

ISSUES IN INCLUSION AND INDIVIDUAL LEARNING NEEDS LEARNING TO READ

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For many lower ability children, inclusion in the mainstream setting does not guarantee that their individual needs will be met. With increased numbers of children with well-below average ability being placed in mainstream schools, it is imperative that teachers understand factors which impact on learning for this group of children. Current trends in the teaching of reading may present barriers to learning for children who have moderate learning difficulties and severe literacy difficulties.

Introduction

Learning to read is, unquestionably, a major milestone in child development. However, the exact weighting of the various processes, upon which fluent and accurate word reading and reading comprehension depend, remains unspecified. Different researchers have found different underlying causes of reading difficulties, leading to the emergence of a number of varied approaches to the teaching of reading that focus on single, predominant strategies.

This paper considers the case of 18 children, aged 8–11 (McMurray, 2002), who were statemented as having moderate learning difficulties (MLD), ability in the well-below average range and who were experiencing severe difficulties learning to read. The author was released from class teaching duties for 2 years to develop a programme to meet the needs of these children. This project was funded by the Department of Education (Northern Ireland) Dissemination of Good Practice Initiative. These children were moderately delayed in all areas except literacy where their progress was severely delayed.

All of the children in the study (McMurray, 2002) acquired sufficient literacy skills to allow them to benefit from the mainstream evidence-based interventions and reading material that had been out of their grasp. This methodology and curriculum is available to teachers in Northern Ireland from The Belfast Education and Library Board, and it is now being used in mainstream schools

with children with extensive literacy difficulties. This is not a programme for protracted use but a method to establish the foundations of literacy learning. The implications for professional practice and successful inclusion are discussed.

Models of reading development

Adams' (1990) seminal review of beginning reading was credited with bringing about a return to phonics instruction in the beginning reading programme, at a time when the whole language approach was popular. Adams, however, made it clear, when drawing her findings together, that all the component knowledge and skills in the reading process are interdependent and cannot be divided into key and support activities. She went on to state that the needs of young readers must be considered, ensuring an eclectic approach which combines all of the elements in the reading process in a complementary way. According to Adams (1990), there is no such thing as a universal method for teaching reading (p. 423). Yet a universal method continues to be sought, with policy in England being influenced by proponents of phonological approaches to such an extent that there is currently a statutory requirement, in England, to teach reading using a 'synthetic phonics' approach (Ellis and Moss, 2014). Considerable weight has been afforded to models of reading development in both policy (Rose, 2006 and the subsequent DfES policy) and practice, therefore the most influential models will be considered.

One of the most influential models of reading development was proposed by Frith (1985). This was a developmental stage model. Three distinct stages are explained by a particular strategy: logographic (word shape, characteristic of beginning readers), alphabetic (grapheme to phoneme correspondences, age 5–7) and orthographic (clusters of letters representing clusters of sounds recognised as orthographic units, aged 7+). Each strategy happens sequentially, with later strategies building on earlier ones.

Ehri's (1995) model supplanted Frith's strict 'stages' with more flexible 'phases' that could be undertaken in tandem or bypassed entirely. Four major phases are involved: the

pre-alphabetic phase (visual recognition of words), the partial-alphabetic phase (a phase where children pick up salient sounds), the alphabetic phase (phonemic decoding develops) and the consolidated phase (grapheme–phoneme connections become consolidated into larger units, morphemic knowledge develops).

The Simple View of Reading (Gough and Tunmer, 1986; Hoover and Gough, 1990) reduces the processes involved in reading down to two distinct parts: decoding (using grapheme–phoneme correspondence) and language comprehension (accessing meaning). Both are necessary for skilled reading and neither can be used by themselves. Both dimensions are continuous, and children can vary in degrees of proficiency on both. Studies on SEN and typically developing children yield support for this model (e.g. Cutting and Scarborough, 2006; Share and Leikin, 2004; Torppa, Tolvanen, Poikkeus, et al., 2007). Harrison (2010), however, stated that this model is oversimplified. Rose (2006) replaced ‘decoding’ with ‘word recognition’, describing ‘word recognition’ as ‘the process of using phonics to recognise words’ (p. 38). Stuart, Stainthorp and Snowling (2009), in response to criticism of the model admitted that decoding and sight word recognition should be classed as two, not one, equally important variables. Indeed, decoding and sight word recognition, as separate processes, are prominent in the elaborated form of the Dual-Route Cascaded Model proposed by Coltheart, Rastle, Perry, et al. (2001).

This model contains three routes that can be utilised when reading words (the two lexical routes are sometimes counted as one). There is the non-lexical route (which is used for words that are unfamiliar, utilising rules to convert a grapheme stream into a phoneme stream) and there are semantic and non-semantic lexical routes (sight word recognition routes). The non-semantic lexical route involves letter units going through an orthographic lexicon (a store of words but without their meaning) with the spoken word being generated in the phonological lexicon. This route is used for pronouncing known words that have no meaning, such as ‘the’. In the semantic lexical route, there is an additional step through the semantic system between the two lexicons. This is where the ‘dictionary’ meaning of the word can be accessed. The non-lexical (decoding) route is used primarily by beginning readers and its use diminishes with reading proficiency.

The final ‘model’ is the Whole Language Approach to Reading. The Whole Language Approach is not a cognitive or developmental model; rather, it is best described as a philosophical view. Stemming from the work of Kenneth Goodman (e.g. Goodman, 1967), it posits that literacy and language are integrated developmental phenomenon (Krashen, 2002) and that the processing of oral and written symbols are conceptually equivalent (Johnson, 2004). Essentially, learning to read and write is as

natural and effortless as learning to perceive and produce speech.

None of these models provide any explicit guidance on how to teach reading, for example, what strategies should be used, what previous learning and skills must already be in place to facilitate new learning and what weighting is needed given individual differences in preschool experience and in cognitive strengths and weaknesses. Also, none of the theoretical models take into account environmental or psychological factors that might be important in reading development. Each child learns to read within their own set of particular circumstances and, although it is understandably difficult to quantify such factors, those seeking to put any of these models into practice must be aware that they exist.

Currently, the argument that synthetic phonics should be the mainstay of the beginning reading programme is not supported by research evidence (Lewis and Ellis, 2006; Singleton, 2009; Wyse and Goswami, 2008). Children who learn easily using a synthetic phonics approach draw on knowledge which has been acquired preschool through implicit learning (Adams, 1990). When learning to read their strong implicit processing capabilities in all domains enable them to process and integrate all sources of knowledge, whether it is phonological knowledge (alphabetic-phoneme/grapheme), orthographic knowledge (whole words and onset and rime patterns), morphemic knowledge (meanings of words and word parts), syntactic or semantic knowledge. This means that they already have ‘anchors’ in memory on which to build new learning. Unfortunately, detailed assessment of what exactly every child knows prior to phonics teaching has not been undertaken by researchers who promote phonics as the predominant teaching method. This was an issue raised by Castles and Coltheart (2004) who argue that the causal relationship between phonemic awareness and reading is not supported by conclusive evidence and progress in learning to read may be the result of an unassessed third variable. It is speculated that variations in, for example, verbal memory, not phoneme awareness, may impact more upon children’s reading ability.

In considering the beginning reading programme for children with MLD, it is important to understand that, within this group, there are children with very different learning profiles. These range from a very small minority who are hyperlexic, reading fluently but with limited comprehension, to a minority who cannot read at all. Nevertheless, all children with MLD will, to greater and lesser extents, experience problems with reading comprehension due to their lower overall ability.

Hyperlexia is the ability to read at a level well above that of other children of the same age despite overall low levels of intellectual ability (e.g. Siegel, 1994). In a number of rare cases, children with severe language and

cognitive difficulties can exhibit advanced reading skills. Montgomery (1997) also discusses fluent reading in children with exceptionally low IQs. Hyperlexia may well explain the advanced reading skills of some children with Down's syndrome, who have very limited cognitive and language abilities in other areas.

An understanding of implicit learning and memory may serve to explain why some low-ability children can read fluently without comprehension. Steffler (2001) states that implicit memory and implicit learning differ in that implicit learning refers to the acquisition of complex information without awareness, whereas implicit memory refers to the storage and retrieval of information without being able to recollect learning it. According to Steffler (2001), implicit learning occurs when there is a differentiation between level of performance and the lack of ability to verbalise the reason for this performance. It may also be characterised by evidence of having learned the underlying structure of complex stimuli. This means that if an individual has strong processing capabilities in all modalities of the brain, then learning can occur at a subconscious level. The brain could, for example, detect patterns and sequences in print without being explicitly taught these relationships, storing this new learning in memory along with links to other associated knowledge of word meaning and correct pronunciation.

Karmiloff-Smith's (1994) model of representational redescription is important in understanding how knowledge changes over time. It explains how existing knowledge can be redescribed into new information that becomes increasingly flexible and accessible. Karmiloff-Smith (1994) believed that there were three ways in which knowledge could be acquired. First, it may be innately specified. Second, it may be acquired through interaction with the environment and, third, it is a process whereby the mind uses the knowledge it already has by redescribing its own internal representations, thereby creating new representations. These in themselves may explain why some children do not experience this process as easily as others – they may have less experience from the environment, as well as having further limitations in terms of processing ability due to an inherited biological insensitivity to particular types of input. Furthermore, if they have low intellectual ability, then limited reasoning resources may inhibit the use of the existing knowledge bases required for redescription. Implicit cognition has not been found to be affected by age or intelligence.

A new theoretical perspective

Castles and Coltheart (2004) argue that, to support the notion that phonological awareness (PA) impacts on reading progress, such training would need to be effective for children possessing no pre-existing reading or spelling skills and no letter–sound knowledge. None of the 18 children (McMurray, 2002) had any reading or spelling skills or letter–sound knowledge and showed no previous

benefit of PA training. Hulme, Snowling, Caravolas, et al. (2005) contend that establishing the alphabetic principle (phoneme-to-grapheme correspondences) together with phonemic awareness is fundamental to learning to read. However, while contesting the view of Castles and Coltheart (2004), they acknowledge that syntactic and semantic language skills may be potential causal influences as well. They also cite Casalis and Alexandre (2000), Shankweiler, Crane, Katz, et al. (1995) and Tunmer (1989) who found that variations in syntactic awareness were predictive of variations in reading ability. Likewise, Laing and Hulme (1999) who reported that knowledge of the meanings of words impacted on how easily words were read. Furthermore, Share (1995) found that children combine the use of partial decoding skills with sentence context to decode irregular words. Despite this clear support for utilising multiple approaches to teach reading, the influence of sentence processing, vocabulary and syntactic knowledge on reading acquisition has been largely ignored in the models of reading acquisition that have been proposed to date. To address these issues, a new model of reading development is proposed.

Simultaneous interconnected processing and memory capacity model

The beginning reading programme should aim to develop the full range of knowledge sources at compatible levels, ensuring connections are made and that all the following sources of knowledge interconnect with each other to aid efficient memory storage and retrieval: (1) vocabulary (word meanings), (2) syntactic processing (the ordering of words in sentences to make sense), (3) semantic processing (extracting meaning constructed at sentence level) and (4) word recognition skills – both phonic decoding and whole word sight recognition. Phonic knowledge should be developed at both fine grain (alphabetic) and coarse grain (orthographic) levels.

This paper contends that, in a complex and deep orthography such as English, the teaching of a sole source of knowledge to read a word (e.g., phoneme/grapheme correspondences) may result, for some children, in the brain losing the ability to draw on the full range of sources of knowledge (morphemic, orthographic, phonic, semantic and syntactic) that are necessary for reading. For children who have limited implicit learning capabilities, this may result in an entrenched approach in which phonemic knowledge is exclusively called on to read all words. Other sources of knowledge and larger units of sounds which aid memory and retrieval are, therefore, not developed and there is limited interconnected learning. The brain does not engage in a subconscious decision-making process and is limited to utilising one strategy only when attempting to read unknown words.

McMurray (2002) did not find evidence of a logographic strategy during reading development. Full orthographic awareness of the sequence of letters in a word at a visual

level was required for automatic sight word recognition. This was in conjunction with the development of syntactic, semantic, morphemic and knowledge of the initial consonant sound within the identified memory capacity for each child. All this associated knowledge was developed simultaneously to enable effective memory storage and retrieval. Some children find it impossible to retain sound symbol relationships if they do not have memories that they can associate this learning with. Adams (1990) describes phoneme to grapheme correspondences as ‘meaningless’ ‘perceptually sparse’, ‘confusable’ and consequently easily forgotten (p. 239), asserting that the teaching of letter sound correspondences, for some children, must be spread over time and not rushed. McMurray (2002) found this to be the case. Substantial work had to be done to establish the learning of sight words to which phoneme to grapheme correspondences could be anchored. The ability to establish sound–symbol relationships lagged behind the development of an orthographic strategy for sight–word recognition, linked with the development of semantic and syntactic processing and vocabulary development.

It is important to be clear that the authors of this paper consider phonics to be a critical element in a balanced reading programme. Therefore, the development of this strategy for children who are very resistant to developing this knowledge is necessary; so that as unknown words occur in the reading programme, an emergent and rudimentary phonics strategy can be called upon and can further develop in conjunction with other strategies. Children need to learn, from the very beginning, that there are a range of strategies required to read words. This is important so that the brain learns to engage in decision making at a subconscious level, enabling the simultaneous selection of connections between all sources of knowledge necessary for fast and efficient recognition of any given word.

Multisensory methods were used to establish this learning. However, it must be noted that multisensory reinforcement of one knowledge base alone, without connections to other knowledge bases, can become a contributor to the development of problematic strategies.

Memory capacity and overlearning are very important within this model. Gathercole and Alloway (2008) have advanced the understanding of education professionals with regard to working memory and learning. Sufficient memory capacity is required to hold in mind information from long-term memory, together with new information from the sensory system (preferably via multi-sensory input). The capacity of this short-term temporary storage within the working memory model is a maximum of 12 seconds (for the average adult, much less for the child with learning difficulties) in which time the working memory system must manipulate and integrate this input to form new learning. This new learning is then either (1)

lost due to limited memory capacity within working memory, (2) cast out because it is not needed, (3) held in long-term temporary storage (McMurray, 2011 terms this ‘everyday’ short-term memory) or (4) stored permanently in long-term memory.

‘Everyday’ short-term memory helps us to conceptualise and explain the process of overlearning. The length of ‘everyday’ short-term memory is different for every child and represents the frequency in which learning must be revisited before it is eventually stored in long-term memory.

The reading programme developed while working with these children aims to provide the foundations necessary for fast and fluent word recognition and reading comprehension from the very beginning. To this end, the reading book is the celebration of success, not the teaching tool. Teaching is through workbook activities in advance of the reading book. These activities require a high level of teacher/pupil interaction until the child can complete each activity independently. The target vocabulary is used to develop all the subskills in reading using a range in reading activities to develop all related sources of knowledge, so that reading success is ensured.

Conclusion

In a complex orthography such as English, where a universal, single method for the teaching of reading is employed, there will always be a group of children who do not have equality and equity of access to the skills required to learn to read. This is an issue for their effective inclusion and access to the wider curriculum.

Conflicts of interest

No conflict of interest.

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