Phonological literacy: Preparing primary teachers for the challenge of a balanced approach to literacy education

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Researchers at the University of New England have developed an electronic module designed to introduce the elements of phonology and phonics to trainee primary teachers. This paper discusses the background and conception of the module, and then describes its contents, its implementation and the results of its formal evaluation.

Introduction
The purpose of this article is two-fold. Firstly, it introduces a new approach, derived from current research in linguistics, to preparing education students to teach phonics in schools. Secondly, it reports on the initial implementation of the approach into the primary education degrees at the University of New England. The work has been undertaken as a joint project between UNE’s School of Languages, Cultures and Linguistics, and School of Education. The end product is an electronic module introducing the basic principles of phonology in the context of children’s language and literacy acquisition.

Although the role of phonics in literacy teaching has been a divisive political issue for a number of years, the strategic use of phonics is now mandated by official endorsement of ‘the balanced approach’ to literacy learning through State and Federal literacy policies, and most recently demonstrated in the findings of the 2005 National Inquiry into the Teaching of Literacy (NITL). The Inquiry report states that “direct systematic instruction in phonics during the early years of schooling is an essential foundation for teaching children to read”. It also acknowledges that “the provision of such a repertoire of teaching skills is a challenge for teacher education institutions” (2005, p. 11). The current module is a response to that challenge.

Existing teacher education programs are burdened with an overcrowded curriculum, in which phonics has been successively reduced in line with pedagogical trends based on Whole Language and socio-cultural theories of literacy acquisition. This reality has shaped two important aspects of the
module. On a practical level, it functions as an adjunct to existing course material used in Australian universities. Covering just four lectures, it can be incorporated into any of several units of study at a range of levels. Although it functions best when backed up by tutorial-style discussion, either face to face or online, the module itself can be studied privately outside of internal class time, and forms a valuable tool for self-paced learning by distance education students.

From a theoretical perspective, this electronic module has been designed to reintroduce phonics as one part of a balanced approach to literacy, in which meaning based and social aspects of literacy are strongly acknowledged, rather than simply reviving an outdated approach to literacy teaching. The strength and uniqueness of this module stems from its grounding in Cognitive Phonology, a relatively recent theory different in many ways to the conventional structural approach which underpinned earlier phonics based teaching. Cognitive Phonology, stemming from the work of Ronald Langacker (1987) and John Taylor (2002), places emphasis on categorisation and concept formation rather than subconscious mental rules, and is particularly appropriate as a theoretical framework for human applications such as language and literacy teaching (Author, 2006a; Author, 2006b). It encourages a move beyond the sterile ‘phonics vs. whole language’ dichotomy, seeing phonics as just one of several stages in the development of literacy skills – albeit a crucial one. On another level, it sees education students’ understanding of phonics as just one part, though equally crucial, of their ‘phonological literacy’ as teachers. The module thus strives to lead students through experiential concept-formation techniques to a clear and contextualised understanding of the role of phonemic awareness in literacy acquisition – and to an appreciation of just how difficult it is for young children to acquire phonemic awareness.

**Phonological knowledge in teacher education**

Phonological knowledge is an important part of reading and spelling strategies. It is integral to the code-breaking role that is one of the Four Roles of the Reader (Luke & Freebody, 1999) that underpin the teaching of reading in NSW schools (NSW Department of School Education, 1997). Similarly, *Focus on Literacy: Spelling* (NSW Department of Education and Training, 1998) describes the teaching of spelling through the use of four types of knowledge: phonological, visual, morphemic and etymological. Phonological knowledge, however, is the strategy that is most frequently relied upon when sounding out unfamiliar words, given that the English language is far more regular than irregular, and it is always meant to work in conjunction with the other three types of knowledge which supply supplementary strategies to help with irregular spelling. This spelling document makes the significant statements that spelling must be taught in an “explicit and sys-
tematic way” (p. 18) and teachers must know “how the spelling system works” (p. 19). Although the NSW Department of Education and Training makes it very clear what should be known and taught, the challenge is preparing student teachers to be able to teach effectively. The recent national report In Teachers’ Hands makes the salient point that “the demanding task for teachers is to acquire deep knowledge of the important elements of literacy learning” (Darling-Hammond, 2000, as cited by Louden et al., 2005, p. 203). 

Phonology, however, is a difficult subject and it is arguable whether teacher education students themselves are receiving sufficient explicit and systematic knowledge of not only how the spelling system works, especially in relation to phonological knowledge, but also of real understanding from the child’s perspective. Deep knowledge is lacking. This is reflected in one challenging submission to the NITL in the section ‘Some Neglected Factors’ (Yule, 2005):

> Teachers (and their college teachers) often do not understand English spelling anyway, and the teachers in the classroom tend to rely on commercial edbiz publishing and computer exercises and games to supply the phonics ‘activities’. (p. 19) Many primary teachers have no idea of the English spelling system, and so cannot teach spelling except in lists or word by word or with ‘activities’. (p. 8)

Primary teacher education students themselves frequently express concern over their lack of confidence in their phonics knowledge and their frustration at having to rely on abstract chapters in textbooks that are usually quite difficult to understand. Now the issue is no longer whether or not phonics should be taught in schools, but how to ensure that teacher education students have sufficient mastery of the subject (deep knowledge) to enable them to teach well. As Yule so aptly states: ‘anything [phonics or whole language] can be done badly’ (2005, p. 1).

Rhona Stainthorp’s UK study (2003) into the phonics knowledge of trainee teachers is very relevant to Australian teacher education. She found that “the average well-educated graduate is neither expert nor confident about the sound structure of words” (p. 7). The study was conducted in two phases and tested a group of 38 graduate students at the beginning of their primary teacher training in order to assess their untutored phonological awareness as well as to demonstrate the importance of knowledge about the sound system. The study questions were divided into five content areas: syllables, rhyme, alliteration, phoneme counting, and phoneme specification. Because these students had no prior knowledge, the word ‘phoneme’ was substituted with the word ‘sound’. These initial scores showed that students were competent at identifying alliteration and rhyme, and counting syllables (though they could not define the term or explain what they had been doing). However, they performed poorly in tasks involving phoneme recognition and phoneme counting. It is interesting to see this in the light of the
Louden Report’s comment that effective literacy teaching uses a metalanguage of “literary terms as well as those associated with the features of letters sounds and words” (Louden et al., 2005, p. 210). These graduates had acceptable literary knowledge (most probably remembered from poetry analysis in secondary school), but they did not have knowledge of the building blocks of language necessary for the big picture of effective literacy teaching. Stainthorp argues from these initial results that “highly literate, educated graduates need training to re-establish [or even establish] their explicit phonemic awareness in order to use it their early literacy teaching” (p. 16).

In the second phase of the study, students were given specific instruction about the phoneme system and its importance in literacy teaching. Stainthorp describes this instruction as only a very small part of their comprehensive training program, a description which seems to correspond closely to Australian primary teacher education. The test was then repeated six months later. Although students’ responses improved considerably, responses were still not good from a professional perspective, and only 16 out of the 38 students were able to correctly identify and specify phonemes in individual words. Stainthorp concludes that students studying teacher training require a considerable amount of instruction and feedback to prepare them for their professional lives.

It cannot be taken for granted that all they need is to be given information about how the system works and that awareness will automatically follow. Other professions recognise this. Speech and Language Therapists spend considerable time making phonemic transcriptions of language in order to develop their phonemic awareness ... psycholinguists and psychologists interested in language and literacy use this knowledge on a daily basis. Their phonemic awareness becomes fluent and explicit. Primary teachers need to develop the same fluency; it should become an effective tool in their teaching. It is also essential for identifying where children are having difficulties. (pp. 18–19)

This is not a call to take sides in the Reading Wars. It is recognition that literacy teachers need a competent level of professional knowledge in a variety of areas. As Jim Rose, the author of the UK’s Independent Review into the Teaching of Early Reading (2006), pertinently remarks: “phonics is not a strategy, it’s content” (as quoted in Hofkins, 2006, p. 14).

The current textbooks used by Australian universities as overviews of primary English teaching reflect the challenge of teaching literacy through an approach that has both breadth and depth. One of the most popular primary teacher education texts in Australian tertiary courses is Literacy: Reading, Writing, and Children’s Literature (Winch et al.: 2001; 2004; 2006). This text is justly popular because of its comprehensiveness and its relevance to the current state of play. The fact that it has undergone two revisions in the last five years attests to this, and it is interesting to note that in the latest
edition considerably more attention has been given to the phonological background to literacy. Winch et al (2006) make the statement that “it is important that a teacher understand the phonemic system of English” (p. 24). They then proceed to deliver this information largely in chapter two, in eight pages, which includes an inadequately explained phoneme chart; and later in chapter ten, in four pages. This is a very small amount of information given that the book has over 500 pages, and given that the NITL (2005) regards the teaching of reading as the prime objective of teacher education courses. This condensed content is very theoretical, and quite different from the type and level of knowledge which primary teacher education students are usually expected to absorb. It includes in a few pages what normally takes several lectures for even introductory coverage in a linguistics program. Furthermore, most education lecturers are not equipped to answer student questions on the material, so are likely to gloss over these sections. It also presents phonemes as if they were obvious to students, when in fact they are highly abstract (Author, 2007, in press). Understanding phonemes and phonetic transcription is indeed hard. Surely it is better to admit that to our students and explain the reasons for it. What is needed is not more pages about phonemes but discussion of why phonemic transcription is hard and what this means for literacy teaching. In fact explicit recognition of this difficulty is an ideal way to begin to overcome the problem that many teachers do not usefully remember “just what it is like to learn to read” (Rose, 2006, as cited in Hofkins, p. 7).

Other well-known literacy textbooks are also problematic in either their presentation of phonological knowledge or in the absence of it. Campbell and Green’s Literacies and Learners (2006) provides a highly effective sociocultural approach to literacy, and includes quite specific work on grammar and punctuation, but does not include any kind of phonology or phonics knowledge. Frances Christie’s Language Education in the Primary Years (2005) offers a comprehensive and accessible overview from a strongly functional approach to language, but again, despite its breadth, this text contains no reference to phonological understanding. On the other hand, Susan Hill’s Developing Early Literacy (2006) deals with phonological knowledge in some detail, particularly in relation to reading, containing several chapters on phonology and phonics and its actual application at appropriate stages in the primary curriculum. The problem here, attested to by students, is that it is a lot to take in, and this information is not supported by summaries or questions designed to crystalise or embed students’ understanding of the essential concepts. Deslea Konza’s (2006) Teaching Children with Reading Difficulties has an excellent section on phonology and its application, but this book is targeted at Special Education, rather than mainstream primary education, students. Emmit, Komesaroff and Pollock’s Language and Learning (2006) appears very promising in its aim to deliver linguistic knowledge
‘specifically for Australian teacher-education students and teachers’ (blurb). Again, however, despite its focus on application of abstract knowledge to relevant situations, it is a dense text and not practical for use as a prescribed text in an already overcrowded curriculum.

Hence these shortcomings in otherwise excellent literacy texts led to the development of this module: it provides a comprehensive guide to essential phonological knowledge from a learner’s point of view; its electronic format appeals to net-generation students already burdened with a large number of prescribed texts; and it offers interactive visual and aural opportunities for engaging and relevant illustrations of complex concepts.

The Module

The module, called Teaching Foundational Literacy, is divided into four topics and students have access to it through a restricted URL. It begins by establishing itself as part of a balanced approach to literacy, making reference to the Four Roles of the Reader and immediately placing traditional concepts of literacy (reading, writing, spelling and phonics) within this larger conceptual frame. The module is constructed in a deliberate sequence designed to move through students’ prior knowledge and personal experience, to content knowledge, and finally to application in literacy teaching. It places a considerable emphasis on spelling as a motivational hook because primary education students at UNE are tested on their own spelling as part of their induction program. Although these students have proficient automatic reading skills, the fact that many are not strong spellers provides another opportunity to allow them to feel what it is like to be a new or struggling literacy learner.

Each of the module’s four topics is supplemented by a range of attractive, explanatory illustrations, and a number of interactive features. Sound bites of various linguistic features give practical and meaningful examples. Popup screens are placed at strategic intervals to serve as reminders of essential concepts and also to introduce extra information for those whose interest has been piqued to another level. Figure 1 shows a Popup which recurs throughout each of the topics to ensure that students stay on top of essential terminology. Throughout the module the authors have attempted to supply succinct, accurate definitions of all technical terms, from ‘phone-me’ to ‘literacy’ itself, to avoid the overlapping and confusion of such definitions in students’ textbooks. They have also employed ‘user-friendly’ language to make the information approachable and accessible.

Each topic ends with a bullet point summary and three types of revision questions: critical reflection and open-ended discussion points, and short answer and multiple-choice questions with answers. Figure 2 is a short answer question that encourages students to apply the module content through relevant problem solving.
A short summary of the salient features of each topic of the module follows:

**Topic 1 Literacy and Spelling** begins from the perspective that traditional concepts of literacy, such as spelling, are only part of the picture. Spelling here is not the spelling of lists and rote learning. Rather it is introduced as an integral part of writing; in essence, the process of encoding. Spelling is then explained as a special and extremely important part of literacy that involves phonics, the linking of phonemes to graphemes. This introduction explains all basic concepts very clearly with many examples, and without need of special symbols or diagrams of the vocal tract. It uses a range of stimulating examples to show that spelling/decoding is not merely a mechanical skill.
but also crucially involves construction of meaning: to interpret the meaning of the words, we use a combination of clues from the individual letters and clues from meaning (see Figure 3). In this section the term foundational literacy is introduced, to emphasise that there are a range of skills that must be acquired in early literacy acquisition. Foundational literacy is not phonics. It is the foundational stage of a balanced approach. It includes everything children need to know to be able to read and write simple meaningful texts. When children have attained foundational literacy, they can move from learning to read, to reading to learn.

**Topic 2. Phonemic Awareness** delves into this much used but little understood term and its main aim is to demonstrate that skilled readers forget how hard it is to learn to read and to explain why. Firstly, children’s real spelling mistakes are examined to show that the main problem children face in learning to read is not spelling irregularity, as is commonly believed, but lack of phonemic awareness. This is demonstrated through a problem-solving activity shown in Figure 4.

Children in the early stages of learning alphabetic literacy really do lack phonemic awareness – even though ‘c-a-t’ seems so obvious once you are literate. This is because phonemes are not real things, but abstract concepts, ideas in people’s heads. Thus the main difficulty in learning to write is not finding which grapheme to use for each phoneme, but identifying the phonemes in the first place. Sound bites of backwards speech and speech in
an unknown language are then given to show that that speech is really a continuous stream of sound. These are practical and convincing demonstrations that phoneme segmentation is virtually impossible in a new or new version of language. The crucial point is made that we learn to perceive words when we learn to talk but we don’t learn to perceive phonemes till we learn an alphabetic writing system. Actual phonemic transcription is introduced, supplemented with exercises which aim to show how difficult it is, and how inconsistently people transcribe speech because of variations in the way they perceive phonemes. At this point students should be fully in the mind-space of early literacy learners and have an understanding that will make them receptive to learn more.

Topic 3 Towards phonics looks in detail at the stages a child must go through before they can acquire phonemic awareness, from infancy to the beginning of school, showing at each stage the kind of help the child needs from a qualified teacher. It is strategically placed. Topics 1 and 2 have established the position of phonics in literacy acquisition and demonstrated the need to teach phonemic awareness. An understanding of stage development is essential before the content of Topic 4, which analyses actual examples of children’s writing, can be meaningfully absorbed. Each stage is followed by a section that applies this content: ‘How teachers can help children in this stage’.

Topic 4 Phonics and beyond uses actual examples of children’s drawing and spelling to discuss the remaining stages of understanding of phonics. Very
importantly, it does not stop there. It emphasises that writing is not the same as phonemic transcription and phonics is not enough on its own to enable foundational literacy. Children need to recognise meaningful units in context, because spelling is not a mechanical skill, but is all about meaning. This topic then goes beyond phonics, building on prior knowledge in the module to present a far more significant level of understanding about the concepts of writing and spelling. This process is seen in Figure 5.

Through exercises, and through reflections on challenging questions (e.g., what would happen if people with no previous experience of writing were asked to learn phonemic transcription and use it as their writing system?), students are able to see three highly significant things: how our writing (and spelling) system evolved; the meaning and necessity of standardisation; and lastly, and now at a much deeper level, why children have trouble learning to read and write.

**Evaluation surveys**

Two evaluations of the content of the module have taken place. The first, in 2006, was conducted after a trial lecture using the material was given to first-year students. At the end of the lecture informal evaluation surveys were distributed. Thirty-eight out of the 81 students who responded rated the overall lecture very highly, and when asked to name a memorable fact from the lecture, the following comments were made:

*that teachers need to not just teach the alphabet and expect children to read*

*the importance of phonemes in teaching*

*sounds are so different from just letters; sounds are important*

*that most of the words that children spell wrong are not irregular words*

*phonemes are not phonetics*

*irregularity is not the main reason for spelling difficulties*
why children make mistakes
different sounds from same letters
that irregularity is not what prevents children from spelling
the ways in which children interpret different sounds and words
how children spell according to sound
order that children learn language
phonemes are not in speech they are ideas in our heads
specific steps for children to spell read and write
typical early spelling – how off track it can be
every language has its own word for cockadoodledoo
how young children don’t know what words are
phonemes and children’s inability to take words apart

To a question which asked for suggested improvements, three responses recurred:

more time;
more examples;
and more colourful slides.

On the strength of this information, the authors obtained a Teaching Development Grant to create an electronic module that extended and enhanced the content of the lecture.

In 2007, the completed module was built into internal students’ workshop schedules in a first-year unit ‘Introduction to the Teaching of Primary English’. Students were asked to complete the module over two weeks in their own time, instead of attending classes. To motivate students, they were informed that key concepts from the module would be examined in their end-of-semester test and they would have no follow-up teaching on the content. The module’s URL was distributed in an explanatory handout and as a link embedded in an email.

A one-page evaluation survey was designed containing a list of questions designed to elicit short personal responses in the following areas: ease of access and navigation; the most important memorable fact about children’s literacy acquisition that emerged from the module; efficacy of the module in increasing understanding literacy acquisition; the part of the module that was liked best; and how it could be improved. This was accompanied by a rating schedule (Table 1).

The survey was voluntary and anonymous. It was conducted at the end of the last lecture of the unit, after students had sat the test but before their results were distributed. From the cohort of 137 students, 80 students chose to complete the survey. The results are displayed in Figure 6.

Twenty-one students rated the survey as good or excellent against all criteria, some of these writing plus signs after the maximum score of 5 to indicate their particular appreciation. Supportive comments included: ‘I found it to be a great resource’; ‘it is very well set up’; ‘it was a great module’; ‘it
increased my knowledge dramatically'; and 'very useful and helpful to trainee teachers'. There was only one explicitly negative comment: ‘it was a pain and boring'; and one student made the resonant remark: ‘it smacks of university cost-cutting’.

Whilst Figure 6 presents useful information, it is best considered in conjunction with the personal responses where respondents are asked to think

Table 1. Evaluation Rating Schedule

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<tr>
<th>Aspect</th>
<th>Score</th>
<th>Comment?</th>
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<td>module overall</td>
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<tr>
<td>layout and navigation</td>
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<td>clarity and interest of information</td>
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<td>attractiveness of presentation</td>
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<td>introductions and summaries</td>
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<td>self-test questions</td>
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<td>usefulness to trainee primary teachers</td>
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Figure 6. Student evaluation of module.
more reflectively than simply number a box. A cluster analysis of these responses yielded some very useful results. Nineteen students commented that they liked the self-test questions best: ‘the best part was the interactive quiz at then end of each topic. It provided instant feedback which was very helpful.’ Fourteen students commented that they liked the phonics aspect best, eight of them citing phonemic transcription as particularly valuable: ‘it gave me an idea of what children go through to learn to read and write.’ Others cited the practical interactive examples as the best feature: ‘I liked the actual examples of talking backward’, and ‘I especially liked the [work on] phonemes and the continuous stream of sounds’.

To the question concerning the most memorable fact, the most frequent responses were that literacy is more than spelling, reading and writing (18) and that it is very difficult for children initially – too much should not be assumed (12). Less than half the respondents answered the question on how the module could be improved. The majority of these focused on the length of the module, stating that it should contain ‘less information’, ‘not so much repetition’, and that it tended toward ‘information overload’. Twenty-three students stated that they would like the module to be supplemented by class teaching to reinforce and explain points. Two comments from the survey, in particular, cast a satisfying overview: ‘I feel I have acquired a new understanding of children’s literacy’; and ‘I liked it because it was put in our terms and not complicated’, which was in part the intention of the module: to provide a down-to-earth introduction to important but relatively abstruse professional knowledge.

The end of semester examination contained a phonology section of short answer and multiple choice questions very similar to those in the module, most of which were designed to test understanding rather than rote learning of definitions. Nearly eighty-five percent of students passed this section of the exam, with more than half obtaining a credit-or-above grade. This was a pleasing result as these scores were considerably above those of the exam overall.

**Conclusion: Future directions**

The strength of this module is that it provides a contemporary and engaging means through which teacher education students can acquire essential knowledge of how language functions at the phoneme level and how this relates to classroom application. It firmly teaches phonics as content, not as an optional strategy. It admits that understanding this professional knowledge is hard, and, more importantly, it explains why. In doing so it approaches linguistic knowledge from a different and learner-relevant direction. Thus it goes at least some of the way to answering the challenge of effective literacy teaching, and provides opportunities for the development of the depth that characterises a professional level of knowledge. To deny
future primary teachers an explicit, relevant understanding of phonology and phonics is comparable to asking teachers to teach a literature-rich program with only a rudimentary knowledge of the range of appropriate texts available and of the depth and potential inherent in those texts. This module takes some significant first steps in redressing some of the imbalance in contemporary teacher training programs. There are plans to develop it into a second stage that provides a more detailed view of sequential classroom practice, followed by more rigorous testing of its effectiveness.

References
NSW Department of School Education, Curriculum Directorate (1997). Focus on Literacy: Reading. Ryde NSW.

