "I remember we were introduced to both of those terms [phonological awareness and phonemic awareness] in the first course. I can't remember the difference." (ID09).

Other sources of information concerning reading instruction. The lack of content and practical pedagogical knowledge resulted in many interviewees using a range of alternative sources of information. One interviewee referred to prior working experience, "I was a teacher assistant in a 2/3/4 class." (ID05). Use of the internet was mentioned, "... going on the net and seeing what else is there" (ID07) and "I learnt about that on Teachers Pay Teachers. It's a resource website, where you can buy resources that have been premade, and you can just print them out." (ID10). Friends, family and colleagues were sources for others: "I'm lucky I have a good mentor. She's been explaining everything so well" (ID10) and "But early literacy, there's a lot out there, and there's some really great teachers in my school in particular, that I can talk to." (ID04). One

interviewee reported looking at the content of her own children's teaching "Ah. I know about that from my kids' school." (ID07). Only two of the alternative sources were related to formal teacher education. One interviewee had completed electives, "And then I've also done four linguistic electives as well, because I didn't feel quite ready." (ID02) and one referred to text books, "And then I've got a couple of books, that I'll go, OK. What am I going to do here, and go back to the books" (ID07).

Theory into practice.

Practicum placements. As shown in Table 4, interviewees had completed a range of practicum placements, but five interviewees had not completed any early years' placements at all. One interviewee was concerned with her limited practicum placements and arranged some volunteer sessions in order to experience a wider range of grade placements, "So we didn't get the young kids at all. I actually went in and volunteered in a few younger grades ... so I could see a little bit of the teaching, but it was only ... three or four sessions that I went in to the classroom." (ID06).

Table 4 near here

Two other issues regarding practicums were also reported by interviewees. First, students were required to do most of the teaching during a practicum experience resulting in little time being available to observe experienced teachers in action, for example, "I didn't really see anyone do anything ... most of my pracs just expected me to do the teaching." (ID01). Second, inadequate supervision by the classroom teacher, for instance, the reason given for placing one preservice teacher with an incompetent supervising teacher was that, as she was a mature-aged student she would be able to cope better than the younger preservice teachers (ID06), and "The poor little year ones were doing lots of worksheets and a lot of the time I was taking the class so that she could write reports. It wasn't the best experience ... I think that was a kind of a missed opportunity." (ID04).

The issue of subject content knowledge was also mentioned in relation to practicum placements: [syllables and digraphs] “Yeah. But I have learnt more in prac, because some of the schools I’ve been at have been using the THRASS.” (ID11). In addition, comments concerning the practical aspects of teaching included: [activities, ways of grouping kids]: “There was a couple, last year, in one of the subjects, but I’ve picked up most of them from actually going out on prac.” (ID02); “Teaching skills came from practicums.” (ID08); “I learnt so much because I had a ten week prac at (name of school) in my final year – it was full time – and I did pretty much the full time teaching load as well for that whole ten weeks. I learnt more in that ten weeks than I reckon I did over the last three years.” (ID11).

Course content. In two cases, interviewees stated that course content did not appear to be linked to the practicalities of teaching literacy in the early grades “... hard to know how to teach all these early literacy skills. I did lots of literacy group activities with the kids, which was really good, but I felt that I was missing some of the ideas behind why we were doing them.” (ID02). Five of the interviewees commented that they had content knowledge, but did not know how they would teach that content, for example, “syllables, breaking words into syllables ... Yes, I do know about it, but I don’t know how I would teach it.” (ID08). A number of interviewees also commented on the need to construct their own knowledge: “they didn’t tell us how to do it. They told us to go away and learn how to do it. And read it and make up our own minds.” (ID01); [phonological awareness, syllables, onset and rime, rhyming activities and phonemic awareness] “I can tell you that they gave us the definitions for all of them, because we were told to learn the definitions for the test, but we did not see how they worked.” (ID10).

Discussion

Only three of the eleven interviewees rated themselves as being prepared to teach

beginning reading. Many interviewees acknowledged that their subject-specific knowledge, including phonological awareness and phonics, was superficial and that they had concerns about their ability to program for, and implement, early reading instruction. Similar results were reported in an Australian study (Meehan & Hammond, 2006) in which preservice teachers reported that they believed phonological awareness and phonics were important components of literacy instruction, but only seven per cent of participants stated that they felt well prepared to teach reading.

If, as asserted by Rowe, reading is the key to literacy competence (2005) and phonemic awareness, phonics, fluency, vocabulary and comprehension are the main elements of literacy (NICHHD, 2000), then it is concerning that ten out of the eleven interviewees had limited knowledge regarding the components of early literacy instruction as evidenced by research. Similar findings have been reported by Mahar and Richdale (2008), Mather, Bos and Babur (2001), and Stark et al. (2015). In particular, a number of interviewees demonstrated confusion with the meaning of various literacy terms, such as phonics, phonology, phonetics, phoneme and phonological awareness, and used them interchangeably. These findings are similar to those reported by Mather et al. (2001). Even more troubling was that two of the interviewees were unaware of their limited competence, as their actual knowledge did not match their perceptions of being proficient in their ability to teach beginning reading. This concept of *not knowing what one does not know* in relation to early reading instruction has also been reported by Leader-Janssen and Rankin-Erickson (2013), Bostock and Boon (2012) and Stark et al. (2015).

A number of inconsistencies within individual responses give rise to a fundamental question: How is it possible for these recently graduated teachers to demonstrate inadequate knowledge of phonological awareness and phonics, but consider themselves

well, or somewhat, prepared to teach beginning reading? One answer may be that perceptions of being prepared are a consequence of the content of university subjects. If emphasis on the explicit teaching of phonological awareness and phonics, and content related to these areas, is limited in their courses, recently graduated teachers may not perceive the importance of these basic skills.

Interviewees made a number of favourable comments about their teacher education courses in relation to teaching literacy. Some comments related to the units they had undertaken and some were directed at a particularly outstanding tutor or lecturer. Most comments, however, related to perceived gaps in interviewees' content knowledge and to difficulties with putting theory into practice.

Gaps in content knowledge for the teaching of beginning reading may be considered in two ways. Some interviewees acknowledged that they had completed units that included instruction in phonics and phonemic awareness, but due to the fact that the unit was presented in the first year of their course, and not revisited or reviewed again in any subsequent units, that they had forgotten the content. Other interviewees considered that the coverage of these subjects had been superficial and lacked in-depth coverage. Related to this lack of knowledge is that, when they reported using other sources of information to inform their teaching practice, no references were made to university notes, research articles or academic libraries. Similar results were reported by Landrum, Cook, Tankersley and Fitzgerald (2002). They reported that teachers preferred to use information provided by colleagues, workshops and in-service programs rather than professional teaching journals. An important issue here is that many of these alternative sources may not have a quality control mechanism, suggesting that if teachers are using these sources it is important that they should have the knowledge to discern good from poor practice.

Putting theory into practice is the ultimate goal in teacher education. The relationship between the content of subject-specific units and practicum experiences provides the basis for this connection. Many interviewees expressed concern with issues of putting theory into practice. Some comments were focused on course content and some on practicum placements. One of the major problems noted by interviewees was the lack of instruction provided in tutorials on how to explicitly *teach* a given concept, such as syllables. Louden and Rohl (2006) reported similar findings with 43% of the primary beginning teachers in their study indicating that they needed more practical ideas and strategies to be included in their preservice literacy courses. When this situation is considered in conjunction with statements indicating that course content did not appear to be linked to the practicalities of teaching literacy in the early grades, the question of the quality and type of practicum placements needs to be considered.

If preservice teacher education involves the acquisition of content specific knowledge as well as the use of this knowledge base in designing and implementing instructional programs (Van den Hurk, Houtveen, & Van de Grift, 2017), then practicum experiences play an important role in linking theory and practice. Interviewees made a number of favourable comments about their practicum placements relating to the quality of the supervising teacher, the feedback received and the range of grade placements experienced. Other interviewees, however, reported a number of issues with practicum placements. These included poor support and feedback from the supervising teacher, no placements in early grade classrooms, the expectation that the preservice teacher would do all of the teaching and an insufficient number of opportunities to observe experienced teachers giving instruction in reading. Similar results were reported in the Australian *Teaching Reading* report (Rowe, 2005), which suggested that some preservice teachers could graduate without ever experiencing the teaching of beginning reading in an early

years classroom. When poor or inadequate practicum experiences are combined with limited subject-specific content and pedagogical knowledge for the teaching of early reading skills, the end result may well be a cohort of stressed and ill-prepared teachers in early grade classrooms.

In the best of all possible worlds, the content of early literacy units would be research-based, sequenced and practical. The literacy units would enable novice teachers to provide instruction to all students, including those who struggle to learn and under-performing students, and would focus on topics and concepts that match the needs of preservice teachers and novice teachers (Kosnik & Beck, 2008). Furthermore, the content of literacy units would be directly linked to corresponding practicum placements, with all students completing a practicum in early years classrooms, and the supervising teachers would be experts in teaching early reading.

Limitations and future research

Although the number of interviewees included in this study satisfies the recommendation of 8-15 participants needed for qualitative research and participants came from different states and universities, it is acknowledged that this very small number of self-selected volunteers calls for caution when generalising these findings to other groups of preservice teachers. A further limitation is related to the specific focus of the questions, most of which concerned the scientific research base for beginning reading instruction rather than other theoretical positions. Future research could include a replication of the interview process with a larger number of participants, and a review of the content and organisation of literacy courses offered in Australian tertiary institutions.

Implications

Perhaps the best-practice methods recommended to our classroom teachers to teach their students are exactly the same methods that should be used by teacher educators to

instruct their preservice teachers. The findings from the scientific research on early literacy are quite clear about what should be included in preservice units, but there is less information available on how this information should be presented to trainee teachers, often resulting in a research-into-practice divide. The provision of direct and systematic instruction in subject-specific content and pedagogical practice, linked to practical implementation on campus and in classrooms through the observation of expert practitioners (modelling), guided practice and constructive feedback, using a 'gradual release of responsibility' model may well give novice teachers the knowledge and order they need.

Conclusion

Preservice teachers need to be given explicit and systematic instruction in the foundational skills necessary for beginning reading instruction *and* allocated practicum placements with expert and competent teachers who would be given extra time on a daily basis to guide, model and support preservice teachers. The recently graduated teachers who took part in these interviews demonstrated a highly variable range of knowledge and ability for the teaching of early reading skills. Two interviewees considered themselves to be well prepared and able to teach beginning reading, but were unaware of the mismatch between these perceptions and the reality of their poor subject-specific content knowledge. Many of the interviewees, however, were well aware of the gaps in their knowledge and indicated that, should they be employed to teach an early grade class, they would need to locate extra sources of information in order to program and prepare for reading instruction.

Appendix

Semi-structured Interview

Introduction Questions

1. Tell me about the early literacy courses that you completed during your training.
Probe: 'Can you give me an example of that?'
2. Tell me about your practicum experiences of teaching early literacy.
Probe: 'Can you give me an example of that?'

Elaboration of Survey Questions

1. Preparedness: How well prepared do you feel to teach beginning reading?
(*not prepared at all, somewhat prepared, prepared, well prepared, very well prepared, unsure*)
Elaboration: How would you structure a beginning reading program for a Kindergarten class?

Prompts:

1. What would be the main teaching concepts?
 2. How would you organise your students?
 3. Give some examples of the group activities you might use.
 4. How would you program for reading?
 5. What resources might you use?
2. Ability: How would you rate your ability to instruct Kindergarten-Year 2 students on phonological awareness?
(*no experience, no ability, minimal ability, proficient, expert*)
Elaboration: Give me a definition of what you understand phonological awareness to be.

Prompt:

What would be the main teaching concepts?

3. Ability: How would you rate your ability to instruct Kindergarten-Year 2 students on all aspects of phonics, including consonant blends, digraphs, etc.?
(*no experience, no ability, minimal ability, proficient, expert*)
Elaboration: Give me an overview of what you understand by the term 'phonics'.

Prompt:

What would be the main teaching concepts?

References

- Archer, A. L., & Hughes, C. A. (2011). *Explicit instruction: Effective and efficient teaching*. New York, NY: The Guildford Press.
- Australian Curriculum, Assessment and Reporting Authority (ACARA). (n.d.) *English Scope and Sequence: Foundation to Year 6*. Retrieved from v7-5.australiancurriculum.edu.au/australian%20curriculum.pdf?...ScopeAndSequence.
- Bellert, A. (2015). Effective re-teaching. *Australian Journal of Learning Difficulties*, 20, 163-183. doi:1080/19404158.2015.1089917.
- Bostock, L., & Boon, H. (2012). Pre-service teachers' literacy self-efficacy and literacy competence. *Australian and International Journal of Rural Education*, 22, 19-37.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77-101. doi: 10.1191/1478088706qp063oa.
- Burnard, P., Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Analysing and presenting qualitative data. *British Dental Journal*, 204, 429-432. doi: 10.1038/sj.bdj.2008.292.
- Carnine, D. W., Silbert, J., Kame'enui, E. J., & Tarver, S. G. (2010). *Direct instruction reading*, (5th ed.). Boston, MA: Merrill.
- Centre for Education Statistics and Evaluation (CESE). (2017.) *Effective reading instruction in the early years of school*. Retrieved from https://www.cese.nsw.gov.au//images/stories/PDF/Effective_Reading_Instruction_A A.pdf.
- Clark, M. (2016). Learning to be literate: Insights from research for policy and practice. *Improving Schools*, 19, 129-140. doi: 10.1177/1365480216651518.
- Creswell, J. W. (1994). *Research design: Qualitative & quantitative approaches*. Thousand Oaks, CA: Sage Publications.

- Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of State policy evidence. *Education Policy Analysis Archives*, 8, 1-44.
- Fielding-Barnsley, R., & Purdie, N. (2005). Teachers' attitude to and knowledge of metalinguistics in the process of learning to read. *Asia-Pacific Journal of Teacher Education*, 33, 65–76. doi: 10.1080/1359866052000341133.
- Fielding-Barnsley, R. (2010). Australian pre-service teachers' knowledge of phonemic awareness and phonics in the process of learning to read. *Australian Journal of Learning Difficulties*, 15, 99-110. doi: 10.1080/19404150903524606.
- Foorman, B. R., Chen, D. S., Carlson, C., Moats, L. C., Francis, D. J., & Fletcher, J. M. (2003). The necessity of the alphabetic principle to phonemic awareness instruction. *Reading and Writing: An Interdisciplinary Journal*, 16, 289-324. doi: 10.1023/A:1023671702188.
- Freebody, P., Luke, A., & Gilbert, P. (1991). Reading positions and practices in the classroom. *Curriculum Inquiry*, 21, 435-457. doi: 10.1080/03626784.1991.11075380.
- Gersten, R., Compton, D., Connor, C.M., Dimino, J., Santoro, L., Linan-Thompson, S., & Tilly, W.D. (2009). *Assisting students struggling with reading: Response to Intervention and multi-tier intervention for reading in the primary grades. A practice guide*. (NCEE 2009-4045). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from <http://ies.ed.gov/ncee/wwc/publications/practiceguides/>.
- Hammond, L. (2015). Early childhood educators' perceived and actual metalinguistic knowledge, beliefs and enacted practice about teaching early reading. *Australian Journal of Learning Difficulties*, 2, 113-128. doi:10.1080/19404158.2015.1023208.

- Harper, H., & Rennie, J. (2009) 'I had to go out and get myself a book on grammar': A study of pre-service teachers' knowledge about language. *Australian Journal of Language and Literacy*, 32, 22-37.
- Hill, C. E., Knox, S., Thompson, B. J., Williams, N. E., Hess, S. A., & Ladany, N. (2005). Consensual qualitative research: An update. *Journal of Counseling Psychology*, 52, 196-205. doi: 10.1037/0022-0167.52.2.196.
- Hulme, C., & Snowling, M. J. (2013). Learning to Read: What we know and what we need to understand better. *Child Development Perspectives* (7), 1-5.
doi:10.1111/cdep.12005
- Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist*, 41, 75–86. doi: 10.1207/s15326985ep4102_1.
- Konza, D. (2011). Research into practice: Phonics. Adelaide, SA: Government of South Australia.
- Kosnick, C., & Beck, C. (2008). We taught them about literacy but what did they learn? The impact of a preservice teacher education program on the practices of beginning teachers. *Studying Teacher Education* 4, 115-128. doi: 10.1080/17425960802433603.
- Johnston, R. S., McGeown, S., & Watson, J. E. (2012). Long-term effects of synthetic versus analytic phonics teaching on the reading and spelling ability of 10 year old boys and girls. *Reading and Writing*, 25, 1365-1384. doi: 10.1007/s11145-011-9323-x.
- Joshi, M. R., Binks, E., Hougen, M., Dahlgren, M. E., Ocker-Dean, E., & Smith, D. L. (2009). Why elementary teachers might be inadequately prepared to teach reading. *Journal of Learning Disabilities*, 42, 392-402. doi: 10.1177/0022219409338736.

- Landrum, T. J., Cook, B. G., Tankersley, M., & Fitzgerald, S. (2002). Teacher perceptions of the trustworthiness, usability, and accessibility of information from different sources. *Remedial and Special Education, 23*, 42–48. doi: 10.1177/074193250202300106.
- Leader-Janssen, E. M., & Rankin-Erickson, J. L. (2013). Preservice teachers' content knowledge and self-efficacy for teaching reading. *Literacy Research and Instruction, 52*, 204-229. doi: 10.1080/19388071.2013.781253.
- Lofgren, K. (2013, May 19). Qualitative analysis of interview data: A step-by-step guide [youtube video]. Retrieved from <https://www.youtube.com/watch?v=DRL4PF2u9XA>
- Louden, W., Rohl, M., Gore, J., Greaves, D., McIntosh, A., Wright, R., ... House, H. (2005). *Prepared to Teach: An investigation into the preparation of teachers to teach literacy and numeracy*. West Perth, WA: Edith Cowan University.
- Louden, W., & Rohl, M. (2006). "Too many theories and not enough instruction": Perceptions of preservice teacher preparation for literacy teaching in Australian schools. *Literacy, 40*, 66-78. doi:10.1111/j.1467-9345.2006.00440.x.
- Mahar, N. E., & Richdale, A. L. (2008). Primary teachers' linguistic knowledge and perceptions of early literacy instruction. *Australian Journal of Learning Difficulties, 13*, 17-37. doi: 10.1080/19404150802093703.
- Maloch, B., Seely Flint, A., Eldridge, D., Harmon, J., Loven, R., Fine, J., ... Martinez, M. (2003). Understandings, beliefs, and reported decision making of first-year teachers from different reading teacher preparation programs. *The Elementary School Journal, 103*, 431-457.
- Mather, N., Bos, C., & Babur, N. (2001). Perceptions and knowledge of preservice and inservice teachers about early literacy instruction. *Journal of Learning Disabilities, 34*, 472-482. doi: 10.1177/002221940103400508.

- Meehan, R., & Hammond, L. (2006). Walking the talk: Western Australian teachers' beliefs about early reading and spelling instruction and their knowledge of metalinguistics. *Australian Journal of Learning Disabilities, 11*, 17-24. doi: 10.1080/19404150609546804.
- Moats, L. (2009). Knowledge foundations for teaching reading and spelling. *Reading and Writing, 22*, 379-399. doi: 10.1007/s11145-009-9162-1.
- National Center for Postsecondary Improvement. (2003). *Tools for qualitative researchers: Interviews*. Retrieved from https://web.stanford.edu/group/ncpi/unspecified/student_assess_toolkit/sampleInterviewProtocol.html.
- National Institute of Child Health and Human Development (NICHD). (2000). *Report of the National Reading Panel. Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (NIH Publication No. 00-4769). Washington, DC: U.S. Government Printing Office.
- O'Neill, S., & Geoghegan, D. (2011). First year pre-service teachers' views about literacy: Exploring the breadth and depth of their pedagogical needs. *International Journal of Pedagogies and Learning, 6*, 187-205. doi:10.5172/ijpl.2011.6.3.187.
- Rohl, M., & Greaves, D. (2005). How are pre-service teachers in Australia being prepared for teaching literacy and numeracy to a diverse range of students? *Australian Journal of Learning Disabilities, 10*, 3-8. doi: 10.1080/19404150509546780.
- Rose, J. (2006). *Independent review of the teaching of early reading: Final report*. Nottingham, UK: Department for Education and Skills.
- Rowe, K. (2005). *Teaching reading: Report and recommendations*. Canberra: Australian Government, Department of Education, Science and Training.

- Sayeski, K. L., Earle, G. A., Eslinger, R. P., & Whitenton, J. N. (2017). Teacher candidates' mastery of phoneme-grapheme correspondence: Massed versus distributed practice in teacher education. *Annals of Dyslexia*, 67, 26-41. doi.10.1007/s11881-016-0126-2.
- Seidenberg, M. (2017). *Language at the speed of sight: How we read, why so many can't, and what can be done about it*. New York, NY: Basic Books.
- Shulman, L.S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15, 4-14.
- Stahl, S. A., Duffy-Hester, A. M., & Stahl, K. A. (2006). Everything you wanted to know about phonics (but were afraid to ask). In K. A. Dougherty Stahl & M. C. McKenna (Eds.), *Reading research at work: Foundations of effective practice* (pp. 126-154). Retrieved from <https://www.guilford.com/excerpts/stahl.pdf>
- Stark, H. L., Snow, P. C., Eadie, P. A., & Goldfeld, S. R. (2016). Language and reading instruction in early years' classrooms: The knowledge and self-rated ability of Australian teachers. *Annals of Dyslexia*, 66, 28-54. doi: 10.1007/s11881-015-0112-.
- Stockard, J., Wood, T. W., Coughlin, C., & Khoury, C. R. (2018). The effectiveness of direction instruction curricula: A meta-analysis of a half century of research. *Review of Educational Research*, 1-27. doi: 10.3102/0034654317751919.
- Taylor, J. S. H., Davis, M. H., & Rastle, K. (2017). Comparing and validating methods of reading instruction using behavioural and neural findings in an artificial orthography. *Journal of Experimental Psychology: General*, 146, 826-858. doi: 10.1037/xge0000301.
- Teacher Education Ministerial Advisory Group. (2014). *Action now: Classroom ready teachers*. Canberra, ACT: Author.

- Tetley, D., & Jones, C. (2014). Pre-service teachers' knowledge of language concepts: relationships to field experiences. *Australian Journal of Learning Difficulties*, 19, 17-32. doi:10.1080 /19404158.2014.891530.
- Van den Hurk, H. T. G., Houtveen, A. A. M., & Van de Grift, W. J. C. M. (2017). Does teachers' pedagogical content knowledge affect their fluency instruction? *Reading and Writing*, 30, 1231-1249. doi: 10.1007/s11145-017-9721-9.
- Weiss, R. S. (1994). *Learning from strangers: The art and method of qualitative interview studies*. New York: Free Press.

Table 1

Course Descriptions, Location of Institutions and Mode of Study

Participant	Course Title	Australia n State	Mode of Study	
			On Campus	Online/Distan ce
1	Bachelor of Learning Management	QLD	✓	
2	Bachelor of Education (Primary)	NSW		✓
3	B.A./B.Ed. (Primary)	NSW	✓	
4	Bachelor of Education (fast track)	NSW	✓	
5	Bachelor of Education	TAS		✓
6	Bachelor of Learning Management	QLD	✓	
7	B.A./B.Ed.	NSW	✓	
8	Bachelor of Education (Prep to Year 12)	VIC	✓	
9	Bachelor of Education (Primary)	NSW		✓
10	Bachelor of Primary (Hons)	QLD	✓	
11	Bachelor of Learning Management	QLD	✓	

Table 2

Data Analysis Categories and Sub-categories

Early reading content skills	Comments on course	Other sources of information concerning reading	Gaps in knowledge concerning early literacy	Problems with teacher preparation	General (any reference to classroom experience)	Personal information
Approaches code-based meaning-based balanced	Course	Text books/books	Reading	Theory into practice in <i>course</i>	Class composition	Family
	Practicum	Other university courses	Comprehension		Class teaching	General comments about degree
		Professional Development courses	Vocabulary	Theory into practice in <i>practicum</i>	Commercial program/s	Personal anecdotes
Preparedness			Phonics			Previous teaching experience
Knowledge			Phonemic awareness	other	Classroom organisation	
		Prior working experience	Irregular/sight words			Current employment (how classrooms are organised/run)
		School/mentor	Acknowledged gaps in knowledge			
		Colleagues				
		Internet	Other areas, e.g., direct instruction			
		Friends	assessment			
		Uni notes	group work			

Table 3

Recently Graduated Teachers' Preparedness and Knowledge Ratings for Beginning Reading, Phonological Awareness and K-2 Phonics

ID	Beginning Reading	Preparedness	Phonics	Actual Knowledge
		Phonological Awareness		Comments and Author Ratings
02	Well prepared	Quite confident	Really confident	<p><i>Beginning reading:</i> Probably a mix of sight words and sounds and lots of reading of picture books and big books and things like that.</p> <p><i>Phonological awareness:</i> I know that there's a difference between the phonetics and the phonology, and I'm just trying to remember the distinction.</p> <p><i>Phonemic awareness:</i> That's just developing their awareness of all the different sounds.</p> <p>Author rating: Inadequate</p>
05	Well prepared	Honological? (then talked about phonics)	Quite proficient but not expert	<p><i>Beginning reading:</i> Definitely with phonics and an overall picture. Finding phonics in big books that we read, finding letter combinations that make certain sounds, sounding out ...</p> <p><i>Phonological awareness:</i> Phonological? Yes. And that is?</p> <p><i>Phonics:</i> ... as they get further up, you sort of need to explain it more, rather than ... kinder/prep/1, it's more about them just becoming aware.</p> <p>Author rating: Inadequate</p>
04	Somewhat prepared	[Phonemic awareness] I remember we talked about that. I couldn't tell you what it's to do with, unfortunately.	Half way between minimal and proficient	<p><i>Beginning reading:</i> But early literacy, there's a lot out there, and there's some really great teachers in my school in particular, that I can talk to.</p> <p><i>Phonics:</i> So, to start we'd have to look at identifying letter-sound correspondences, or simple c-v-c words. Building that up to more complex words, c-v-cc. ... once we've got a small collection of sight words and c-v-c words, perhaps even looking at introducing word families. Tricky words like 'buy' and 'bought' would probably come towards the end of the year. I'd focus on fluency ... and that might mean in practice that these students are actually reading books that are several levels below where they're at. Rely less on the pictures.</p> <p>Author rating: Adequate</p>
09	Prepared	Is that sounds?	Phonics? Not really	<p><i>Beginning reading:</i> [How to program?] Right. I don't think they did.</p> <p><i>Phonological awareness:</i> Phonological ... I think, again is it the sounds? Are they digraphs? Is that where it comes from?</p> <p><i>Phonemic awareness:</i> Because phonemic awareness, just from the top of my head, is that it's what you listen for. Listen for the sounds.</p> <p><i>Phonics:</i> I think I'd go with the sounds with the 'a', as it says /ă/, /ā/ /ar/ and /or/. I guess they eventually do get to know all the sounds that the letter makes.</p>

				Author rating: Inadequate
03	Not very well prepared	Proficient	I reckon I'd be pretty good at that.	<p><i>Beginning reading:</i> I really need to get my head around early literacy.</p> <p><i>Phonological awareness:</i> ... wouldn't that have been c-v-cs and onset and rime. Threaded through that then you would then have the instruction of sounds, letter recognition, how it's formed ...</p> <p><i>Phonics:</i> Sounds, syllables and blends and ... The phonics program is very complicated. I guess that would be digraphs as well, would it?</p> <p>[Phonemes, graphemes and morphemes?] OK. I know the words, but you can see where it is starting to fall apart.</p> <p>Author rating: Inadequate</p>
01	Somewhat/not prepared	Somewhat	Bit below proficient	<p><i>Beginning reading:</i> ... not much of that I'm going to retain, because it's not relevant to me at the moment.</p> <p><i>Phonemic awareness:</i> I could probably look it up and it would probably return to me pretty quickly.</p> <p><i>Phonics:</i> I would probably go and watch some videos, or, you know, a grammar film that says, 'Hey, you teach like this!'</p> <p><i>Main teaching concepts for phonics?</i></p> <p>I would think they would need to be blends. I think there would be ... probably go into syllables. I would probably think about what things look like, so it would be visual.</p> <p>Author rating: Inadequate</p>
07	Somewhat/not prepared	Prepared	Prepared	<p><i>Beginning reading:</i> I've got kind of an understanding what needs to be done ...</p> <p><i>Phonological awareness:</i> We went from sentence structure to syllables and ... so the whole sort of thing of what to do.</p> <p><i>Phonemic awareness:</i> We got a great folder.</p> <p><i>Phonics:</i> I'd have to go away and do it all by myself going back to all of my books, rather than going "Yep. I've got my little program that I know this is how you teach it and I know I can go on and teach it."</p> <p>Author rating: Inadequate</p>
08	Not very well prepared.	A 3 perhaps. I'm not very confident.	I am learning most of it on the job.	<p><i>Beginning reading:</i> So when it came to having placements, I would think, "I hope I don't have grade Prep to 1, because I don't know what to do."</p> <p><i>Phonological awareness:</i> I'm not too sure what it means.</p> <p><i>Phonemic awareness:</i> It's not in-depth at all. Just barely scraping the surface.</p> <p><i>Phonics:</i> That was in our first year and we just did one course on that. We had to develop a book ourselves, using all the different ways to spell, and going through all the strategies that you teach children.</p>

				Author rating: Inadequate
06	I'd be terrified.	First year course	First year course - can't remember	<i>Beginning reading:</i> So I couldn't just walk in like that and teach it, no. <i>Phonological awareness:</i> It was a shame that it was in the first year, and we did not touch it again in the four years. <i>Phonics:</i> I can't remember. Author rating: Inadequate
10	Low	I get confused [with phonemic awareness]	No. not to help me teach ...	<i>Beginning reading:</i> So we learnt what it was, but we didn't learn how to teach it. <i>Phonological awareness:</i> Is that the sounds that they hear? I always get confused. <i>Phonics:</i> We got given a game that was already made, and we just played with it. It was rhyming words and you had to move a little thing until they got to the end. Author rating: Inadequate
11	I just had no idea	How words are put together or broken apart	I can't remember	<i>Beginning reading:</i> ... after starting my first year this year. I was setting up reading groups and I was absolutely lost, I had no idea where to start. <i>Phonological awareness:</i> I know something about spelling or reading, like how words are put together or broken apart or ... <i>Phonemic awareness:</i> One subject was heavily around phonemic awareness, or about the four, four?, different types. <i>Phonics:</i> I really can't remember too much of what we actually did in it relation to phonics. Author rating: Inadequate

Table 4

Range of Practicum Placements

Practicum placements (N = 24)						
ID	K-6 (n = 1)	Early Stage 1 (Kindergarten) (n = 2)	Stage 1 (Years 1/2) (n = 5)	Stage 2 (Years 3/4) (n = 7)	Stage 3 (Years 5/6/7*) (n = 9)	High School (n = 1)
01				x	x	
02			x		x	
03		x		x	x	
04			x	x	x	
05		x	x			
06					x	
07			x	x	x	
08			x	x	x	x
09	x					
10				x	x	
11					x	

Notes: Empty cells indicate that the heading is inapplicable. *year 6 in NSW is equivalent to year 7 in Queensland.

CHAPTER 7: AUSTRALIAN PRESERVICE TEACHERS AND EARLY READING
INSTRUCTION: AN INVESTIGATION INTO THE CONTENT OF LITERACY
UNITS OFFERED IN TERTIARY INSTITUTIONS

Chapter Overview

This chapter is a content-analysis study submitted for publication to a peer-reviewed journal (Meeks & Stephenson, under review). Analysis of the data presented in Chapters 3 to 6 suggested that the content of current Australian preservice literacy programs may not contain sufficient coverage of early reading skills as recommended by current research. The organisation and content of literacy units offered to undergraduate and postgraduate students enrolled in primary and early childhood teacher education programs and the interests and expertise of unit coordinators across Australia were investigated using an analysis of publicly available information retrieved from the internet. Results indicate that references to early reading content in unit descriptions are generally included with other literacy subject matter, the total tuition time available for beginning reading instruction is limited, and many unit coordinators do not have expertise in early reading. In addition, it would appear that essential research-based content such as phonics, phonemic awareness and the alphabetic principle may not be adequately addressed in many units. This investigation represents the first Australian study of this type.

Australian preservice teachers and early reading instruction: An investigation into the content of literacy units offered in tertiary institutions

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Australian preservice teachers and early reading instruction: An investigation into the content of literacy units offered in tertiary institutions

Abstract

University websites and internet search engines were used to locate information about literacy units addressing early reading instruction offered in Australian primary and early childhood teacher preparation programs. Data concerning course organisational details, the content of literacy units, and the qualifications and research interests of unit coordinators were collected for 40 Australian tertiary institutions. Results indicate that references to early reading content in unit descriptions were generally included with other literacy subject matter, the total tuition time available for beginning reading instruction was limited, and many unit coordinators did not have expertise in early reading. In addition, it would appear that essential research-based content such as phonics, phonemic awareness and the alphabetic principle may not be adequately addressed in many units. An amendment to Standard 2.5 of the guidelines set out in the Australian Professional Standards for Teachers may assist in resolving some of these issues.

Keywords: balanced literacy; beginning reading; phonics; phonemic awareness; teacher preparation

Within Australia, the development of nationally agreed policies for education falls under the auspices of the Australian Institute for Teaching and School Leadership (AITSL). AITSL was formed in 2011 and is responsible for the processes involved in the accreditation of initial teacher education and school leadership, as well as the maintenance of a core set of teaching standards known as the Australian Professional Standards for Teachers which outline what teachers should know and be able to do (AITSL, 2011). AITSL and state and territory authorities are responsible for the accreditation of teacher preparation programs based on these standards.

Despite these moves to introduce policies to improve teacher education and teacher performance, both national and international assessment programs report that the reading performance of Australian students has shown a continuous and steady decline between 2000 and 2016. Results from the Australian National Assessment Program for Literacy and Numeracy for 2017 indicated that 10% of Year 3 students scored below (3.1%) or at (6.9%) the national minimum standard for reading, and 14.6% of Year 5 students scored below (4.2%) or at (10.4%) the minimum standard for reading (Australian Curriculum Assessment and Reporting Authority, 2017). Similar results from international assessment programs reflect this trend. Results from the reading section of the Programme for International Student Assessment (PISA) 2015, for example, showed that 18% of 15 year-old Australian students were considered to be low performing (Thomson, De Bortoli, & Underwood, 2017), and results from the 2016 Progress in International Reading Literacy Study (PIRLS) revealed that 18 per cent of fourth-grade students in metropolitan schools, 22 per cent of students in provincial schools, and 30 per cent of students in remote schools, did not achieve the intermediate benchmark. (Thomson, Hillman, Schmid, Rodrigues, & Fullarton, 2017).

Teacher quality and student achievement

Teacher quality is the single, most important in-school factor influencing student achievement (NSW Education Standards Authority [NESA], 2018). International research has also consistently demonstrated the relationship between well-prepared teachers, who provide quality teaching, and student achievement (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2009; Darling-Hammond, 2000; National Institute of Child Health and Human Development [NICHD] 2000; Rockoff, 2004). In order for newly qualified teachers to provide quality teaching in any area, they must have received quality teacher preparation programs themselves. These programs need to include evidence-based instruction in subject specific content and pedagogical practices.

Teacher preparation for beginning reading instruction

The 2013 report of the National Academy of Education in the United States included a framework designed to assist in the evaluation of teacher preparation programs (Feuer, Floden, Chudowsky, & Ahn, 2013). Two of the six attributes included in this framework were *quality and substance of instruction* and *faculty qualifications*. Measures of ‘quality and substance of instruction’ were based on the examination of course offerings and the required hours, lectures and assignments, and course syllabi. Measures of ‘faculty qualifications’ included the percentage of faculty with advanced degrees and the percentage of faculty in full-time or part-time employment (Ingvarson et al., 2014). Similarly, Boyd, Grossman, Lankford, Loeb, and Wyckoff (2009) identified five areas that may be used to determine the quality of education programs: program structure, subject specific preparation, learning and child development, preparation to teach a diverse range of students, and field experiences.

In 2000, the U.S. National Reading Panel (NRP) investigated the subject specific preparation for the teaching of reading. The findings from this report recommended that the provision of explicit teacher preparation in reading instruction should include five

component skills: phonemic awareness (a sub-skill of phonological awareness), which has been shown to improve spelling and enhance reading skills; systematic phonics instruction (including the alphabetic principle), which needs to begin in kindergarten or first grade, and requires the integration of phonemic awareness and letter knowledge; methods to improve fluency; and ways to enhance comprehension (including vocabulary) (NICHD, 2000). Similar international reports have confirmed the findings of the NRP including two Australian reports, *Teaching Reading* (Rowe, 2005) and *Prepared to Teach* (Louden et al., 2005), and the *Independent Review of the Teaching of Early Reading* report published in the United Kingdom (Rose, 2006). As pointed out by Rowe (2005), the effective teaching of reading is a highly developed professional skill, requiring knowledge of evidence-based practices. Such practices for beginning reading instruction during the early years of schooling include direct, explicit and systematic instruction in the alphabetic principle, phonics and phonemic awareness.

In Australia, questions have been raised concerning the content of reading units offered to preservice teachers, in particular whether research-based early literacy instruction involving the systematic and direct instruction of phonemic awareness and phonics is being included in Australian teacher education courses in sufficient depth (Bostock & Boon, 2012; Fielding-Barnsley, 2010; Fielding-Barnsley & Purdie, 2005; Mahar & Richdale, 2008; Meehan & Hammond, 2006). Several Australian researchers have investigated the relationship between preservice teachers' perceptions of their preparedness to teach beginning reading and their subject-specific content knowledge (Hammond, 2015; Meehan & Hammond, 2006; Meeks & Kemp, 2017; Stark, Snow, Eadie, & Goldfeld, 2015; Tetley & Jones, 2014). The general findings from these studies suggest that preservice teachers favour the teaching of phonological awareness and phonics, but have limited metalinguistic knowledge. Using the recommendation made by

Stainthorp (2004) that “a score of 80% can be taken as an indication of reliable explicit ability to identify the phonemic structure of words” (p. 760), the majority of participating preservice teachers in these Australian studies do not reach this standard. Similar findings have also been reported in Canada (Kosnik & Beck, 2008), the United Kingdom (Stainthorp, 2004), and the United States (Clark, Jones, Reutzel, & Andreasen, 2013).

Research questions

Since the teaching of foundation early reading skills is a critical area of teacher education, it is of interest to determine how this area is addressed in teacher education courses and the weight given to early reading instruction. A number of factors may be considered as contributing to the quality of a unit in early reading in a teacher education course: the unit characteristics (for example, total hours of instruction, learning outcome/s, choice of prescribed texts, assessment tasks and types of learning activities), and the expertise and research interests of unit coordinators (Binks, 2008; Glenn, 2010; Walsh, Glaser, & Wilcox, 2006). The purpose of the study reported here was to examine how content relevant to the teaching of early reading was provided in literacy units included in undergraduate and postgraduate education degrees offered to early childhood and primary preservice teachers in Australia.

Four specific questions were posed:

- How much content on early reading is included in Australian teacher education courses?
- What are the characteristics of the units in Australian teacher education courses that include content on early reading instruction?
- What are the qualifications and research interests of the unit coordinators in Australian teacher education courses?

- Do literacy units in Australian teacher education courses address basic content such as the alphabetic principle, phonics, and phonemic awareness?

Method

Data collection

In this study, *course* refers to a program of study, for example, *Bachelor of Education (Primary)* and *unit* refers to a subject within a course, for example, *Language and Literacies in the Early Years*.

Step 1: Institutions and courses listed on the AITSL website

At the beginning of 2016, the Australian Institute for Teaching and School Leadership website (AITSL, n.d.) was used to identify those tertiary institutions offering courses in early childhood and primary education. The filters used to locate relevant generalist preservice teacher education courses were Early Childhood and Primary; Early Childhood, Primary and Secondary; Kindergarten to Year 12; Multiple Stages of School; Primary; Primary and Secondary; Primary and Secondary (including middle years); and Primary with F-10 Option. This search identified 44 institutions offering 197 undergraduate and postgraduate courses for primary and early childhood education. Courses that were accredited but not currently offered (20), pending accreditation (18), or repeated in different locations (44), were removed from the count, leaving a total of 115 courses. These 115 courses were examined to ensure they were generalist primary or early childhood courses. Two specialist degrees, special education (1) and health and physical education (1) were excluded. In addition, courses that were not listed on institution websites as current offerings, were excluded (3). One hundred and ten courses went forward to step 2.

Step 2: Selection of literacy units by title

Tertiary institution websites and the Google search engine were used to locate course overviews and course content descriptions of the 110 courses. This material was downloaded and examined in order to identify literacy units resulting in the location of 448 core literacy units. Only core literacy units were included in order to determine what early reading instruction would have been completed by all enrolled preservice teachers.

The titles of the units were then examined in order to locate those units that were likely to be relevant to beginning or early reading. Units were included as possibly containing content on beginning reading if the title included any of the following terms: alphabetic principle, comprehension, direct instruction, early literacy, early reading, explicit instruction, fluency, language, literacy, phonemic awareness, phonics, phonological awareness, reading, sounds, spelling, systematic instruction, and vocabulary. Units that focused on critical literacy, multiliteracies and children's literature were excluded. Units were retained if it was unclear if they met the inclusion criteria.

Inter-rater reliability for unit location and unit selection by title was conducted on 30% (35) of randomly selected courses (using the online random generator at random.org). The titles of all literacy units were listed for each of these 35 courses, giving a total 94 units. Both authors independently applied the criteria described above to each unit title. Interrater reliability for unit retention by title was 93.6% (calculated using the formula $\frac{\text{agreements}}{\text{agreements} + \text{disagreements}} \times 100$), with disagreements resolved by discussion between authors. Unit selection by title was then completed for the remaining units by the first author only. Of the 448 core literacy units identified, 63 units were excluded by title and 159 duplicate units were removed, resulting in a final total of 226 units being retained for further examination.

Step 3: Selection of literacy units by description

As before, searches of institution websites and Google searches were used to locate course and unit overviews, guides, and handbook descriptions for the 226 retained units. Units were included if they made reference to early reading by age or grade (for example *birth to 8 years* and *early years*), or to early reading content (for example, balanced approaches to literacy, curriculum studies – English, coding, decoding, encoding, language, literacy, literacy assessment, literacy development, national and state curricula, phonemic awareness, phonics, phonological awareness, reading, reading instruction (general), and Whole Language. Units were excluded if they referred only to *grades 3-6*, *middle years*, and *upper primary* or if content included the terms diverse learners, diverse literacies (intercultural, global, multi, professional) English language learning, literacy/reading difficulties, literature, spelling and writing.

Both authors independently examined 30% (66) of randomly selected unit descriptions for retention or inclusion. Inter-rater reliability was 90.9% (calculated using the formula $\text{agreements} / (\text{agreements} + \text{disagreements}) \times 100$). Disagreements were resolved by discussion between both authors. Unit selection by description was then completed for the remaining units by the first author only. One hundred and ten units were excluded by description, resulting in a total of 116 units that went forward for data extraction. At this point four institutions and six courses were removed from further consideration as all units for a given course, or courses, had been excluded during the selection of units by description.

Step 4: Full data extraction

In addition to materials already located, Google searches were conducted using unit codes and unit titles, and additional searches were carried out to locate further information on timetables, prescribed texts, and assessment tasks. Full data extraction covered three

broad areas: course information, unit information and coordinator information. Searches for prescribed readings were also included, but no reading lists were found.

Course information

Course information extracted for each retained unit included the name of the tertiary institution and its location by state; course name; the type of program (primary; early childhood; primary/early childhood; other); and the level of program (bachelor; double degree; graduate diploma; master). A final total of forty institutions offering 104 early childhood and primary teacher education courses at undergraduate and postgraduate levels was used for unit analysis.

Unit information

Unit information collected included title and code number; year of program when the unit was offered; the total hours of face-to-face tuition provided (including lectures, tutorials and workshops); unit learning outcomes; unit descriptions; prescribed texts and assessment tasks. If a unit had combined content areas, such as literacy and numeracy, only information related to literacy content was coded.

Learning outcomes and unit content descriptions

The degree of focus on early reading in unit outcomes, and descriptions of unit content, was coded for each using the following criteria: a focus on early reading instruction; early reading instruction mentioned but included with other content; a broad focus on literacy: early reading instruction is not specifically mentioned, but reading is mentioned; a broad focus on literacy: no mention of reading; unclear; and no information provided.

Using recommendations from national and international reports about crucial early reading skills (National Institute of Child Health and Human Development (NICHD), 2000; Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001; Rose, 2006; Rowe, 2005), materials relating to each unit were examined for mention of beginning reading

concepts including phonics (including terms such as *decode* and *encode*, but not *reading* and *spelling*); alphabetic principle (including terms such as *alphabet*, *grapho-phonics*, *letter-sound relationships*, *graphological*, and *consonants*); and phonological awareness (including *phonemic awareness* and any subskills such as *blending*, *segmentation*, *onset & rime*) (Louden, et al., 2005; NICHD, 2000; Pressley, Roehrig, Bogner, Raphael, & Dolezal, 2002; Rowe, 2005; Zygouris-Coe, 2001). Units were also examined for mention of Whole Language approaches and balanced approaches. Those units designated in the descriptions as ‘balanced’ were examined to determine whether they also contained references to phonics and phonological awareness.

Prescribed texts

Both authors independently examined the titles of each of the prescribed textbooks. Textbooks were retained for further study if the title included reference to literacy, phonics and reading. Texts that appeared not to focus on early reading instruction as shown by the titles that contained references to grammar, language, literature, meaning or writing were excluded. The contents pages, index pages and glossaries for each of the retained prescribed textbooks were then examined for inclusion of any of the following concepts: balanced, Whole Language, alphabetic principle, phonemic awareness, phonics, and phonological awareness using the recommendations as detailed on the previous page.

Assessment tasks

Assessment tasks were coded according to type and content. Assessment types included essay, unit of work/lesson plan, case study, assessment (exam, quiz, test), portfolio, presentation (poster), reflective journal, production of resources, no information given, and ‘other’. The content of assessment tasks was analysed using the same coding system as described for learning outcomes and unit content.

Coordinator information

Information concerning the unit coordinators for each retained unit was retrieved from staff profiles and resumés on university websites as well as publicly available information located on Google Scholar, Trove (National Library of Australia) and EBSCOHOST. The data collected included coordinator name, highest qualification, thesis subject area, research interests, peer-reviewed journal articles published during the previous ten years, and teaching areas. The following coding was used for the content of theses, peer-reviewed journal articles and teaching areas: early reading; literacy, but not early reading; no reference to literacy topics; not given or found; and no information at all. Coordinator research interests were coded as follows: active interest in early reading; 'interest only' listed; no interest in early literacy stated; no reference to literacy topics; no research interests given; no information given at all.

Inter-rater Reliability

Inter-rater reliability checks were conducted on all of the coding categories for 25 (20%) of the units retained for in-depth analysis. Both authors conducted independent searches in the first instance, with any differences in content located being shared for final coding. Mean reliability across course and unit categories, unit content, and prescribed texts was 89.3% (range 84%-100%). The mean reliability across unit coordinator data was 90% (range 84%-100%). Following the resolution of any disagreements by discussion between both authors, unit coding for the remaining units was completed by the first author only.

Results

Undergraduate and postgraduate early childhood and primary education courses

The results are presented separately for course data, unit data and coordinator data.

Course details

Course details included institution location, course levels, course types, and number of literacy units included per institution.

Location. The location of courses by state is shown in Table 1. Seventeen of the 40 institutions delivered a course at different campuses in the same state, or across a number of states, adding a further 44 sites and resulting in a final total of 84 locations. Twenty-five of the 104 courses (24%) were also available online, by distance or off-campus.

[Table 1 near here]

Course level and type. Seventy-eight of the 104 courses were offered at undergraduate level and 26 were offered at postgraduate level (one graduate diploma, one graduate entry and 24 Masters degrees). Twenty-four of the primary undergraduate courses were double degrees, for example, *Bachelor of Education/Bachelor of Disability Studies* and nine were specialist degrees, for example, *Bachelor of Education (Primary) (Creative Arts)*. Of the 104 courses, 20 (19.2%) were early childhood, 71 (68.2%) were primary, 9 (8.7%) were early childhood and primary combined, and 4 (3.8%) were primary and secondary combined.

Number of literacy units included per course. The number of units per course meeting the inclusion criteria related to beginning reading is shown in Table 2. Four courses had no identifiable units.

[Table 2 near here]

Number of literacy units offered in each year of a given program. Data regarding the year that units were offered within a course were available for 69 of the literacy units offered in undergraduate courses and 29 of the postgraduate courses (see Table 3). The majority of the core literacy units were offered in the first two years of undergraduate degrees (81%) and in the first year of postgraduate degrees (75.9%).

[Table 3 near here]

Unit Details

Unit details included total hours of face-to-face tuition, learning outcomes, content descriptions and assessment tasks.

Total hours of face-to-face tuition per unit. Data regarding the total hours of face-to-face tuition provided within literacy units were available for 93 of the 116 literacy units. The majority of units provided between 30 and 39 hours of face-to-face tuition per unit (see Table 4).

[Table 4 near here]

Unit learning outcomes, content descriptions and assessment tasks. Only 15 unit outcomes, 40 content descriptions and seven assessment tasks included any mention of early reading. In addition, only one unit was specifically designed to teach early reading instruction and, of the 262 assessment tasks, only three tasks specifically focused on early reading instruction (see Table 5).

[Table 5 near here]

Two hundred and sixty-two assessments were recorded for the 116 units, with information concerning the type of task being provided for 162 of the assessments. The main types of assessment were exams, quizzes or tests (37), essays (26), portfolios (15) and various types of lesson programming exercises (14) (see Table 6). Examples of tasks coded as *other* include ‘parent information flyer’, ‘fieldwork’, ‘tutorial exercise’, and ‘oral storytelling’.

[Table 6 near here]

Four sources of information were used to determine the number of references to specific content relating to beginning reading and to balanced approaches and Whole Language. Out of a total of 116 units, the alphabet was mentioned in 16 units (13.8%), phonological awareness was mentioned in 20 of the units (17.2%) and phonics was mentioned in 27 of the units (23.3%). A balanced approach to teaching reading was

mentioned in 20 units (17.2%). However, mention of phonics or phonemic awareness, was only found in three of these 20 units (15%) (see Table 7).

[Table 7 near here]

Prescribed texts. Fifty-seven of the 116 units provided information regarding prescribed texts, with thirty-three literacy textbooks being prescribed altogether. One title was out of print and unavailable through an inter-library search. Fifteen of the remaining 32 prescribed textbooks contained references to the alphabet, phonics, phonemic awareness and/or phonological awareness.

The most prescribed texts were *Developing early literacy: Assessment and teaching* (Hill, 2012) (11); *Literacy in Australia: Pedagogies for engagement* (Seeley Flint, Kitson, Lowe, & Shaw, 2014) (10); *Language, literacy and early childhood education* (Fellowes & Oakley, 2010) (7); *Literacy: Reading, writing and children's literature* (Winch, Johnston, March, Ljungdahl, & Holliday, 2014) (7); and *Literacy for the 21st century: A balanced approach* (Tompkins, Campbell, Green, & Smith, 2015). One of these texts (Seeley Flint et al., 2014) contained no reference to the alphabet, phonics, phonemic awareness and/or phonological awareness; two contained some reference to these topics within a balanced approach to literacy instruction (Tompkins et al., 2015; Winch et al., 2014); one text devoted three chapters to phonological awareness and phonics (Hill, 2012); and one text devoted one chapter to phonological awareness and phonics (Fellowes & Oakley, 2010).

A comparison of references to early reading concepts in unit content and in prescribed textbooks revealed that 18 units included mention of early reading instruction that was supported by the content of the prescribed textbooks; 35 units did not include any reference to early reading instruction, but the prescribed textbooks did contain early reading content; four units included early reading content, that was not supported in the

texts; 11 units did not include early reading instruction in unit content or the text; and 68 units did not prescribe textbooks.

Coordinator details

The qualifications, thesis subject area, research interests, peer-reviewed publications and nominated teaching areas were investigated for unit coordinators. Two of the 116 units listed two coordinators, and the names of 15 coordinators appeared twice, giving a final total of 103 coordinators.

Qualifications. Information regarding coordinators' qualifications was available for 67 (65%) of the 103 unit coordinators. Fifty-four of the 67 coordinators had doctoral qualifications (81%), 12 (18%) had a Master's degree, and one had an undergraduate qualification. Information was not available for 36 (35%) of the coordinators.

Thesis subject area, peer-reviewed journal articles and teaching areas. Limited information was available for the research background of unit coordinators. Of those coordinators for whom information was available, fewer than half appeared to have qualifications (31%) or publications (43.2%) related to early reading, although more had expertise in literacy generally. Only two listed early reading as a teaching area (see Table 8).

[Table 8 near here]

Research interests. From the research-interests information available for 36 of the 103 coordinators, only 16 (44%) indicated any research interest in early reading instruction (see Table 9).

[Table 9 near here]

Discussion

How much content on early reading is included in Australian teacher education courses?

The majority of universities offered one or two reading units containing some early reading content in early childhood and primary courses, with the full range being between one and four units. Most reading units were offered in the first two years of undergraduate degrees and in the first year of postgraduate degrees. As most units addressed literacy content other than early reading, the time allocated to early reading instruction in most units would appear to be limited.

What are the characteristics of the units in Australian teacher education courses that include content on early reading instruction?

It could be expected that both Early Childhood degrees and Early Childhood and Primary degrees would include units devoted to the teaching of beginning reading. Of the 104 courses included in this study, 18 were early childhood and nine were early childhood and primary combined, suggesting that 27 (26%) of all courses would specifically target the early years of education. Out of a total of 116 literacy units, only one unit, included in one primary teaching program, specifically focused on early reading instruction with a further 39 units including early reading instruction with other content. In addition, although the majority of units in both undergraduate and postgraduate degrees provided between 30 and 39 hours of face-to-face tuition per unit, the hours ranged from as few as 10 hours to more than 40 hours. This suggests that the emphasis, and the teaching time, given to components of early reading must be limited. These findings are similar to those reported in a 2014 Australian government report, which found that less than 10% of course time was dedicated to early reading (Board of Studies, Teaching and Educational Standards NSW [BOSTES], 2014).

Who is coordinating the units and what are the characteristics of the unit coordinators?

Generally, a unit coordinator is responsible for the overseeing and administration of a given unit, and may be responsible for unit content, assessment and teaching. It could be assumed that coordinators who have the responsibility for the provision of early reading content and instruction would have expertise in this area of literacy. However, from the limited amount of data available, it would appear that fewer than half of the coordinators for whom information was available had specific qualifications, publications, research interests or expertise related to early reading instruction, with stated research interests including rural education, social justice, digital literacies, history and arts-based education. A similar observation was made in a NSW Government report investigating the quality of initial teacher education (BOSTES, 2014). This finding is of concern because the percentage of faculty members with advanced degrees has been identified as one of the contributing factors to the quality of teacher preparation programs (Feur et al., 2013; Ingvarson et al., 2014) and, in much the same way that classroom teacher quality affects student achievement, it can be argued that teacher educator quality will affect teacher performance.

What is the nature of the content included in literacy units in Australian teacher education courses and how well does this match content identified in the research literature?

As research has clearly demonstrated that instruction in phonics, phonological awareness (including phonemic awareness), and the alphabetic principle provides the foundation for beginning reading (Louden et al., 2005; NICHHD, 2000; Rowe, 2005; Rose, 2006), it is important that early reading instruction in teacher preparation courses for early childhood and primary teachers reflects this extensive evidence-base. The results from this study, however, would suggest that the literacy units provided in early childhood and primary programs contain limited mention of the alphabetic principle, phonological awareness and

phonics. For example, out of 116 units, only one unit was specifically designed to teach early reading instruction, and less than 22% of the unit descriptions, and 15 of the 32 prescribed literacy textbooks, included any reference to early reading concepts. A balanced approach to teaching reading was mentioned in 20 of the units, but reference to phonics and/or phonemic awareness only occurred a total of three times in those particular units.

Although the overall data that were available for primary and early childhood courses and literacy units may be limited, learning outcomes, handbook descriptions, unit guides, and assessments were all available for 83 (72%) of the units. However, the information contained in 46 (55%) of these units made no reference to any beginning reading terms (alphabetic principle, phonics, and phonological awareness) as supported by research, suggesting that between 20% and 40% of early childhood and primary literacy units do not cover the foundational skills necessary for beginning reading.

As one measure of the quality of instruction provided in initial teacher education programs concerns subject specific preparation (Feur et al., 2013; Boyd et al., 2009), it is of concern that the findings from this study highlight a number of issues that may affect the quality of teacher preparation offered to Australian preservice teachers in the area of beginning reading. These issues include a lack of focus, or no mention at all, of early reading in course content, limited hours of instruction, and fewer than half of unit coordinators having qualifications, research interests or publications associated with early reading skills. These factors may also provide some explanation for the lack of reference in publicly available materials to the important concepts of beginning reading instruction (alphabetic principle, phonics and phonological awareness), and to the extensive evidence-base that supports these concepts.

Teacher Preparation

Two international studies (Al Otaiba, Lake, Greulich, Folsom & Guidry, 2012; Leader-Janssen, 2013) and one Australian study (Tetley & Jones, 2014) have demonstrated that it is possible for preservice and in-service teachers to acquire a broad and deep knowledge of the skills for the teaching of beginning reading through the provision of specific, in-depth instruction in beginning reading content. At the present time, however, it would appear that most Australian primary and early childhood preservice teachers do not have the opportunity to acquire this depth of knowledge as only one of the 116 units included in this study specifically focused on early reading instruction, with a further 39 units mentioning early reading instruction in conjunction with general reading content.

In addition, the results of this study indicate that there appears to be little consistency between institutions regarding the number of reading units required, the content of those units, the choice of prescribed textbooks, or the prescribed hours of tuition provided in early childhood or primary degree programs. Units may include early literacy only, or combine early reading instruction with the teaching of reading in middle and upper primary years. Assessment tasks range from a concentration on early reading to general reading issues, and coordinators' theses, publications, and research interests may focus on early reading or have no connection to reading.

The accreditation of Australian initial teacher education programs is managed by the AITSL, and a set of standards and procedures outlines the requirements for program accreditation. Included in Standard 2, which relates to program development, design and delivery, are requirements that a program will be evidence-based, will be delivered by appropriately qualified staff, and will ensure that preservice teachers meet the standards set for graduates (AITSL, 2015). On the assumption that the design of a unit includes the choice of content material, the AITSL is responsible for ensuring that unit content is evidence-based. It would appear, however, that the Standard 2.5 requirement that

graduates must “know and understand literacy and numeracy teaching strategies and their application in teaching areas” (AITSL, 2011, p.11) is not specific enough to ensure research-based content relevant to early reading instruction is included in all programs. It is encouraging that one of the standards specifically refers to literacy and numeracy; however this standard gives a simplistic view of these two important subject areas. In particular, this format does not ensure that preservice teachers are getting the specific content they need for early reading instruction. A simple remedy would be to separate Standard 2.5 into two separate standards. The literacy standard could then be expanded to contain specific mention of the recommendations from various reading panels that detail the crucial role that phonics, phonological awareness and the alphabetic principle play in the acquisition of beginning reading skills. An outcome of such an amendment may be an increase in the number of literacy units that includes research-based instruction for beginning reading.

Limitations

A number of limitations should be considered. The unit selection process began with an examination of unit names, with a requirement that there was some indication that the content of the unit included literacy, reading and/or beginning reading. It is possible that units may have included beginning reading concepts that were not evident from the unit name and thus relevant units may have been excluded, although where there was any doubt units were included for further examination. Another limitation concerns the *variability* of publicly-available information, especially concerning unit and coordinator details, resulting in difficulty with the coherent integration of information collected from various internet sources. This was particularly problematic when searching for information regarding unit coordinators and for the number of hours provided in face-to-face tuition. A final issue concerns the *amount* of information available. For some units

only minimal information was provided in unit descriptions and/or guides, and sometimes only a brief handbook description was available.

Conclusion

Nearly two decades ago, Stanovich (2000) remarked that if any teachers of beginning reading were not aware of the need to include both phonological awareness and explicit code instruction in their teaching, they were either acting in an unprofessional manner or had been taught by faculty members who did not include established scientific knowledge in their preservice courses. Given the limited time devoted to early reading instruction in teacher education courses and the apparent absence of content related to phonics and phonemic awareness in many courses, this observation appears to still be relevant today.

References

- Al Otaiba, S., Lake V. E., Greulich, L., Folsom, J. S., & Guidry, L. (2012) Preparing beginning reading teachers: An experimental comparison of initial early literacy field experiences. *Reading and Writing*, 25, 109–129. doi: 10.1007/s11145-010-9250-2.
- Australian Curriculum, Assessment and Reporting Authority (ACARA). (2017). *National Assessment Program Literacy and Numeracy: Achievement in reading, writing, language conventions and numeracy: National report for 2017*. Sydney, NSW: ACARA. Retrieved from http://www.nap.edu.au/docs/default-source/default-document-library/naplan-national-report-2017_final_04dec2017.pdf?sfvrsn=0.
- Australian Institute for Teaching and School Leadership (AITSL). (n.d.). *Accredited programs list*. Retrieved from <https://www.aitsl.edu.au/deliver-ite-programs/apl>.
- Australian Institute for Teaching and School Leadership (AITSL). (2011). *Australian professional standards for teachers*. Retrieved from <https://www.aitsl.edu.au/teach/standards>.
- Australian Institute for Teaching and School Leadership (AITSL). (2015). *Accreditation of initial teacher education programs in Australia, Standards and Procedures*. Melbourne. Author. Retrieved from https://www.aitsl.edu.au/docs/default-source/general/accreditation-of-ite-programs-in-australia.pdf?sfvrsn=3013e33c_2.
- Binks, E. S. (2008). *An assessment of university instructors and their pre-service teachers' knowledge of basic language constructs before and after university instructor professional development*. (Doctoral dissertation.) Retrieved from <http://oaktrust.library.tamu.edu/handle/1969.1/85925?show=full>.
- Board of Studies, Teaching and Educational Standards NSW. (2014). *Literacy learning in the early years*. Sydney, NSW: Author. Retrieved from

- <https://educationstandards.nsw.edu.au/wps/wcm/connect/ba6185b4-59d9-4488-914c-4f65da54a828/LiteracyLearningReportAccess.pdf?MOD=AJPERES&CVID=>.
- Bostock, L. & Boon, H. (2012). Pre-service teachers' literacy self-efficacy and literacy competence. *Australian and International Journal of Rural Education*, 22, 19-37.
- Boyd, D. J., Grossman, P. L., Lankford, H., Loeb, S., & Wyckoff, J. (2009). Teacher preparation and student achievement. *Educational Evaluation and Policy Analysis*, 31, 416-440. doi: 10.3102/0162373709353129.
- Clark, S. K., Jones, C. D., Reutzel, D. R., & Andreasen, L. (2013). An examination of the influences of a teacher preparation program on beginning teachers' reading instruction. *Literacy Research and Instruction*, 52, 87-105. doi: 10.1080/19388071.2012.754520.
- Darling-Hammond, L. (2000). Teacher quality and student achievement. *Education Policy Analysis Archives*, 8. doi: 10.14507/epaa.v8n1.2000. Retrieved from <https://doaj.org/article/4a9fb026488e4f00b5b7b3dd1b702a53>.
- Fellowes, J., & Oakley, G. (2010). *Language, literacy and early childhood education*. South Melbourne, VIC: Oxford University Press.
- Feuer, M. J., Floden, R. E., Chudowsky, N. A., & Ahn, J. (2013). *Evaluation of teacher preparation programs: Purposes, methods, and policy options*. Washington, DC: National Academy of Education.
- Fielding-Barnsley, R. (2010). Australian pre-service teachers' knowledge of phonemic awareness and phonics in the process of learning to read. *Australian Journal of Learning Difficulties*, 15, 99-110. doi: 10.1080/19404150903524606.
- Fielding-Barnsley, R., & Purdie, N. (2005). Teachers' attitude to and knowledge of metalinguistics in the process of learning to read. *Asia-Pacific Journal of Teacher Education*, 33, 65-76. doi: 10.1080/1359866052000341133.

- Glenn, D. (2010). Is your Psychology 102 course any good? *Chronicle of Higher Education*, 57(17), pA14-A14.
- Hammond, L. (2015). Early childhood educators' perceived and actual metalinguistic knowledge, beliefs and enacted practice about teaching early reading. *Australian Journal of Learning Difficulties*, 2, 113-128. doi:10.1080/19404158.2015.1023208.
- Hill, S. (2012). *Developing early literacy: Assessment and teaching*. South Yarra, Vic: Eleanor Curtain Publishing.
- Ingvarson, L., Reid, K., Buckley, S., Kleinhenz, E., Masters, G., & Rowley, G. (2014). *Best practice teacher education programs and Australia's own programs*. Canberra, ACT: Australian Council for Educational Research. Retrieved from http://research.acer.edu.au/cgi/viewcontent.cgi?article=1014&context=teacher_education
- Kosnik, C., & Beck, C. (2008). We taught them about literacy but what did they learn? The impact of a preservice teacher education program on the practices of beginning teachers. *Studying Teacher Education*, 4, 115-128. doi: 10.1080/17425960802433603.
- Leader-Janssen, E. M., & Rankin-Erickson, J. L. (2013). Preservice teachers' content knowledge and self-efficacy for teaching reading. *Literacy Research and Instruction* 52, 204-229. doi: 10.1080/19388071.2013.781253.
- Louden, W., Rohl, M., Gore, J., McIntosh, A., Greaves, D., Wright, R., ... House, H. (2005). *Prepared to teach: An investigation into the preparation of teachers to teach literacy and numeracy*. Mount Lawley, WA: Edith Cowan University.
- Mahar, N. E., & Richdale, A. L. (2008). Primary teachers' linguistic knowledge and perceptions of early literacy instruction. *Australian Journal of Learning Difficulties*, 13, 17-37. doi: 10.1080/19404150802093703.

- Meehan, R., & Hammond, L. (2006). Walking the talk: Western Australian teachers' beliefs about early reading and spelling instruction and their knowledge of metalinguistics. *Australian Journal of Learning Disabilities, 11*, 17-24. doi: 10.1080/19404150609546804.
- Meeks, L., & Kemp, C. (2017). How well prepared are Australian preservice teachers to teach early reading skills? *Australian Journal of Teacher Education, 42*(11), 1-17. doi: 10.14221/ajte.2017v42n11.1.
- National Institute of Child Health and Human Development (NICHD). (2000). Report of the National Reading Panel: Teaching children to read: Reports of the subgroups (00-4754). Washington, DC: US Government Printing Office.
- NSW Education Standards Authority (NESA). (2018). *Australian professional standards for teachers*. Sydney, NSW: Author. Retrieved from <http://educationstandards.nsw.edu.au/wps/wcm/connect/8658b2fa-62d3-40ca-a8d9-02309a2c67a1/australian-professional-standards-teachers.pdf?MOD=AJPERES&ContentCache=session&CACHE=site&CVID=>.
- Pressley, M., Roehrig, A., Bogner, K., Raphael, L. M., & Dolezal, S. (2002). Balanced literacy instruction. *Focus on Exceptional Children, 34*(5) 1-14.
- Rayner, K., Foorman, B. R., Perfetti, C. A., Pesetsky, D., & Seidenberg, M. S. (2001). How psychological science informs the teaching of reading. *Psychological Science in the Public Interest, 2*, 31-74. Retrieved from http://www.fcrr.org/science/pdf/Foorman/Foorman_Psychological_Science.pdf.
- Rockoff, J. E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *American Economic Review, 94*, 247-252.
- Rose, J. (2006). *Independent review of the teaching of early reading: Final report*. Nottingham, UK: Department for Education and Skills.

- Rowe, K. (2005). *Teaching reading: Report and recommendations*. Canberra: Australian Government, Department of Education, Science and Training.
- Seeley Flint, A., Kitson, L., Lowe, K., & Shaw, K. (2014). *Literacy in Australia: Pedagogies for engagement*. Milton, NSW: Wiley.
- Stainthorp, R. (2004). W(h)ither phonological awareness? Literate trainee teachers' lack of stable knowledge about the sound structure of words. *Educational Psychology: An International Journal of Experimental Educational Psychology*, 24(6), 753-765. doi: 10.1080/0144341042000271728.
- Stanovich, K. E. (2000). *Progress in understanding reading: Scientific foundations and new frontiers*. New York: Guilford Press.
- Stark, H. L., Snow, P. C., Eadie, P.A., & Goldfeld, S. R. (2016). Language and reading instruction in early years' classrooms: The knowledge and self-rated ability of Australian teachers. *Annals of Dyslexia*, 66, 28-54. doi: 10.1007/s.11881-015-0112-0.
- Tetley, D., & Jones, C. (2014). Pre-service teachers' knowledge of language concepts: Relationships to field experiences. *Australian Journal of Learning Difficulties*, 19, 17-32. doi:10.1080 /19404158.2014.891530.
- Thomson, S., De Bortoli, L., & Underwood, C. (2017). *PISA 2015: Reporting Australia's results*. Camberwell, VIC: Australian Council for Educational Research. Retrieved from <http://research.acer.edu.au/cgi/viewcontent.cgi?article=1023&context=ozpisa>.
- Thomson, S., Hillman, K., Schmid, M., Rodrigues, S., & Fullarton, J. (2017). *Highlights from PIRLS 2016 – Australia's perspective: Selected findings from the full report*. Camberwell, VIC: Australian Council for Educational Research. Retrieved from <https://research.acer.edu.au/cgi/viewcontent.cgi?article=1001&context=pirls>.

- Tompkins, G., Campbell, R., Green, D., & Smith, C. (2015). *Literacy for the 21st century: A balanced approach*, (2nd ed.). Frenchs Forest, NSW: Pearson.
- Walsh, K., Glaser, D., & Wilcox, D. D. (2006). *What education schools aren't teaching about reading and what elementary teachers aren't learning*. Washington, DC: National Council on Teacher Quality.
- Winch, G., Johnston, R., March, P. Ljungdahl, L., & Holliday, M. (2014). *Literacy: Reading, writing and children's literature*, (5th ed.). South Melbourne, VIC: Oxford University Press.
- Zygouris-Coe, V. (2001). *Balanced reading instruction in K-3 classrooms*. Orlando, FL: Florida Literacy and Reading Excellence Center, University of Central Florida.
Retrieved from <http://education.ucf.edu/mirc/research/balanced%20reading.pdf> .

Table 1. Number of primary and early childhood courses offered by site: States and Territories.

New South Wales	Victoria	Queensland	West Australia	South Australia	Tasmania	Northern Territory	Australian Capital Territory
24 (28.5%)	20 (23.8%)	24 (28.5%)	5 (6%)	3 (3.6%)	3 (3.6%)	3 (3.6%)	2 (2.4%)

Table 2. Number of literacy units per course that included beginning reading instruction.

No. of units per course	Early Childhood	Primary	Early Childhood and Primary	Primary and Secondary	Total
1	12	36	7	3	58
2	8	30	2	1	41
3	0	2	0	0	2
4	0	3	0	0	3
	20	71	9	4	104

Table 3. Number of literacy units offered in each year of undergraduate and postgraduate courses.

Undergraduate units (<i>n</i> = 69)				Postgraduate units (<i>n</i> = 29)	
1 st year	2 nd year	3 rd year	4 th year	1 st year	2 nd year
27 (39.1%)	29 (42%)	10 (14.5%)	3 (4.3%)	22 (75.9%)	7 (24.1%)

Table 4. Total hours of face-to-face tuition per unit.

Undergraduate Units (<i>n</i> = 63)			Postgraduate Units (<i>n</i> = 30)		
10 – 29 hours	30 – 39 hours	> 40 hours	10 – 29 hours	30 – 39 hours	> 40 hours
12 (19%)	40 (63.5%)	11 (17.5%)	8 (26.7%)	19 (63.3%)	3 (10%)

Table 5. Coding of learning outcomes, unit content descriptions and assessment tasks.

Category	Learning outcomes (<i>N</i> = 116)	Content descriptions (<i>N</i> = 116)	Assessment tasks (<i>N</i> = 262)
Specifically focuses on early reading instruction	0	1 (0.9 %)	3 (1.2%)
Mentions early reading instruction, but is included with other content	15 (12.9%)	39 (33.6 %)	4 (1.5%)
Has broad focus on literacy: early reading instruction not specifically mentioned, but reading is mentioned	28 (24.1%)	44 (37.9 %)	17 (6.5%)
Has a broad focus on literacy: no mention of reading	36 (31%)	14 (12 %)	21 (8%)
Unclear	15 (12.9%)	17 (14.7 %)	162 (61.8%)
No information given	22 (19%)	1 (0.9%)	31 (11.8%)
Not literacy	-	-	24 (9.2%)

Table 6. Types of assessment tasks.

Task type	Number (%)
Assessment – exam, quiz, test	37 (14.1%)
Essay	26 (9.9%)
Portfolio	15 (5.7%)
Unit of work/lesson plan/teaching program	14 (5.3%)
Case study	9 (3.4%)
Analysis of curriculum and policy documents	7 (2.7%)
Presentation (poster/group)	6 (2.3%)
Reflective journal/reflection	6 (2.3%)
Literature review	3 (1.2%)
Production of resources	2 (0.8%)
Other	35 (13.4%)
No information given	102 (38.9%)

Table 7. Number of units where specific content was mentioned.

Content	Number of units (<i>N</i> = 116)
Alphabetic principle	16 (13.8%)
Phonics	20 (17.2%)
Phonological awareness	27 (23.3%)
Balanced	20 (17.2%)
Whole Language	5 (4.3%)

Table 8. Unit coordinators' thesis subject areas, published articles and teaching areas.

Category	Thesis subject area (<i>N</i> = 42)	Peer-reviewed journal articles (<i>N</i> = 37)	Teaching areas (<i>N</i> = 31)
Early reading	2 (4.8 %)	3 (8.1%)	2 (6.4%)
Literacy, but not early reading	11 (26.2%)	13 (35.1%)	18 (58.1%)
No reference to literacy topics	29 (69%)	21 (56.8%)	11 (35.5%)

Table 9. Unit coordinators' research interests.

Active interest in early reading	4 (11.1%)
'interest only' listed	12 (33.3%)
No interest in early literacy stated	20 (55.6%)

CHAPTER 8: DISCUSSION

Chapter Overview

In this chapter a summary of the research contained in this thesis is presented, followed by a summary of the research questions addressed and the main conclusions that can be drawn from the studies. The major contribution of this research to the field of teacher preparation, specifically in regard to the teaching of beginning reading, is identified.

Summary of Research

The main purpose of the research reported in this thesis was to explore the subject-specific and pedagogical knowledge regarding beginning reading instruction of both Australian preservice teachers in the final year of their course of study, and of recently graduated teachers. In addition, the courses offered to undergraduate and postgraduate students enrolled in primary and early childhood teacher education programs were investigated. Specifically, the outcomes, teaching content, assignments, and prescribed texts of literacy units, as well as the interests and expertise of unit coordinators, were examined.

In Chapter 1, the purpose of the study was presented, along with a brief outline of the relevant published literature, in order to provide a background and rationale for this research. The scientific research base for early reading and early reading instruction was outlined. This thesis specifically explored preservice teachers' knowledge of early reading instruction, including content and pedagogy drawn from scientific research and how this knowledge was incorporated in teacher education programs.

In Chapter 2, a summary of Australian school students' performances on various international and national literacy assessments provided information concerning the

literacy and numeracy performance of students at various stages in their primary and secondary school careers. These results were compared to the performance of students in other countries for whom comparable data were available. An examination of the research regarding the factors that affect student achievement indicated that teachers were the main in-school contributors to student success. It is possible that the content of teacher education programs makes a major contribution to the quality and depth of teacher knowledge. As a concerning number of Australian school students fail to reach the lowest acceptable standards for literacy, attention was also directed at both the existing knowledge of preservice teachers and the design, content and organisation of teacher preparation programs.

In Chapter 3 the results of a systematic literature review were presented. This review was the first of its kind to investigate the views of final-year preservice teachers concerning their perceived degree of preparedness for the task of teaching early reading skills, the extent of their content knowledge and skills necessary for this task, their attitudes towards code-based and/or meaning-based approaches to early reading, and their confidence to teach students who struggle to read. The results indicated that although the majority of primary and early childhood preservice teachers favoured a code-based approach to teaching early reading, many lacked the knowledge and confidence to implement such an approach. In addition, although most preservice teachers were confident in their ability to teach early reading skills, they had reservations regarding their ability to teach children who struggle to learn to read.

Four of the 13 studies included in this review were Australian with each study being conducted in a single tertiary institution. Generally, the findings from the Australian studies indicated that, although preservice teachers held positive impressions of phonics and code-based instruction, they felt that they did not have sufficient *explicit* phonics

knowledge necessary for early literacy instruction. Similar findings were reported in the studies conducted in the United States, apart from the three studies where the participants received specific instruction in phonemic awareness and phonics.

Students were recruited from five states and 16 universities to complete the online survey reported in Chapter 4. The survey was designed to extend the four existing Australian studies described in Chapter 3. The study reported in this chapter was the first in which final-year preservice teachers in teacher preparation institutions across multiple Australian states were surveyed. Earlier studies were conducted in a single institution. The survey was designed to determine the extent of final-year preservice teachers' knowledge of the subject-specific content required for the teaching of beginning reading skills, as well as preservice teachers' perceptions of their preparedness and ability to teach those skills. As a group, final-year preservice teachers demonstrated a substantial discrepancy between their general confidence to teach early reading and spelling, and their content knowledge of this area, leading to the conclusion that few preservice teachers had sufficient expertise to be effective teachers of early reading and spelling. The results obtained from this study are comparable to those reported in the existing small body of available research.

Final-year preservice teachers' knowledge of the current research base related to beginning reading instruction was included in Chapter 5. Three questions included in the online survey, but not included in the analysis and discussion in Chapter 4, formed the basis of Chapter 5. This was the first time that a survey had been conducted to examine preservice teachers' knowledge of the content of early reading research.

Just over half of the respondents in this study identified practices involving phonics and phonemic awareness as being research-based, and confusion was evident regarding the terminology related to phonics and phonemic awareness. Similar results have been

reported in previous research (Cheesman, McGuire, Shankweiler, & Coyne, 2009; Mather, Bos & Babur, 2001; Meehan & Hammond, 2006; Washburn, Joshi, & Binks-Cantrell, 2011). In addition, fewer than 60% of the respondents in the current study were able to identify research-based instructional practices. These findings support the results of previous studies in which no significant difference was found between the ratings preservice teachers gave for the research evidence supporting Whole Language compared with the evidence supporting phonics (Bos, Mather, Podhajski, & Chard, 2001; Carter, Stephenson, & Hopper, 2015; Washburn, Joshi, & Binks-Cantrell, 2011). Finally, most of the literacy instructional strategies nominated in this study related to reading or comprehension. Only 24 of the 176 literacy instructional strategies nominated referred to phonics instruction and 11 referred to components of phonological awareness instruction. These results parallel the findings of Mahar and Richdale (2008). Based on these results, questions must be raised regarding the inclusion of evidence-based research in preservice teacher preparation courses. The purpose of the qualitative paper included in Chapter 6 was to enrich the quantitative information collected through the online survey described in Chapter 4. The opinions of eleven recently graduated or newly appointed teachers from six universities from four states regarding the quality and content of their teacher preparation courses, and their perceptions of preparedness to teach beginning reading, provided additional in-depth, qualitative data. Only one previous Australian study had included interviews with preservice teachers, but that study was limited to a cohort of final-year preservice teachers attending one tertiary institution. The results indicated that most interviewees demonstrated inadequate knowledge of beginning reading instruction, and that they were generally critical of their preservice preparation.

The research results outlined in Chapters 3 to 6 revealed two major issues related to the teaching of reading in the Australian school system. A large number of school

students failed to achieve the reading skills necessary for post school success, and few final-year preservice or recently graduated teachers had sufficient knowledge of the essential foundational skills required for the teaching of beginning reading.

Poor literacy outcomes for both primary and secondary Australian school students have continued to be an issue for an unacceptable proportion of students (see Chapter 2). Best practice for the teaching of beginning reading has been identified through scientific research, as outlined in Chapter 1, but results from the systematic literature review (see Chapter 3) revealed that many Australian and international preservice teachers' content and pedagogical knowledge of early literacy instruction was inadequate. Teachers have been shown to be the major in-school contributors to student gains in learning (Hattie, 2009). If the quality of teacher preparation is inadequate, then teachers' lack of knowledge will affect the quality of instruction that occurs in classrooms.

As outlined in the overview included in Chapter 1 and the findings from the systematic literature review described in Chapter 3, concerns have been raised regarding the content of reading units provided in preservice primary and early childhood tertiary programs. The purpose of the content-analysis study included in Chapter 7 was to address some of these concerns through a detailed examination of relevant literacy units. This was the first study of this type to be conducted in Australia. Of the 116 units included in this analysis, only 15 unit outcomes, 40 content descriptions and seven out of 262 assessment tasks included any mention of early reading, indicating a need for an increased focus on research-based beginning reading instruction in literacy units.

Research Questions Addressed

The first research question related to the factors that contribute to school students' performance in literacy. This question was addressed in the discussion paper presented in

Chapter 2. The second question related to the quality of preparation that preservice and recently graduated teachers received in the area of early reading instruction and was addressed in the systematic literature review included in Chapter 3. An investigation into the preparation of Australian preservice teachers to teach early reading (research question three) was conducted through an online survey and is presented in Chapter 4. Research question four related to Australian final-year preservice teachers' knowledge of the current evidence base for beginning reading instruction. Three specific questions included in the online survey described in Chapter 4 formed the basis of this study, with findings reported in Chapter 5. The fifth research question, concerning the perceptions held by graduates of teacher education courses of their preparation to teach early reading skills, was presented in Chapter 6. The sixth research question related to the early reading content included in preservice primary and early childhood programs in Australian teacher education tertiary institutions. This question was addressed in Chapter 7.

Overview of Findings

Five major conclusions can be drawn from the research presented in this thesis. First, the results from the survey described in Chapter 4 indicate that Australian preservice teachers possess highly variable knowledge of specific components of early reading instruction, such as phonemic awareness and phonics, with more than three-quarters of survey respondents scoring less than 66% on the knowledge questions. Similar findings have previously been reported (Fielding-Barnsley, 2010; Mahar & Richdale, 2008; Meehan & Hammond, 2006; Tetley & Jones, 2014). In addition, these preservice teachers generally perceived themselves as able and prepared to teach both reading and spelling. However, the relationship between the perception of ability to teach beginning reading and spelling and the overall measure of knowledge and skill was small and statistically

nonsignificant indicating that preservice teachers held unwarranted perceptions of their ability and preparedness to teach early literacy.

Second, many of the recently graduated teachers who participated in the telephone interviews acknowledged that their subject-specific knowledge, including phonological awareness and phonics, was superficial and that they had concerns about their ability to program for, and implement, early reading and spelling instruction. Similar results from a previous Australian study were reported by Meehan and Hammond (2006). Moreover, although interviewees made a number of favourable comments about their teacher education courses in relation to teaching literacy, they were generally critical of their preservice preparation, especially with regard to translating theory into classroom practice.

Third, it is highly probable that the variable quality and extent of the subject-specific content knowledge, and the explicit systematic pedagogy that supports student early reading and spelling acquisition, as revealed through the survey and interview processes, represents the standard reached by most graduating teachers. Although not yet graduated, the final year preservice teachers participating in this research were likely to have the same level of skill and knowledge for the teaching of early reading and spelling as those entering the teaching force. They were unlikely to learn additional skills and knowledge in this area in the very few months left in final year of their course, as the review of the organisation of programs of study, described in Chapter 7, indicated that early reading units are generally offered in the first or second year of teacher education programs.

Fourth, many teacher education courses do not appear to include scientifically-based reading research in their programs. This is evidenced by the limited knowledge of subject-specific pedagogical strategies necessary for implementing

research-based practices reported by preservice teachers, described in Chapter 6, and from the examination of course and unit contents, as described in Chapter 7.

Fifth, at the present time there appears to be little consistency between institutions regarding the content, allocation of tuition time, assessment requirements and prescribed textbooks for literacy units. In addition, unit coordinators may have proven expertise in beginning reading instruction, or none at all.

Implications for Practice

The apparent dominance of constructivist approaches to reading instruction in English-speaking countries, including a rejection of the extensive scientific base for instruction in beginning reading (Seidenberg, 2017), is of concern. Compelling scientific evidence provided by cognitive and psychological science, including neuroimaging and neuropsychology, (Taylor, Rastle, & Davis, 2017), is still missing from pre-service teacher education programs. Consequently, scientific evidence is also missing from early years classrooms, with teachers being left to discover effective classroom practices for themselves (Seidenberg 2017).

The Teacher Education Ministerial Advisory Group (TEMAG) (2014) has suggested that government policies and procedures need to be developed to ensure the provision of comprehensive, high-quality teacher preparation programs at tertiary institutions. The quality of literacy units provided in initial teacher education courses must be seen as the shared responsibility of tertiary course providers and the Australian Institute for Teaching and School Leadership (AITSL). As two of the responsibilities of AITSL are the setting of standards for providers of initial teacher education programs and the accreditation of graduate teachers, the AITSL provider accreditation processes needs to be amended in order to provide

more specific requirements for the content of literacy units. A more detailed description of the content of teacher Standard 2.5, for example, which requires teachers “to know and understand literacy and numeracy teaching strategies and their application in teaching areas” (AITSL, 2011), to include content from the scientific research base for best practice in literacy instruction, may well contribute to a more unified approach to the preparation of preservice teachers to teach literacy. Such amendments would, in turn, require providers of teacher education programs to review the content of their courses to include the most recent scientific research concerning beginning reading instruction. Teacher educators need to ensure that preservice teachers are knowledgeable about the explicit and systematic teaching of phonics and phonemic awareness as recommended by that research.

Contributions to the Field

The research included in this thesis adds to the very small Australian research base related to the preparation of teachers in the area of beginning reading instruction. The unique contribution of this research to the field of primary and early childhood teacher preparation was identified as follows:

The systematic literature review presented in Chapter 3 was the first of its kind to investigate preservice teachers’ perceptions of preparedness to teach, and content knowledge of, early reading skills, their preferences for different approaches to early reading, and their level of confidence to teach students who struggle to read. An analysis of the results from the limited amount of national and international research available revealed concerns with the content and effectiveness of teacher preparation for early literacy, especially with beginning reading instruction. The systematic literature review

provides a basis for further investigation into the preparation of Australian preservice teachers to teach early reading skills.

The survey of Australian preservice teachers concerning their perceived degree of preparedness for the task of teaching early reading skills, and the extent of their content knowledge and skills necessary for this task, described in Chapter 4, was the first survey of its kind to be conducted in teacher preparation institutions across multiple Australian states. Although five similar Australian surveys had previously been conducted, each study had been completed in a single tertiary institution and in different years of a four-year teacher preparation program. The study described here was conducted in multiple tertiary institutions across five Australian states and all preservice teachers were in their final year of a teacher education program. The results, therefore, provide a more coherent view of the preparedness and knowledge of Australian preservice teachers for the task of beginning reading instruction.

The Australian Institute for Teaching and School Leadership (AITSL) course accreditation process requires that the teaching practices taught within Australian initial teacher programs must be based on evidence (AITSL, 2015) Scientific research into the teaching of beginning literacy must, therefore, inform the content of teacher preparation programs. Three original questions, designed to investigate preservice teachers' knowledge of the content of early reading research and described in Chapter 5, were included in the online survey. This was the first time that this topic had been explored.

One previous Australian study had included interviews with preservice teachers. However, that study was limited to a cohort of preservice teachers attending one tertiary institution. The telephone interviews described in Chapter 6 were conducted with recently graduated teachers located across four Australian states. The analysis of the content of interviews revealed contradictions and discrepancies in recently graduated teachers'

perceptions of their preparedness and ability to teach, and their knowledge of, beginning reading instruction. The results suggest that the content of preservice teacher preparation for beginning reading instruction may need to be reviewed.

The content-analysis of reading units provided in preservice primary and early childhood tertiary programs study included in Chapter 7 was the first study of this type to be conducted in Australia. Although the information available was variable in amount and type, the content-analysis provides an insight into the extent that the scientific research base for early literacy and, in particular, beginning reading, is included in preservice teacher programs of study. In addition, it also provides an indication of the face-to-face teaching time allocated to beginning reading instruction, and the expertise of faculty staff.

Limitations

Three major limitations need to be acknowledged. Two limitations concern the response rates to the online survey and the interview process, the third concerns the variability of publicly available information regarding literacy units included in preservice primary and early childhood programs.

The low tertiary institution participation rate in the survey process (25%), together with the resultant limited number of survey completions by final-year preservice early childhood and primary teachers, may contribute to an inherent bias which could affect the generalisation of results to all final-year preservice teachers. Even so, the results support the findings of previous, similar research in Australia and overseas. The low response rate, however, provides its own important data. For example, it is possible that the tertiary institutions that did participate in the survey process were those that were confident about the content of their courses and believed that their students would report favourably.

The second limitation concerns the small number of recently graduated teachers who took part in the interviews. Even though the number was acceptable for a study of this kind, the results cannot be seen as being representative of all recently graduated teachers.

A third limitation concerns the amount, and availability, of public information in relation to the content of literacy units offered in preservice primary and early childhood courses of study. For some units, only minimal information was provided on institution websites in unit descriptions, guides, and handbook descriptions, whereas other institutions provided an in-depth coverage of the composition of unit content and organisation. Additional information garnered from various internet sites also varied in content and range of information. However, as adequate information was available for 63% of the units, and 21% of these units did not appear to cover phonemic awareness and phonics in depth, and 45% did not refer to phonemic awareness or phonics at all, then the results may well be indicative of literacy units in general.

Future Research

Further research is needed to extend and complement the studies included in this thesis. For example, this might include a replication of the interview process with a larger number of participants, and a replication of the content-analysis study of literacy courses offered in Australian tertiary institutions, including a formal process for requesting course and unit information not publicly available. In addition, new research aimed at a) clarifying the causes of the disparity between preservice teachers' confidence and competence to teach early reading; b) comparing the outcomes of different teacher education programs to identify the most effective teacher preparation practices; and c) investigating the relationship between the content of teacher education programs, the skills and knowledge that teachers acquire, and the degree to which this knowledge is

transferred to the classroom environment, is recommended. These particular areas of research will be crucial to the provision of a renewed approach to improving the literacy achievement of all of our students. Until this occurs, the answer to *How well prepared are Australian preservice teachers to teach beginning reading skills?* will remain, ‘Not consistently well enough to guarantee effective instruction in early reading for all children’.

References

- Australian Institute for Teaching and School Leadership (AITSL). (2011). *Australian professional standards for teachers*. Retrieved from <https://www.aitsl.edu.au/teach/standards>.
- Australian Institute for Teaching and School Leadership. (2015). *Accreditation of initial teacher education programs in Australia: Standards and procedures*. Melbourne, VIC: Author. Retrieved from https://www.aitsl.edu.au/docs/default-source/default-document-library/accreditation-of-ite-programs-in-australiace118891b1e86477b58fff00006709da.pdf?sfvrsn=86f9ec3c_2.
- Bos, C., Mather, N., Dickson, S., Podhajski, B., & Chard, D. (2001). Perceptions and knowledge of preservice and inservice educators about early reading instruction. *Annals of Dyslexia*, 51, 97-120. Retrieved from <http://www.jstor.org/stable/23765365>.
- Carter, M., Stephenson, J., & Hopper, T. (2015). Factors in instructional decision-making, ratings of evidence and intended instructional practices of Australian final year teacher education students. *Australian Journal of Teacher Education*, 40(6), 85-103. doi: 10.14221/ajte.2015v40n6.5.
- Cheesman, A. E., McGuire, J. M., Shankweiler, D., & Coyne, M. (2009). First-year teacher knowledge of phonemic awareness and its instruction. *Teacher Education and Special Education*, 32, 270-289. doi: 10.1177/0888406409339685.
- Fielding-Barnsley, R. (2010). Australian pre-service teachers' knowledge of phonemic awareness and phonics in the process of learning to read. *Australian Journal of Learning Difficulties*, 15, 99-110. <https://doi.org/10.1080/19404150903524606>.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Abingdon, OXON: Routledge.

- Mahar, N. E., & Richdale, A. L. (2008). Primary teachers' linguistic knowledge and perceptions of early literacy instruction. *Australian Journal of Learning Difficulties*, 13, 17-37. doi: 10.1080/19404150802093703.
- Mather, N., Bos, C., & Babur, N. (2001). Perceptions and knowledge of preservice and inservice educators about early literacy instruction. *Annals of Dyslexia*, 51, 97-120.
- Meehan, R., & Hammond, L. (2006). Walking the talk: Western Australian teachers' beliefs about early reading and spelling instruction and their knowledge of metalinguistics. *Australian Journal of Learning Disabilities*, 11, 17-24. doi: 10.1080/194041506095468.
- Seidenberg, M. (2017). *Language at the speed of sight: How we read, why so many can't, and what can be done about it*. New York, NT: Basic Books.
- Taylor, J. S. H., Davis, M. H., & Rastle, K. (2017). Comparing and validating methods of reading instruction using behaviour and neural findings in an artificial orthography. *Journal of Experimental Psychology: General*, 146, 826-858. doi: 10.1037/xge0000301.
- Teacher Education Ministerial Advisory Group (TEMAG). (2014). *Action Now: Classroom Ready Teachers*. Canberra, ACT: Australian Government, Department of Education and Training.
- Tetley, D., & Jones, C. (2014). Pre-service teachers' knowledge of language concepts: Relationships to field experiences. *Australian Journal of Learning Difficulties*, 1-16. doi: 10.1080/19404158.2014.891530.
- Washburn, E. K., Joshi, R. M., & Binks-Cantrell, E. S. (2011). Teacher knowledge of basic language concepts and dyslexia. *Dyslexia*, 17, 165-183. doi: 10.1002/dys.426

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APPENDIX

Ethics final approval correspondence and amendment approval correspondence.



MACQUARIE
University

LINDA MEEKS <linda.meeks@students.mq.edu.au>

RE: HS Ethics Application - Approved (5201300190)(Condition met)

1 message

Fhs Ethics <fhs.ethics@mq.edu.au>

17 April 2013 at 13:58

To: Dr Coral Kemp <coral.kemp@mq.edu.au>

Cc: A/Prof Jennifer Stephenson <jennifer.stephenson@mq.edu.au>, Dr Alison Madelaine <alison.madelaine@mq.edu.au>, Mrs Linda Joy Meeks <linda.meeks@students.mq.edu.au>

Dear Dr Kemp,

Re: "Student achievement and the teacher factor: How well prepared are final-year students, enrolled in initial primary and early childhood teacher education programs, to teach early literacy?"(5201300190)

Thank you for your recent correspondence. Your response has addressed the issues raised by the Faculty of Human Sciences Human Research Ethics Sub-Committee and approval has been granted. This email constitutes ethical approval only.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

A/Prof Jennifer Stephenson
Dr Alison Madelaine
Dr Coral Kemp
Mrs Linda Joy Meeks

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).
2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 17th April 2014
Progress Report 2 Due: 17th April 2015
Progress Report 3 Due: 17th April 2016
Progress Report 4 Due: 17th April 2017
Final Report Due: 17th April 2018

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

3. If the project has run for more than five (5) years you cannot renew

approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Sub-Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4. All amendments to the project must be reviewed and approved by the Sub-Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

5. Please notify the Sub-Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

<http://www.mq.edu.au/policy>

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have final approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

If you need to provide a hard copy letter of Final Approval to an external organisation as evidence that you have Final Approval, please do not hesitate to contact the Ethics Secretariat at the address below.

Please retain a copy of this email as this is your official notification of final ethics approval.

Yours sincerely,

Dr Peter Roger
Chair
Faculty of Human Sciences Ethics Review Sub-Committee
Human Research Ethics Committee

Faculty of Human Sciences - Ethics
Research Office
Level 3, Research HUB, Building C5C
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NSW 2109

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Fax: +61 2 9850 4465

Email: fhs.ethics@mq.edu.au

<http://www.research.mq.edu.au/>



MACQUARIE
University

LINDA MEEKS <linda.meeks@students.mq.edu.au>

RE: Ethics Amendment 1 - Approved (Ref No. 5201300190)

1 message

Fhs Ethics <fhs.ethics@mq.edu.au>

17 July 2013 at 10:10

To: Dr Coral Kemp <coral.kemp@mq.edu.au>

Cc: A/Prof Jennifer Stephenson <jennifer.stephenson@mq.edu.au>, Dr Alison Madelaine
<alison.madelaine@mq.edu.au>, Mrs Linda Joy Meeks <linda.meeks@students.mq.edu.au>

Dear Dr Kemp,

RE: 'Student achievement and the teacher factor: How well prepared are final-year students, enrolled in initial primary and early childhood teacher education programs, to teach early literacy?' (Ref: 5201300190)

Thank you for your recent correspondence regarding the amendment request. The amendments have been reviewed and we are pleased to advise you that the amendments have been approved.

This approval applies to the following amendments:

1. Addition of "Please submit your survey, even if you do not complete all questions" on the student invitation, recruitment notice and reminder notice;
2. Change in the survey page for entry into gift draw - "If yes, please provide your contact details (name and address) below";
3. Change in prize - \$50 MasterCard Gift Card;
4. Revised survey and student Recruitment notice;
5. Attached Consent form noted.

Please accept this email as formal notification that the amendments have been approved. Please do not hesitate to contact us in case of any further queries.

All the best with your research.

Kind regards,

FHS Ethics

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MACQUARIE
University

LINDA MEEKS <linda.meeks@students.mq.edu.au>

RE: Ethics Amendment 2 - Approved (Ref No. 5201300190)

1 message

Fhs Ethics <fhs.ethics@mq.edu.au>

5 August 2013 at 14:30

To: Dr Coral Kemp <coral.kemp@mq.edu.au>

Cc: A/Prof Jennifer Stephenson <jennifer.stephenson@mq.edu.au>, Dr Alison Madelaine <alison.madelaine@mq.edu.au>, Mrs Linda Joy Meeks <linda.meeks@students.mq.edu.au>

Dear Dr Kemp,

RE: 'Student achievement and the teacher factor: How well prepared are final-year students, enrolled in initial primary and early childhood teacher education programs, to teach early literacy?' (Ref: 5201300190)

Thank you for your recent correspondence regarding the amendment request.

The amendment has been reviewed and we are pleased to advise you that the amendment has been approved.

This approval applies to the following amendment:

1. Request to revise Section 3.2 (b) - At Macquarie University, the recruitment notice will be distributed via the weekly **Campus News** email.

Please accept this email as formal notification that the amendment has been approved. Please do not hesitate to contact us in case of any further queries.

All the best with your research.

Kind regards,

FHS Ethics

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MACQUARIE
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LINDA MEEKS <linda.meeks@students.mq.edu.au>

RE: Ethics Amendment 3 - Approved (Ref No. 5201300190)

1 message

Fhs Ethics <fhs.ethics@mq.edu.au>

24 October 2013 at 13:52

To: Dr Coral Kemp <coral.kemp@mq.edu.au>

Cc: A/Prof Jennifer Stephenson <jennifer.stephenson@mq.edu.au>, Dr Alison Madelaine <alison.madelaine@mq.edu.au>, Mrs Linda Joy Meeks <linda.meeks@students.mq.edu.au>

Dear Dr Kemp,

RE: 'Student achievement and the teacher factor: How well prepared are final-year students, enrolled in initial primary and early childhood teacher education programs, to teach early literacy?' (Ref: 5201300190)

Thank you for your recent correspondence regarding the amendment request. The amendments have been reviewed and we are pleased to advise you that the amendments have been approved.

This approval applies to the following amendments:

1. To repeat the 2013 survey in 2014;
2. To attach a second 'gift card draw' to the registration page;
3. Attached information and consent forms, survey, letters, recruitment and reminder notice and registration forms noted.

Please accept this email as formal notification that the amendments have been approved. Please do not hesitate to contact us in case of any further queries.

All the best with your research.

Kind regards,

FHS Ethics

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MACQUARIE
University

LINDA MEEKS <linda.meeks@students.mq.edu.au>

Re: HS Ethics Amendment 4 - Approved with Condition/s (5201300190)

1 message

Dr Coral Kemp <coral.kemp@mq.edu.au>

8 May 2014 at 13:52

To: Fhs Ethics <fhs.ethics@mq.edu.au>

Cc: A/Prof Jennifer Stephenson <jennifer.stephenson@mq.edu.au>, Dr Alison Madelaine <alison.madelaine@mq.edu.au>, Mrs Linda Joy Meeks <linda.meeks@students.mq.edu.au>

The reminder email and phone call will be a one-off as suggested.

Regards,

Coral

On 06/05/2014, at 1:45 PM, Fhs Ethics wrote:

> Dear Dr Kemp,
>
> RE: 'Student achievement and the teacher factor: How well prepared are
> final-year students, enrolled in initial primary and early childhood
> teacher education programs, to teach early literacy?' (Ref: 5201300190)
>
> Thank you for your recent correspondence regarding the amendment request.
>
> The amendment request has been reviewed and I am pleased to advise you that
> the amendments have been approved.
>
> This approval applies to the following amendments:
>
> Change in the recruitment process -
>
> 1. To send a reminder 'invitation' email to institutions whose Deans have
> not responded;
> 2. To make follow-up telephone calls to administration officers/PA.
>
> Please note that this approval is subject to the following condition:
>
> 1. Please confirm that the reminder email and phone call would be a
> one-off, in order to avoid any perceived coercion.
>
> Please accept this email as formal notification that the amendments have
> been approved.
>
> Please do not hesitate to contact us in case of any further queries.
>
> All the best with your research.
>
> Kind regards,
>
> FHS Ethics
>
> *****
> Faculty of Human Sciences - Ethics
> Research Office
> Level 3, Research HUB, Building C5C
> Macquarie University
> NSW 2109
>

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> Fax: +61 2 9850 4465
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>



MACQUARIE
University

LINDA MEEKS <linda.meeks@students.mq.edu.au>

RE: HS Ethics Amendment 5 - Approved (Ref No. 5201300190)

1 message

Fhs Ethics <fhs.ethics@mq.edu.au>

6 August 2014 at 11:45

To: Dr Coral Kemp <coral.kemp@mq.edu.au>

Cc: Associate Professor Jennifer Stephenson <jennifer.stephenson@mq.edu.au>, Dr Alison Madelaine <alison.madelaine@mq.edu.au>, Mrs Linda Joy Meeks <linda.meeks@students.mq.edu.au>

Dear Dr Kemp,

RE: 'Student achievement and the teacher factor: How well prepared are final-year students, enrolled in initial primary and early childhood teacher education programs, to teach early literacy?' (Ref: 5201300190)

Thank you for your recent correspondence regarding the amendment request. The amendments have been reviewed and we are pleased to advise you that the amendments have been approved.

This approval applies to the following amendments:

1. Additional information in the Student Invitation Email as stated in Section 6;
2. Revised Student invitation email noted.

Please accept this email as formal notification that the amendments have been approved. Please do not hesitate to contact us in case of any further queries.

All the best with your research.

Kind regards,

FHS Ethics

Faculty of Human Sciences - Ethics
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MACQUARIE
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RE: HS Ethics Amendment 6 - Approved (Ref No. 5201300190)

1 message

Ms Kay Bowes-Tseng <kay.bowes-tseng@mq.edu.au>

26 February 2015 at 13:37

To: Dr Coral Kemp <coral.kemp@mq.edu.au>

Cc: Associate Professor Jennifer Stephenson <jennifer.stephenson@mq.edu.au>, Dr Alison Madelaine <alison.madelaine@mq.edu.au>, Mrs Linda Joy Meeks <linda.meeks@students.mq.edu.au>

Dear Dr Kemp,

RE: 'Student achievement and the teacher factor: How well prepared are final-year students, enrolled in initial primary and early childhood teacher education programs, to teach early literacy?' (Ref: 5201300190)

Thank you for your recent correspondence regarding the amendment request. The amendments have been reviewed and we are pleased to advise you that the amendments have been approved.

This approval applies to the following amendments:

1. Additional recruitment, as stated in Section 6;
2. Invitation noted.

Please accept this email as formal notification that the amendments have been approved. Please do not hesitate to contact us in case of any further queries.

All the best with your research.

Kind regards,

FHS Ethics

Faculty of Human Sciences - Ethics
Research Office
Level 3, Research HUB, Building C5C
Macquarie University
NSW 2109

Ph: +61 2 9850 4197

Fax: +61 2 9850 4465

Email: fhs.ethics@mq.edu.au

<http://www.research.mq.edu.au/>



MACQUARIE
University

LINDA MEEKS <linda.meeks@students.mq.edu.au>

RE: HS Ethics Application - Approved (5201400754)(Con/Met)

1 message

Fhs Ethics <fhs.ethics@mq.edu.au>

30 July 2014 at 11:13

To: Dr Coral Kemp <coral.kemp@mq.edu.au>

Cc: Associate Professor Jennifer Stephenson <jennifer.stephenson@mq.edu.au>, Dr Alison Madelaine <alison.madelaine@mq.edu.au>, Mrs Linda Joy Meeks <linda.meeks@students.mq.edu.au>

Dear Dr Kemp,

Re: "Perceptions of final-year students, enrolled in initial primary and early childhood teacher education programs, regarding their preparedness, and ability, to teach early literacy"(5201400754)

Thank you for your recent correspondence. Your response has addressed the issues raised by the Faculty of Human Sciences Human Research Ethics Sub-Committee and approval has been granted, effective 30th July 2014. This email constitutes ethical approval only.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

Associate Professor Jennifer Stephenson
Dr Alison Madelaine
Dr Coral Kemp
Mrs Linda Joy Meeks

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).
2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 30th July 2015
Progress Report 2 Due: 30th July 2016
Progress Report 3 Due: 30th July 2017
Progress Report 4 Due: 30th July 2018
Final Report Due: 30th July 2019

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

3. If the project has run for more than five (5) years you cannot renew

approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Sub-Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4. All amendments to the project must be reviewed and approved by the Sub-Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

5. Please notify the Sub-Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

<http://www.mq.edu.au/policy>

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

If you need to provide a hard copy letter of approval to an external organisation as evidence that you have approval, please do not hesitate to contact the Ethics Secretariat at the address below.

Please retain a copy of this email as this is your official notification of ethics approval.

Yours sincerely,

Dr Simon Boag
Acting Chair
Faculty of Human Sciences
Human Research Ethics Sub-Committee

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