February 3, 2014

The Australian Literacy and Numeracy Foundation (ALNF) seeks to contribute to the public inquiry in response to the Government's request of the Productivity Commission to inquire into future options for childcare and early childhood learning, with a focus on developing a system that supports workforce participation and addresses children's learning and development needs.

The Commission has been asked to specifically report and make recommendations on six (6) topics.

The Australian Literacy and Numeracy Foundation seeks to submit comments on sections of the following four (4) topics:

1. The contribution of childcare to child development
2. Current and future needs for childcare in early learning needs
3. The capacity of the childcare system to ensure a satisfactory transition to schools, in particular for vulnerable and at risk children
4. Alternative models of care which should be considered for trial in Australia

Please Note: ALNF's comments will be restricted to the area of language, pre-literacy and literacy development in the prior to school child. We acknowledge the broader understanding that:

- Child development, in the prior to school years, encompasses a range of skill domains, which describe multiple aspects of fulsome child development. Whilst recognising that no one domain functions in isolation, ALNF will restrict comments to prior to school early childhood development of language and pre-literacy development essential for reading competence during the later formal school years.
- Play-based multisensory learning interaction with children is acknowledged by ALNF as essential to preserve childhood and to maximise learning. ALNF's focus is on the conversion of the vast array of information provided through academic rigour into focussed play learning activities that are easy for all participants to work with and for children to engage with.
- Formal school activities started earlier in the child's life do not constitute pre-literacy learning experiences. Pre-literacy development in the 0 – 8 years of age is a stage of development with a well researched and documented set of features that begin at birth, progress in a particular scope and sequence prior to school entry and then continue to develop into the first years of schooling.
- Child care workforce and parents are often challenged with their own literacy competence and do not have the level of skill, nor confidence, to help the children through the pre-

literacy development stage. ALNF provides the Early Language and Literacy (EL&L)[1] accredited course, which assists with the skill development in the adults needed to facilitate children's pre-literacy skill development. The up-skilling of the adults is the means by which the children's pre-literacy skills improve.

- ALNF's work draws from Speech Pathology understandings and practices combined with Early Education best practice. The content is often new for the majority of ALNF workshop participants. It is implausible to expect childcare workers to have "state of the art" pre-literacy skills, drawing from the specialised area of speech pathology, at part of their knowledge and skill set.

This submission will now focus on the following topics as set out by the Commission:

1 The contribution of childcare givers to child development

1.1 Parental participation in the workforce outside of the home often necessitates that prior to school aged child/ren require care outside of their own home from people other than their family members. These waking hours are prime learning times for the developing child, particularly for pre-literacy and oral language development. Therefore the contribution of the childcare givers to child development is paramount to the eventual literacy competence and life long learning capacity of the child. Possibly the child care giver is compensating for poor literacy capacity within the home environment and **most definitely, the child care giver is providing essential language and pre-literacy learning experiences whilst the child is in their care**[i2].

1.2 Given that the childcare giver's level of pre-literacy teaching competence and confidence is a vital role for the children's later literacy competence, the components of that role need to be identified. Broadly, these include the following:

- Adequate competence and confidence to implement, adjust, document, report and communicate pre-literacy development according to National Quality Framework requirements.[3]
- Capacity to generate and sustain home/childcare site communication and interaction with pre-literacy concepts, resources and feedback conversations. [ii4]
- Capacity to hold informed conversations about pre-literacy learning experiences with formal schoolteachers during the transition to school process.

1.3 In very remote, remote, regional and some urban areas, Indigenous Australian children and their families require a culturally sensitive and community responsive model of support. Where First Language is spoken as a home language, pre-literacy learning activities must be in the child's spoken language (often First Language and English). Similarly, children from new arrival families also require resources in their spoken home language. When presented in the correct manner, with twin English resources, a transition to English pre-literacy competence is possible. Therefore, the transition to formal literacy instruction at school is possible within the expected age bracket i.e. prior to school

[1] Refer to Appendix 1 for information on the Early Language and Literacy Program

[2] Pre-literacy skills develop in parallel to oral language development. Therefore the essential age for this stage is in the prior to school years. Pre-literacy is not mini schoolwork started earlier!

[3] This can be provided through the Early Language and Literacy Certificate IV course and workshops.

[4] Communication between the home environment and the childcare givers is pivotal to pre-literacy sustained success.

years and early years of school. Childcare givers working with these families will need additional skills[5] [iii] Childcare givers may also need to work with a different form of service delivery. (See pages 6&7). Irrespective of the method of service delivery, the contribution made by the childcare giver is paramount in these bi/multi-lingual culturally sensitive communities. Investment into the skill set of the childcare giver in these communities will ensure that these vital formative early years where foundational pre-literacy skills are acquired, are appropriately stimulated, monitored and shared with the family members.

2. Current and future needs for childcare in early learning needs

2.1 The current and future needs for early learning development in the prior to school years, as seen through the prism of pre-literacy development stages, needs to encompass the following:

Five Elements are essential for pre-literacy development as a precursor to functional literacy;

- Multi-sensory pre-literacy development must occur **before the child enters formal schooling**.
- Pre-literacy developmental experiences must occur in **both English and the Home Language** – a child learns pre-literacy concepts by attending to their own speech (not just listening to others). Therefore, pre-literacy experience in a child's own spoken language is essential for later literacy competence if they are a Speaker of a Language Other than English.
- **Home Early Childhood Learning Site partnerships** must be active, positive pre-literacy shared experiences with **compensatory support** provided to children where the home is not engaged/able to share language/pre-literacy learning experiences with the children.
- **Phonemic Awareness** strategies must be expressly taught to children.
- **Vocabulary development (oral language)** must be explicitly stimulated.

These Five Elements must be **explicitly scaffolded whilst embedded** within focussed play, focussed and directed story reading and general activities across a variety of play environments combined with inviting home/childcare site partnerships.

Focussed early learning development through the Early Language and Literacy Program[6] will facilitate pre-literacy development (in First Language and English if appropriate).

2.2 To better understand the childcare givers' role and their contribution to eventual literacy and educational equity, particularly for vulnerable children, clarity of understanding needs to occur around the following:

1. The role of pre-literacy development as a foundational pathway to effective literacy acquisition during the school years;
2. The developmental nature of phonemic awareness i.e. early phonemic awareness begins with the two/three year old age/stage;

[5] Coding Aboriginal Languages for Indigenous Literacy (CALIL) is a course that teaches the process for creation of pre-literacy resources in the spoken home language.

[6] The EL&L Program Strategy is a trialled and successful strategy that stimulates pre-literacy development.

3. The need for compensatory sensory perceptual instruction particularly for those children suffering from Otitis Media induced hearing loss and other language learning challenges;
4. Effective methodology and pedagogy for multi-sensory instruction, within implicit, explicit and sequentially presented targeted activity, is essential for pre-literacy growth.

2.3 The current and future need for childcare sites is to provide the pre-literacy preparation for children, in collaboration with their family members and the wider community.

Why? Because ...The quality of pre-literacy learning experiences during the time spent in these sites is invaluable to the child's eventual capacity to benefit from formal literacy lessons as taught in the formal years of school.

Why? Because…Learning to read is not an intuitive skill: the child must learn it. The pre-literacy knowledge and confidence of early childcare givers and their ability to impart that knowledge in a meaningful way, appropriate for the child's age and style of pre-literacy learning, is proportional to the child's eventual level of success in acquiring formal literacy at the onset of formal schooling. Children's literacy learning capacity is determined in the years before school. The personnel in childcare sites require competence in pre-literacy activity skills to incorporate these essential foundational skills and not leave this development until children go to "big school". By then it is too late, particularly in cases where the family unit cannot provide this pre-literacy exposure to the child.

Why? Because…childcare sites provide care for a cross section of the community, and in doing so the childcare givers will encounter children from the full spectrum of vulnerabilities. (Some examples are Otitis Media, FASD, concentration issues etc.) Research is very clear that early intervention is an essential component of effective child learning management. Childcare givers who are skilled in pre-literacy stimulation will provide not only the essential learning experiences in pre-literacy skill development but will also provide the repeated exposure needed by vulnerable children in order to accrue the experiences needed for understanding and competence.

2.4 **A national pre-literacy initiative is required to build capacity of childcare givers within the childcare sites.**

Why? Because…Employees within childcare sites are unlikely to have adequate skills in the integration of explicit and organised pre-literacy learning experiences into their daily exchanges with the children. Equally, these employees are unlikely to have skills in supporting parents and carers in this essential pre-literacy development. The lack of pre-literacy learning/teaching capacity in the childcare sites, along with many parents' need for literacy support, results in poor pre-literacy development in vulnerable children.

This can be ameliorated through a national roll out of the ALNF's pre-literacy strategy, the EL&L Program.

(In addition, participation in the EL&L Certificate IV provides a pathway to employment and/or promotion.)

3. What is the capacity of the childcare system to ensure a satisfactory transition to schools, in particular for vulnerable and at risk children?

3.1 It is ALNF's experience that the childcare system is grossly under informed and the workforce ill prepared to satisfactorily transition children to school with respect to pre-literacy development, particularly in the case of vulnerable and at-risk children.

The ability to read and write fluently is a taught skill – it is not naturally developed like speaking. Therefore, the childcare sector needs to up-skill its workforce to understand pre-literacy development and to acquire the accompanying skills to stimulate this development in a manner appropriate for prior-to-school aged children.

Robust prior to school childhood learning experiences result in the overall developmentally appropriate maturation of the developing child. This submission acknowledges the range of experiences that encompass a multitude of daily interactions that result in an emotionally, physically, spiritually and cognitively well-rounded child developing to their full potential. These understandings are articulated in the Early Years Learning Framework (EYLF) and National Quality Framework along with a myriad of academic volumes documenting children's developmental ages and stages. What is not readily available to the childcare workforce is access to practical pre-literacy skill development, resources and mentoring which translates into daily implementation of meaningful pre-literacy stimulation.

Furthermore, not only do childcare givers need to appropriately stimulate the pre-literacy development of non-vulnerable children, they also need to be equipped to stimulate the pre-literacy development of vulnerable children who present with a range of conditions requiring insight, identification and pre-literacy management skills. Examples of presenting conditions are:

- Acute and/or chronic hearing loss arising from recurrent middle ear infection (Otitis Media).
- The impact of poor oral language, listening skills, phonemic awareness etc. development.
- Limited home support from parents due to a range of reasons, including, poor personal literacy level, English as a second or third language.
- Trans-generational poor literacy skills and attitudes.

In ALNF's experience, childcare sites are increasingly becoming aware that there is "a stage before" phonics at school and that they are alert to an expectation to include this stage into their day plans. However, most childcare sites do not understand the features of this pre-phonics stage, and try their best to include components of various approaches that appeal. However, phonics programs for very young children are not adequate. There are pre-literacy steps/stages, according to the developmental trajectory, that the child must move through during pre-phonics skill development, prior to starting a phonics program. [7] Borrowing from formal school activities and re-presenting them as "mini school started early" is not the developmental answer for pre-literacy development. There is a lot to be said against doing this, but to be fair, there are few programs available that do adequately address pre-literacy development, making it difficult for childcare sites to source and understand appropriate activities in an appropriate sequence.

[7] These stages are clearly set out in the EL&L Program.

ALNF's strong recommendation is that a national strategy be devised to in-service current childcare givers and to include strong pre-literacy education into trainee childcare course work.

3.2 The capacity of the childcare system to ensure a satisfactory transition to schools, in particular for vulnerable and at risk children

In this section of the submission ALNF will address the childcare system capacity to ensure transition to school for vulnerable, at- risk children particularly Aboriginal and Torres Strait Islander Communities in regional, rural, remote and very remote areas.

Specific circumstances exist in communities that give rise to specific considerations essential to the improvement of functional pre-literacy development in prior to school children to ensure a successful transition to school.

3.2.1 In those communities where First Language and Aboriginal English is spoken on a day to day basis, provision of appropriate pre-literacy resources and skills is essential so that children can make the connections between their spoken language and Standard Australian English (SAE). This is the way that the prior to school child builds understandings towards the SAE literacy concepts and skills they will encounter in formal literacy lessons at school. This should not be viewed as a bilingual education precursor. Rather, these pre-literacy activities are the stepping-stones towards making the neurological connections between spoken sound patterns in words (called the pre alphabet level) with the alphabet level knowledge in formal school literacy lessons.

- The best speakers of First Language and Aboriginal English (within that community) are the family members themselves. They are excellent teachers of a wide variety of skills, however, due to (often) literacy challenges within themselves and/or a lack of appropriate literacy materials, pre-literacy is, generally, neither a teaching strength nor a shared teaching/learning exchange with their youngsters. It is ALNF's experience that up-skilling and confidence building through the mentoring of the mums, aunties and family members plus Assistant Teachers and Community Teachers creates a sharing of skills and resources that are readily taken up in the community, homes and learning sites with children.

3.2.2 The benefits of working with on site community members are numerous. Seven key points are relevant particularly in areas where the childcare giver is a non-local person. These include, but are not limited to, the following:

- Breaks the cycle of pre-literacy and literacy failure through empowerment, relevant pre-literacy and literacy teaching skills and confidence, appropriate resources and knowledge.
- Generates an understanding and use of vocabulary about key issues relevant to their own child's development and allows conversations about children's literacy learning needs to be shared through informed conversations between parents and teachers, health professionals and all other services involved with their children.
- Builds capacity amongst the very best teachers (family members) who are speakers of the children's Home Language and deeply understand the cultural components.
- Provides cultural relevance to pre-literacy development, which strengthens the "opting in" attitude amongst participating children and families.

- Transfers pre-literacy teaching experiences outside and into community settings where pre-literacy learning can occur in these natural environments (e.g. fishing, shell collecting, animal habitats). Family engagement augments the more formal "inside play" that occurs in learning facilities such as crèche and playgroup.
- Minimises the impact of early childhood staff turn around with capacity retained within the community.
- Builds "our community teamwork" capacity where the family members can participate as experts through First Language pre-literacy skills and resources and culturally relevant learning experiences with the children. These skills can be shared with childcare givers as shared skill sets and leadership. [8]

ALNF recommends that policy be introduced that reflects the pre-literacy learning needs of children in communities with systemic up-skilling of current and future childcare service provider personnel with comprehensive pre-literacy knowledge, skills and resources as demonstrated in the ALNF's EL&L Program.

Personnel will then be capable of implementing pre-literacy skill development, as a companion skill to all other learning domain objectives in two ways:

1. Working directly with the children in the childcare sites and,
2. Teaching the community, family members and early years' teachers pre-literacy skills as capacity building within that community.[9] These childcare givers will provide a "train the trainer" service model with the view to "train the community". The end goal is to build capacity within the community. In addition, the EL&L Program is recognised as an accredited Certificate IV course. Eventually the capacity within the community will become substantial, as opportunities for pathways to employment will flow from Statements of Attainment or the full Certificate IV.

3.3 ALNF recommends that a national digital pre-literacy platform be provided for onsite support in communities. In addition to "low tech" resources, "high tech" resources are essential so that, irrespective of the skill level of the family members or community teaching personnel, the child is engaged with quality pre-literacy brain stimulation from the onset.[10] Family members, with literacy challenges, may initially begin as facilitators by putting the digital device in the child's hands, but, over time, proximity to digital content will enhance both the adults' and child's skill level and confidence. Childcare givers can be up-skilled in the use of the digital devices during their pre-literacy in-service. In addition to the provision of an integrated pre-literacy learning support product, the digital technology also provides a mechanism for collecting information about the child's learning progress which can inform the childcare giver about how to adjust the child's pre-literacy activities, provide feedback to parents and also support collection of attendance information and engagement.

[8] NB The EL&L Program provides First Language and English twin resource sets (also in digital).

[9] ALNF can provide examples of different iterations of EL&L in a variety of communities.

[10] EL&L Digital Outreach provides quality digital pre-literacy resources.

Summary of recommendations:

- **Policy change to acknowledge the role of childcare givers in the provision of quality pre-literacy knowledge, skills and home communication for all children.**
- **Systemic national support and funding to up-skilling current and future childcare givers in pre-literacy knowledge and skills for all children.**
- **Systemic national support and funding for up-skilling current and future childcare givers in pre-literacy knowledge and skill for vulnerable and low socio-economic children and families.**
- **Targeted funding in identified high need communities, particularly in regional, rural, remote and very remote Indigenous communities, for the immediate provision of a pre-literacy in-service module, in First Language and English where appropriate, as a companion program to augment programs and practices already established in childcare sites in these communities.**
- **Targeted funding to set up a National Digital Pre-Literacy Platform that will provide pre-literacy resources, games, activities, monitoring and management capacity.**

END SUBMISSION

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[i] Dr Roslyn Neilson' document, The Phon- Words and the Teaching of Literacy, 2014, provides an excellent explanation of the role of phonemic awareness in pre-literacy development. See Appendix 1.

[ii] Communication between the home environment and the childcare givers is pivotal to pre-literacy sustained success. Shared pre-literacy pro active dynamics, with a common dialogue between the home and the child care site, greatly assists robust pre-literacy development in the child whilst simultaneously stimulating the pre-literacy/literacy knowledge within the home - thereby supporting the adult's learning and that of other young children in the household.

[iii] Information on CALIL: **Coding Aboriginal Languages for Indigenous Literacy (CALIL**)
CALIL is an accredited course. It is a Vocational Graduate Certificate, Level 8 (Australian Skills Quality Authority). CALIL is a course that collects, categorises and converts oral First Language elements so that they can be transformed into reading and writing resources. An essential component of ALNF's work is with Indigenous elders who can indicate the correct pronunciation of letters strings and words. To facilitate quick and accurate pronunciation representation whilst reading, a pronunciation reading code has been devised. By converting oral First Languages into reading and writing courses, the ALNF and local communities can provide community members with the teaching and learning skills and strategies that empower them to teach their own children to read and write in their First Languages. Literacy in First Language/s helps children by giving them the skills to make comparisons and contrasts with English language and literacy.

Languages that are candidates for this type of application require a dictionary and a speaker who can pronounce the words. This CALIL process only works with the "code" of the language and decodes the words with a technique that promotes phonemic awareness at the word level. CALIL facilitates sound pattern awareness in First Language in a way that parallels phonological processing in the Early Language and Literacy Program.

APPENDIX 1.

Early Language and Literacy Program Description:

The EL&L Program is a pre literacy and oral language development program for all children.

EL&L is specifically designed for children in the two to eight year age group, to improve cognitive and perceptual development and to compensate for literacy learning challenges that arise from disadvantage, in particular, chronic middle ear infection (Otitis Media) induced hearing loss, FASD and other developmental difficulties resulting in language and literacy learning disadvantage.

The delivery of the program consists of ASQA Accredited Certificate IV courses, workshops and ongoing mentoring to; parents and community members (such as librarians), teachers' aides, preschool and early years schoolteachers and special needs teachers. EL&L aligns with the Early Years Framework and National Curriculum. The twin First Language EL&L program can be developed at the request of community/ies.

Investment in the ALNF's EL&L Program will:

- **Break down barriers between health and education** with easy to use integrated speech pathology practices for the whole class, small groups and individual children. There is no other comparable program that incorporates both speech pathology and education best practice to address the literacy learning needs of children.
- **Reduce the educational impairments caused by Chronic Otitis Media (OM). OM causes** ongoing hearing loss that negatively impacts on the development of language and pre literacy/literacy skills. According to the Australian Bureau of Statistics, the prevalence of Otitis Media within Indigenous communities ranges from 40% to 70% compared to only 5% in more advantaged populations around the world.
- **Result in all children, irrespective of socio-economic or health disadvantage, having equitable developmental access to formal literacy instruction.** The EL&L Program teaches children through their learning challenges.
- **Accredit all participants** who complete the EL&L (ASQA Accredited) Course.
- **Empower parents and carers with skills and confidence** to engage in conversations about their own child/ren's learning needs.

APPENDIX 2.

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The PHON- words and the Teaching of Literacy:

An Introductory Linguistics Tutorial for Teachers and Educational Policy Makers

The PHON- words and the teaching of literacy

An Introductory Linguistics Tutorial for Teachers and Educational Policy Makers

Introduction

The topic of how to teach reading and writing is fraught with disagreement amongst academics and policy makers, as well as amongst teachers. Professionals who work in the area of early literacy teaching will often encounter potentially confusing linguistic terminology – frequently involving words that include the word-part '*phon*' (Scarborough & Brady, 2002). It is possible that lack of clarity about the underlying linguistic concepts may be a contributor to the lack of resolution in the area.

These notes start from the point that the English written code is to a very large extent an alphabetic one. It will be argued that in order to be an efficient teacher of reading and writing in English, it is important to understand:

- How the alphabetic code works in English
- How individuals are able to learn the code, and use it with accuracy and automaticity

These notes will offer very brief definitions of terms that are relevant to literacy teaching, and will discuss the issue of how individuals learn to use the English written code. Attention will be paid to problems encountered by individuals who find it difficult to learn to use the system.

It is hoped that these notes will serve to encourage teachers, policy makers and other professionals to engage more closely with the linguistic concepts that have been touched on here.

Definitions: Terminology for understanding the English Alphabetic Code

The term '*phon-*', common to many of the confusing terms that crop up in the area of early literacy teaching, is derived from Greek, and refers to 'sound' or 'voice'.

Phonology

Human language involves the use of sounds to communicate. The sounds that we use are far more complex than animal calls: the sounds of speech are shaped into an intricate and infinitely flexible symbolic system of words and sentences. The study of the sound system of human language is referred to as *phonology*.

Phonology is relevant to the teaching of literacy because the English writing system is based largely (not entirely) on a sound code: alphabet letters map onto the sounds in spoken words.

Phonetics

Study of the phonological system of language includes the science of *phonetics*, which is concerned with the acoustic and articulatory aspects of speech sounds: how we perceive and produce the sounds in words.

Phonemes

Phonemes are the smallest sounds in words that make a difference to meaning.

- Example: the words *sip*, *ship* and *chip* differ by one phoneme

It is often thought that phonemes simply correspond to the letters in words, and that once children have grasped this fact they understand the alphabetic principle. This assumption, however, is a serious oversimplification. In order to appreciate the nature of the alphabetic code of English, and to teach it efficiently, it is important for teachers not only to understand the concept of phonemes, but also to be familiar with the term *graphemes*, and to understand the nature of *allophones* and the role of *morphemes* in the written code.

Graphemes

In a written code that uses a sound-based alphabet, the letter or letters that map onto phonemes are called graphemes. If two letters are used for one phoneme the grapheme is called a *digraph* (e.g. SH), three letters are termed a *trigraph* (eg. IGH), etc.

It is misleading to refer to digraphs as 'blends', since a digraph represents a single phoneme rather than two phonemes that are blended into a unit.

The grapheme-to-phoneme mappings, or correspondence patterns, are extremely complex in English, although it is important to stress that they do incorporate a good deal of very useful regularity as well. The complexities include the following problems:

There is no consistent one-to-one correspondence between graphemes and phonemes.

- The same phoneme can be represented by different graphemes
    - Example: the same phoneme – /ʃ/ in the International Phonetic Alphabet – is represented by the letters SH in *shoe*, CH in *machine*, and TI in *patience*
- Different phonemes can be represented by the same grapheme
    - Example: the digraph CH – /tʃ/ in the International Phonetic Alphabet – can represent the sound at the end of *match*, the sound at the beginning of *Christmas*, and the sound in the middle of *machine*

There are many context-dependent grapheme-to-phoneme relationships, which follow positional rules:

- A grapheme choice may be determined by a phoneme's position within a syllable
    - Example: the phoneme at the beginning of *jab* and *gents*, and at the end of *badge* and *page*, is spelled with different graphemes (J, G, DGE and GE).
- The pronunciation of a phoneme may be signaled by relationships between adjacent graphemes within and across syllables
    - Examples: the 'silent E' rule and the consonant doubling rule serve to specify the pronunciation of a vowel by means of the graphemes that follow it (*hop* versus *hope*; *hopping* versus *hoping*).

Grapheme choices often reflect the original language from which English borrowed words

- Examples: the Ks in *kayak*; the CH in *Christmas*, the PH in *phon-*, etc.

Allophones

Phonemes are actually abstract categories of sounds, rather than single unambiguous entities. Each phoneme category includes a set of sounds that have a range of acoustic and articulatory variations. The various sounds within one phoneme category are called *allophones*.

Allophones within a phoneme category differ acoustically according to the way the phoneme is co-articulated with other phonemes in the word.

- Examples: in English, the short /a/ phoneme is shorter in *bat* than it is in *bad*; the /t/ phoneme in *tree* and *Tuesday* is more affricated than the /t/ in *top* (it actually sounds a little

like CH), and the /t/ phoneme is less aspirated in *stop* than it is in *top* (it has less of a puff of air in *stop*, and actually sounds a little like a/d/).
- Note that literate speakers of English learn to focus on the alphabet letter that represents the group of allophones, and tend not to notice allophonic variations.
- People (including children) who have not yet learned the alphabetic code are more sensitive to allophonic variations than people who have learned the letters. Teachers often misinterpret this sensitivity to variations as confusion about letters and sounds.

Each language has its own phoneme categories or sets of allophones. The categories and their boundaries are sometimes not easily identified by non-native speakers of the language. This can lead to confusions for speakers of other languages and for speakers of non-standard dialects of English.

- Examples: the Chinese l/r phoneme category does not correspond to the English l/r phoneme distinction; many English dialects do not distinguish between f/th or t/th (unvoiced) and v/th or d/th (voiced); speakers of Aboriginal English, Cockney dialects and native French speakers tend not to distinguish between the presence/absence of initial /h/, etc.

In various English accents, allophonic variations only seldom cross phoneme boundaries for speakers from different parts of the world. Although people can usually understand each other, there are some phonemic differences that may cause confusion.

- Examples: North Americans and British speakers argue about whether *ant* and *aunt*, or *sauce* and *source*, are pronounced in the same way; the word *ten* spoken by a New Zealander may sound like *tin* to an Australian.

Morphemes and the Morphemic Principle

A morpheme is a unit of meaning. Morphemes may be free-standing words, but also often exist only attached to other words - in which case they are known as *bound morphemes*.

- Examples of bound morphemes: -S can signify plurality, possession or a third person simple present verb; -ED signifies past tense; -TION serves to create a noun from a verb (*educate*/*education*); RE- signifies that something is repeated (*rewrite*); PHON- signifies sound or voice, etc.

The English written code is actually both morphemic and phonemic. This means that the code is based on meaning as well as on sound. Where there is a conflict between the phonological and the morphemic systems, the morphemic system wins out; English spelling respects the meaning instead of the sound. For example:

- D*ogs* and *cats* are both spelled with a final S to represent the plural, although the phoneme sounds like /s/ in *cats* and like /z/ in *dogs*; the regular past tense morpheme uses the letters ED, although the phoneme sounds like /t/ in *walked* and like /d/ in *stayed*.
- The letter C in *medical* and *medicine* is pronounced as a /k/ in the first word and /s/ in the second, but the spelling stays consistent to reflect the underlying root word.

In English words, pronunciation stress patterns change with morphemic alterations to words. Although the stress given to a particular syllable affects its pronunciation, grapheme usage stays consistent to reflect meaning.

- Example: the long 'o' in the first syllable of *photograph* changes to a short neutral vowel in the word *photography*, without any change in the spelling.

Phonics

The term *phonics* refers to a system of rules describing the relationships between graphemes and phonemes.

Phonics rules cover the basic letter-sound relationships, context-dependent spelling rules, grapheme choices relevant to particular words, and the use of morphemes in spelling.

There are many different teaching programs available for introducing learners to the rules of phonics. The programs vary in terms of the scope and sequence of what is taught, and they vary in terms of the additional cues they provide to learners to help remember the rules.

Phonics programs also vary in the degree to which the teaching is embedded in the discussion of meaningful written texts, as opposed to being presented to learners as a subject in its own right, out of the context of reading books and writing stories. This issue will be mentioned again below.

Phonological and phonemic awareness

Phonological awareness, in its simplest sense, is the ability to focus on aspects of the speech stream – to attend to, identify and manipulate sounds in spoken words.

Where attention is focused explicitly on phonemes, rather than on larger phonological units within the speech stream such as rhymes and syllables, the concept is often referred to as *phonemic awareness*.

Tasks used to measure phonological and phonemic awareness typically involve a range of different skills.

- As mentioned above, the tasks may involve analysis of different units within the speech stream (e.g. syllables, rhymes, phonemes).
- Phonological and phonemic awareness tasks vary in complexity; they may go beyond simple awareness and involve other cognitive skills such as phonological working memory (e.g. identifying the 'odd one out' from a set of items; phoneme manipulation, addition and deletion).
- Phonological and phonemic awareness tasks may involve manipulating real words or nonsense words. With real words, phonological working memory is supported by the individual's long-term knowledge of the words.

The Development of Phonological and Phonemic Awareness

Implicit and explicit phonological awareness

Phonological awareness tasks may tap into 'implicit' or 'explicit' knowledge.

Implicit phonological awareness involves the ability to play with or manipulate aspects of the speech stream without being able to identify the aspects involved or explain what one is doing.

- Examples: responding to the rhythm of syllables without being able to identify what the syllables are; producing rhyming words without being able to identify exactly what the words have in common.

Explicit phonological / phonemic awareness involves more conscious analysis, with individuals showing the ability to isolate and identify aspects of the speech stream.

- Examples: segmenting, identifying and manipulating syllables or phonemes in words.

Early development of phonological awareness

Phonological awareness is a skill that develops over time. There is a fairly clear distinction between preschool abilities and school-age skills.

When very young children are learning to talk, their attention is focused on the meaning of what is said, rather than on the sounds that comprise the words. It takes a conceptual leap to disregard the meanings of words and attend to their sound structure. It is also an important step, in terms of children's vocabulary learning, to realise that the word 'sound' can refer to details within the speech stream as well as to environmental noises.

The first emergence of phonological awareness in preschoolers involves implicit awareness of syllable rhythms, and rhyming and alliteration patterns.

- Examples: syllabic skipping chants; rhyming phrases like 'eazy-peezy'; tongue-twisters like 'Peter Piper picked a peck of pickled peppers'; filling in the last rhyming word in nursery rhymes, etc.

Preschoolers are also very often able to notice if a word has been pronounced incorrectly by someone else, and may sometimes correct the pronunciation – although they will typically not be able to describe what the error was or what the correction involved.

Later development of phonemic awareness

From school entry onwards, phonemic awareness continues to develop in interaction with mastery of the alphabetic code.

At school age, with the introduction of the alphabet and instruction in phoneme-grapheme correspondences, phonological awareness normally becomes explicit. At this stage children are conscious of what they are doing as they attend to the speech stream, and are able to explain the process.

- Examples: isolating specific syllables in words; explaining which bits of two words rhyme; attending to phonemes in various positions in words.

It is usually easiest for children to develop phonemic awareness for sounds at the beginning of words; awareness of sounds in other positions may have to be taught systematically. Sounds in consonant clusters (often referred to as 'blends') are often particularly difficult to identify.

It is very difficult for children to achieve explicit awareness of rhymes if they do not already have implicit awareness of rhyming patterns, and this implicit awareness is itself very difficult to teach if it is not naturally present. For children at the point of school entry, therefore, it is more useful to target explicit awareness of syllables and initial phonemes, rather than rhyming. Rhyming skills are more easily taught later on.

The relationship between phonemic awareness, alphabet knowledge, and knowledge of letter-sound correspondences

Preschool children are often able to recite or sing the alphabet, and those children who are stronger language learners will readily learn the names of the individual alphabet letters and recognise the letters in a range of fonts. This skill is not necessarily associated with early phonological or phonemic awareness.

Alphabet knowledge and phonemic awareness support each other when children are in the early stages of learning to read and write. The basic letter-sound correspondences are usually taught with reference to phonemes at the beginnings of words (e.g. B is for *ball*). Importantly, in order for children to understand that a letter 'makes' a sound, they have to be able to segment, isolate and identify that particular sound in a word and relate the sound to the letter used. It is important for

teachers and parents to realise that there is a difference between knowing about letter-sound correspondences out of the context of spoken words, and having phonemic awareness of sounds in spoken words. That is, even if a child is taught that there is a phoneme associated with a letter – and, for example, learns to say the sound /b/ for the letter B – this is not the same as having the ability to isolate the /b/ phoneme in the spoken words *ball*, *rabbit* and *tub*. Both knowledge about letter-sound correspondences and phonemic awareness are necessary for a child to start to master the alphabetic code.

Segmenting and blending sounds – usually regarded as critical aspects of the process of learning to read and spell – also depend on the child having strong phonemic awareness of phonemes in all positions in words, as well as on having the ability to manipulate sounds in the speech stream.

Most complex phonemic awareness tests are to some extent deceptive, in that they normally tap more than an auditory skill. Tasks such as deletion, addition and substitution of phonemes are typically carried out using a strategy that involves visualising letters that correspond to the phonemes, and doing the 'phonemic' manipulation on the visualised letters rather than on the phonemes. This visual strategy, which is naturally adopted by strong readers and writers by Grade 2 or 3, relieves the load on phonological working memory.

- Example: When asked to delete the /l/ sound from the spoken word *cold*, most people respond with *cod* rather than *code* – a response that can only be derived from visualisation of the letters.

At later stages of the development of literacy, once individuals have mastered the alphabetic code, literate adults tend to lose sensitivity to allophonic variations, and spelling knowledge tends to dominate over phonemic awareness. Adults tend to 'hear' sounds in words that correspond to the letters rather than to the actual phonemes.

- Example: Many people believe they can hear a /t/ phoneme in *pitch* that they can't hear in *rich*, although the end sounds are identical (Ehri & Wilce, 1980).

How do individuals achieve mastery of the alphabetic code?

Where English is concerned, the first answer to how children learn the alphabetic code is: *With some difficulty!* (Galletly & Knight, 2004). English schoolchildren take much longer to master the alphabetic code than do learners of transparent alphabetic languages that have one-to-one phoneme-grapheme correspondences (e.g. Finnish, Italian).

Despite this relatively slow progress, children in English schools are expected to have 'cracked the code' by about Grade 3. At this point they are seen as moving beyond learning to read, and are expected to use reading in order to learn.

How is the alphabetic code taught?

School systems differ in their approaches to teaching the alphabetic code.

The classic 'Whole Language' approach, introduced in the last quarter of the 20th century, works on the assumption that simple immersion in printed texts, in the context of meaningful discourse, is sufficient for children to learn all they need to know about the alphabetic code. Attention to phonics rules is seen as distracting attention from comprehension; it is claimed (despite subsequent evidence to the contrary – see, for example Adams, 1990) that word recognition is normally achieved on the basis of guessing the meaning of texts rather than by decoding the actual letters. A focus on letter-sound relationships is actively discouraged.

A 'phonics' or 'code-based' approach, which has been used at various other stages in the history of education (see Chall, 1996), takes the view that explicit teaching of phonics is essential if the alphabetic code is to be mastered. As mentioned above, phonics programs vary in nature and in scope and sequence. Phonics may be taught as a subject in its own right, or may be taught incidentally, as grapheme-phoneme issues crop up in the reading and writing of meaningful texts.

The Australian Curriculum currently states that explicit phonics should be taught in the early school years, but only in the context of meaningful text. This is often referred to as a 'balanced' approach. The scope and sequence of phonics teaching is largely unspecified in the Australian Curriculum at this stage.

The paradox of explicit and implicit phonics knowledge

The majority of literate English speakers are able to use the alphabetic code efficiently, accurately and automatically. Competent literate individuals are able to demonstrate their mastery of the alphabetic code by reading and spelling nonsense words, which by definition cannot have been learned by sight.

(Needless to say, not all adult English speakers are competent with the alphabetic code. People who cannot read and spell nonsense words fluently and accurately tend to have associated literacy problems. The literacy problems range from poor spelling and difficulty when reading complicated unfamiliar words, through to full-blown 'dyslexia'.)

An interesting feature of competent readers' mastery of the alphabetic code is that their spelling of nonsense words respects the statistical probabilities and the context-dependent relationships of the complex English alphabetic code.

- Example: if asked to generate an *English-like* spelling for a nonsense word like 'gadge' (dictated), individuals are very unlikely to choose spellings like GAJ, although each of those graphemes is a permissible rendition of the associated phoneme. Very few literate adults would use the letter J for the final phoneme (this would be statistically very improbable in English); most would include the letter D (this serves to ensure the vowel is kept short); and most would include the final E (this serves to ensure the G sounds like a J rather than the hard /g/).

This general facility with the alphabetic code that is evident in most competent readers and writers of English is paradoxical in the face of another well-known fact about them: their phonics knowledge is quite dramatically implicit rather than explicit. Most individuals, without specific coaching after they have learned to read and write, are unable to explain phonics rules beyond the most basic letter-sound relationships that are taught in the first few months of schooling.

- Example: Most individuals who spelled GADGE appropriately, in the above example, rather than choosing GAJ, would not be able to explain the rules they were following. They would say that it just felt right, and/or remark that it somehow reminded them of *badge* or *gadget*.

Most literate English speakers, furthermore, do surprisingly poorly on some tests of phonemic awareness. Few, for example, are able to count the phonemes in words. Many are surprised to learn that the letter X tends to represent two phonemes (/k/ and /s/), and that the letters QU tends to represent the phonemes (/k/ and /w/).

How can one reconcile this widespread lack of explicit knowledge of phonics rules and poor phonemic awareness, with mastery of the alphabetic code?

The conundrum may be resolved by research involving computer learning studies, that shows that it is possible to master the English alphabetic code by means of a pattern detection and statistical learning process (Plaut, 2007). Given repeated exposure to English words, accompanied by feedback on how the words are pronounced, computers can 'learn' to recognise patterns of letter-sound relationships in a connectionist fashion. They come to 'know' how patterns of letters sound. The fact that people can achieve the same feat of statistical learning relatively unconsciously - that is, coming to know how patterns of letters sound – is a striking example of the implicit learning of which the human brain is capable.

This pattern learning process can, of course, only occur if learners actually look at all the letters in words and simultaneously attend to the associated sounds as they read – mirroring the process of computer learning.

Implications for teaching the alphabetic code

A Whole Language immersion approach will put individuals at risk of not learning the patterns of English if children are discouraged from paying any attention to sounds and letters beyond the first letter, and are encouraged to concentrate exclusively on meaning instead. Learners who do what they are told to do in Whole Language classrooms may never actually notice the patterns that are present.

An explicit phonics approach, on the other hand, will ordinarily give children enough exposure to relevant spelling patterns to ensure that they absorb the statistical probabilities of the alphabetic code. Children may not remember all the rules they have been taught, but in the process of being taught phonics they look at a sufficient number of exemplars to learn what the patterns are.

Learners with intrinsic risk factors

It is important to note that even when phonics is taught explicitly, children who have inherent problems with phonological analysis and phonological working memory may still be at risk for problems with mastering the alphabetic code. This is, at least in part, because the cognitive procedures underlying the pattern recognition process may be compromised. The at-risk group includes children with language difficulties and/or other phonological difficulties (including children who are showing the long term effects of otitis media in childhood). Those children who are learning to read in English when it is not their native language may also encounter specific problems at the level of phoneme analysis, although if they are strong language learners they will be able to overcome the problems with less difficulty.

The teaching strategy mandated in the Australian curriculum, where phonics exposure is routinely to be embedded within the task of attending to meaningful texts, deserves further consideration in this context. When individuals do bring inherent phonological difficulties to the pattern recognition task in phonics classes, it is possible that the distraction of simultaneous attention to meaning might add substantially to the processing load, and this distraction itself might impede their ability to master the code.

Conclusions

Learning the alphabetic code is a complex task, but teaching it responsibly is even more complex. It is perhaps fortunate that so many students learn to read and write almost in spite of any teaching to which they are exposed. Teachers, however, have a major obligation to ensure equity of access for all learners. The disadvantage experienced by those individuals who do not master the alphabetic code is very far-reaching indeed in our society. It is a disadvantage that is critical for students' sense of success and achievement at school, critical for their learning, and critical for their employment opportunities as adults.

Given the linguistic complexity of the whole area of early literacy learning, and given the relative lack of linguistic training currently available to regular classroom teachers and policy makers, it is perhaps not surprising that the teaching of reading is contentious. It is also not surprising that the unresolved disagreements have tended to center on the role of phonics. If, however, there were greater general understanding of some of the underlying linguistic concepts, and if there were deeper understanding of the language-related difficulties that some students bring to the learning process, teachers might be more confident and more skilled in supporting students who do not learn to read and write easily. There might also be a chance that the 'reading wars' could be left behind.

References

Adams, M. J. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: MIT Press.

Chall , J. (1996). *Learning to read: The great debate* (3rd Ed.) New York: McGraw Hill.

Ehri, L. C. & Wilce, L.S. (1980). The influence of orthography on readers' conceptualization of the phonemic structure of words. *Applied Psycholinguistics, 1(4),* 37—385. DOI: 10.1017/S0142716400009802

Galletly, S. A & Knight, B. A. (2004). The high cost of orthographic disadvantage. *Australian Journal of Learning Disabilities*, *9(4),* 4-11. DOI: 10.1080/19404150409546774

Plaut, D.C. (2007). Connectionist approaches to reading. In M.J. & Snowling C. Hulme & (Eds.). *The science of reading: A handbook* (pp. 24-38). Oxford: Blackwell Publishing.

Scarborough, H. & Brady, S. (2002). Toward a common terminology for talking about speech and reading: A glossary of the "phon" words and some related terms. *Journal of Literacy Research, 34(3)*, 299-336. DOI: 10.1207/s15548430jlr3403_3