Research and theory into practice: Australian preservice teachers' knowledge of evidence-based early literacy instruction.

Linda Meeks[1], Alison Madelaine[1], Coral Kemp[1]

[1] *Department of Educational Studies, Macquarie University, Sydney, Australia*

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Abstract

Much has been written about the decline in Australian literacy standards, as measured by international tests, and concerns have been expressed about the quality of teacher preparation for teaching early literacy to young children in their first years of school. Preservice teacher knowledge of research evidence supporting the essential components of early literacy instruction and the strategies used to teach these foundation skills are explored in this study. Responses to survey questions provided both quantitative and qualitative data. Results suggest that although preservice teachers have some knowledge of the components of early literacy identified in research, they are less knowledgeable about the subject-specific pedagogical strategies identified as necessary for implementing evidence-based practices. These results are not surprising given the findings of recent research into the quality of literacy units in teacher education courses.

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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 (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). More recent research into the content of teacher education courses across Australian teacher training institutions has found that teachers may not be well prepared to teach early literacy skills in the first years of school (Meeks, Madelaine, & Stephenson, 2020;

Meeks & Stephenson, 2020; Stark, Snow, Eadie, & Goldfeld, 2015). The findings from this research indicate that the content and pedagogy taught in courses on early literacy do not always reflect evidence-based practice and that many of the university academics coordinating these courses do not have a research background relevant to the teaching of literacy. It should be noted here that the Australian Institute for Teaching and School Leadership is responsible for the accreditation of tertiary education courses in Australia. The standards delineated by this agency, however, are generic in style and do not provide strict regulations regarding specific content, or number of courses, related to literacy instruction in teacher education courses.

Content of early reading instruction

The content of early reading instruction 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 (ability to focus on and manipulate phonemes in spoken words); phonics (letter sound correspondences and spelling patterns); fluency (the ability to read texts accurately, fluently and with expression); and comprehension (including vocabulary) (National Institute of Child Health and Human Development [NICHHD], 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; (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 & Miller, 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, including the explicit and systematic teaching of each of the component skills identified in the scientific research. 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

Given the findings from researchers' analyses of the content and pedagogy included in early literacy units in teacher education courses, it was of interest to determine whether preservice early childhood and primary teachers in their final year of study in Australian teacher preparation courses were knowledgeable about the current evidence-base relating to content and pedagogical practice for literacy instruction. Three research questions were posed:

- Are preservice teachers informed about the five main components of reading instruction recommended by the National Reading Panel report?
- 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

The research reported in this paper was part of a larger survey of preservice teachers' knowledge of the components of early literacy, in particular early reading and spelling. The majority of the survey questions addressed preservice teacher perceptions of preparedness and ability to teach early reading and spelling skills and their knowledge of components of early reading and spelling. The results of the survey of these areas are reported in Meeks and Kemp (2017). Three survey questions, two multiple-choice questions and one open-ended question, specifically addressed preservice teacher knowledge of the evidence base for the content and pedagogical components of an early literacy program. Full details of the questions are included in the appendix. The responses to these three questions are analysed and reported in this paper.

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, Podhajski, and Chard (2001), and Joshi et al. (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.

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 Schools 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 question

One of the questions included in the current study assessed knowledge of the five main components of early literacy instruction as identified in the report of the National Reading Panel (NICHHD, 2000). The focus of this report was reading (decoding and comprehension) instruction as a step towards literacy [i.e. the ability to read and write] (Australian Curriculum, Assessment and Reporting Authority, n.d.). Respondents were asked to identify the five main components of literacy 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, the following procedures were followed.

Identification of broad categories

A set of criteria for the coding of statements was developed by the first author. A glossary was also constructed by the first author in order to provide information concerning any acronyms and to assist in the categorisation of specific terms, such as *multimodal.*

Using the codes developed by the first author, the first and second authors worked together, using a consensus approach, to code 20% of the participant responses. As part of this process, the criteria were reviewed and revised. Agreed criteria were established for coding each response as (a) describing a teaching strategy, (b) describing something other than a teaching strategy (non-strategy) or (c) uncodeable.

Identification of sub-categories

Following the initial classification, sub-categories were developed by consensus between the first and second authors. The "teaching 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 (e.g. guided reading, shared reading, modelled reading, phonemic awareness, decoding strategies, teach in context, chunking words and reading roles); comprehension (e.g. questioning, prediction, inferences, here/hidden/head, summarising and clicks to clunks); spelling for example, bossy "e", invented spelling, and spelling techniques; writing, (e.g. 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, blending and segmenting; *phonics* included references to the alphabetic principle, c-v-c words, decoding, encoding and letter-sound relationships; and *fluency* included guided reading. Sounding out, which incorporates both letter sound correspondence and oral blending was counted as both phonemic awareness and phonics. *Comprehension* and *vocabulary* strategies are shown in Table 5.

Responses related to the organisation of instruction (organisational strategies) were sub-divided into five categories: type of instruction (e.g. explicit instruction, strategy instruction, differential instruction, gradual release of responsibility and the teaching and learning cycle); classroom organisation (e.g. grouping of students, writing corners, literacy rotations); program organisation (e.g. practice/time to revise, integrate with other Key Learning Areas (KLAs) and "*incorporate the arts into literacy programs*"); lesson organisation (e.g. "*start with outline of lesson and end with a summary of lesson/recap to assist memory*"); and "other", (e.g. "*refer students with low literacy to literacy support staff in your school*"). Following the initial joint coding and refinement of the codes, the first and second authors coded the remaining responses together using a consensus approach. The third author checked all coding and where this author disagreed with the coding, this was resolved by discussion amongst all three authors.

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. Although only 10% of respondents nominated all five of the main components identified in the research, 60% nominated four of them. Of note, phonics was correctly identified by fewer than 55% of respondents.

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.

Literacy teaching strategies generated by preservice teachers

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); *non-strategies* (141 items) and *uncodeable* (107 items).

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 each generated by one respondent only and included: "*using full stops instead of and*"; "*stretch out words like bubble gum*"; "*here/hidden/head*" and "*literature through drama strategies*". These strategies are not included in Table 3.

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 each generated by one respondent only and included: "*group students by reading strategy*"; "*incorporate the arts into literacy programs*" and "*gradual release of responsibility*".

Non-strategies and uncodeable elements

The 141 responses classified as "non-strategies" 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 uncodeable. 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 (NICHHD, 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 36 times, phonics was mentioned 33 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).

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; Meeks & Kemp, 2017; 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). 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. Although 70% of respondents nominated four or five of the main components of early literacy instruction, the component that was most often overlooked was phonics. 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 (National Institute of Child Health and Human Development (NICHHD), 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 generation 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 somewhat 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) reported 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 practice 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, 2012,, 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 (National Institute for Literacy, 2008; National Institute of Child Health and Human Development (NICHHD), 2000; Rose, 2006; Rowe, 2005), 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. Of concern is the greater number of nominations for partial guidance practices such as "*providing a rich language environment rather than systematically teaching component skills*", and the higher rate of generation of instructional strategies focusing on comprehension and meaning-making compared to phonics and phonological awareness. These results are not surprising given Australian research into teacher education courses on early reading instruction. A 2005 Australian study by Rowe found 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. Recent research into Australian teacher preparation courses for early reading instruction suggest that things have not improved since 2005 (Meeks et al., 2020; Meeks & Stephenson, 2020).

The results also reflect the findings from studies in other countries. In the United States, for example, Bos et al. (2001) noted that current research and national initiatives into the teaching of evidence-based reading instruction did not appear to be promoted by teacher educators.

Literacy teaching strategies generated by preservice teachers

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*".

Instructional strategies

Most of the literacy instructional strategies generated by preservice teachers were for reading or comprehension, with almost half relating to comprehension. Guided reading, modelled reading and shared reading were the most frequently generated strategies. 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, 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, therefore, 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 also necessary for the reader to decode words on a page fluently and automatically (Foorman, Herrera, Petscher, Mitchell, & Truckenmiller, 2015) and accurate and fluent reading contributes significantly to reading comprehension (National Institute of Child Health and Human Development (NICHHD), 2000).

Phonics and phonological awareness instruction provide the essential foundational skills for decoding (National Institute for Literacy, 2008; National Institute of Child Health and Human Development (NICHHD), 2000; Rose, 2006; Rowe, 2005), but of the 176 literacy instructional strategies generated by preservice teachers, only 24 mentioned phonics instruction and 11 mentioned 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 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 that 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 its extensive research base, it must be considered less than satisfactory that only 9 of the 50 responses in the category of organisational strategies mentioned explicit instruction. In addition, a number of important and effective organisational strategies were not generated by

any 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.

Non-strategies and uncodeable elements

Just over half the items suggested in response to the question relating to important literacy teaching strategies were not teaching strategies or were uncodeable. Uncodeable 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 et al., 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. Replication of this research by others is, therefore, recommended.

Conclusion

The research evidence is 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. Knowledge of the recommendations made by the National Reading Panel (National Institute of Child Health and Human Development (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-profes sional-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.

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.

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.

Clark, R. E., Kirschner, P. A., & Sweller, J. (2012). Putting students on the path to learning: The case for fully guided instruction. In *American Educator* (pp. 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.

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.

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.

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.

Ford, M. P., & Opitz, M. F. (2011). Looking back to move forward with guided reading. *Reading Horizons*, *50*, 225–240.

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.

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Abingdon, OX: Routledge.

Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. Abingdon, Oxon: Routledge.

Hattie, J. (2015). The applicability of visible learning to higher education. *Scholarship of Teaching and Learning in Psychology*, *1*, 79–91.

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, T. J., II, & Raisch, C. D., Eds. (2010). *Encyclopedia of educational reform and dissent*. Thousand Oaks, CA: Sage Publications Inc. 10.4135/9781412957403.

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.

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.

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.

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.

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.

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.

Meeks, L., Madelaine, A., & Stephenson, J. (2020). New teachers talk about their preparation to teach early literacy. *Australian Journal of Learning Difficulties*, 1–21. doi:10.1080/19404158.2020.1792520

Meeks, L., & Stephenson, J. (2020). Australian preservice teachers and early reading instruction. *Australian Journal of Learning Difficulties*, *25*, 65–82.

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*, 1–17. Retrieved from http://ro.ecu.edu.au/ajte/vol42/iss11/1

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.

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.

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 (NICHHD). (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.

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/mathematicsteachingandlearningstra tegiesinpisa.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.

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.

Spear-Swerling, L. (2007). The research-practice divide in beginning reading. *Theory into Practice*, *46*, 301–308.

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.

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*. doi:10.1007/s11881-015-0112-0

Stephenson, J. (2017). An overview of survey-based research carried out with Australian preservice teachers (1995–2015). *Teaching and Teacher Education*, *63*, 159–167.

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. Advance online publication.

Tetley, D., & Jones, C. (2014). Pre-service teachers' knowledge of language concepts: Relationships to field experiences. *Australian Journal of Learning Difficulties*, *14*, 17–32.

Washburn, E. K., Joshi, R. M., & Binks-Cantrell, E. S. (2011). Teacher knowledge of basic language concepts and dyslexia. *Dyslexia*, *17*, 165–183.

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.

Table 1

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

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

Note: Correct answers are in italics.

Table 2

Knowledge of instructional practices supported by research.

Knowledge of instructional practices ($N = 158$)	
Teaching invented spelling	27 (17%)
The systematic teaching of phonics	91 (57.6%)
Ensuring that all children have good phonemic awareness skills	95 (60%)
Encouraging the use of picture cues in early reading	107 (67.7%)
Using phonics-based readers in the early grades	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%)
Using a direct instruction approach for the teaching of reading	58 (36.7%)
Unsure	19 (12%)

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

Table 3

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 4

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 5

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

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