
Title	Recontextualising reading, rethinking teaching: Reading in the English medium primary school in Singapore
Author(s)	Sally Ann Jones
Source	<i>Education 3-13</i> , 40(3), 243-258. http://dx.doi.org/10.1080/03004279.2010.512564
Published by	Taylor & Francis

This document may be used for private study or research purpose only. This document or any part of it may not be duplicated and/or distributed without permission of the copyright owner.

The Singapore Copyright Act applies to the use of this document.

This is an Accepted Manuscript of an article published by Taylor & Francis in *Education 3-13* on 22 Jun 2012, available online:

<http://www.tandfonline.com/10.1080/03004279.2010.512564>

Notice: Changes introduced as a result of publishing processes such as copy-editing and formatting may not be reflected in this document. For a definitive version of this work, please refer to the published source.

Recontextualising reading, rethinking teaching: Reading in the English medium primary school in Singapore.

Sally Ann Jones

Abstract

In this article theoretical frameworks of genre theory, reading strategies and situated learning are used to show the complexity of the reading task for pupils in the English medium upper primary school in Singapore. An analysis of text genres from school textbooks of English, maths and science at primary three, shows how reading appropriately in the different disciplines requires the application of specific reading strategies, knowledge and attitudes. Content and process frameworks for teaching reading strategies are considered in the light of the analysis. The article concludes that recontextualising reading in this way involves rethinking the teaching of reading in the English medium primary school which requires teachers to increase our knowledge of discipline specific texts through text analysis and to deepen our knowledge of children's reading by talking to them about it.

Key words: reading; English; primary school; textbook analysis

1. Introduction

1.1 The school curriculum in Singapore

In Singapore the curriculum at primary one and two consists of English, another language called the mother tongue, maths, health education, music, art and physical education all of which are timetabled to be taught in a few separate lessons of a half to one hour's duration. English is the medium of instruction in Singapore and there has been a national English syllabus since 1981. This means that at present all these subjects apart from the mother tongue are taught in English. At primary three and four when children are nine to ten years old, the subjects of science and social studies are added to the curriculum, and unlike other English medium education systems such as the U.S.A. and the U.K., in which one teacher usually takes a class for all subjects, in Singapore, these subjects are most often taught by different teachers who move from class to class for their timetabled lessons. The move from primary two to three can

be quite a significant transition for primary school pupils, not least because of the demands made on their reading in this broader and more varied curriculum. In order to understand more exactly what these demands are, in this article I analyse extracts from Singaporean English, maths and science primary three textbooks. I then discuss the implications that arise from this analysis for rethinking the teaching and learning of reading in the English medium primary school. In order to do this, I use the theoretical pedagogic frameworks of genre theory, (for example, Christie 1998; Unsworth 2001; Wing Jan 2001; Wong 2003) for a preliminary classification of text type on a macro level. I then refer to theories of schema (for example, Anderson 1994) and reading skills and strategies (for example, Beach and Appelman 1984; Gunning 2010; Paris, Wasik and Turner 1991; Pressley 2002) to show on a micro level the reading strategies and schematic knowledge necessitated by the text type. I also refer to theories of situated learning (for example, Gutierrez and Rogoff 2003; Heap 1991) to discuss the implications for teaching arising from this analysis.

1.2 A school reading project

This analysis of school textbooks arose out of a collaborative project with the teachers in a large, mixed, multilingual and multi-ethnic government primary school. The school follows the national curriculum and operates a timetable as described above. The project concerned teaching reading in English and had a dual focus. One focus was the assessment of reading in English in primary one and two. The other focus was an exploratory observation study the aim of which was to identify common features of English reading lessons and so to identify the reading pedagogy preferred by teachers at the transition year of primary three. During this study, I taught a primary three class for half a year, interviewed teachers about teaching reading in English in primary three and observed a set of nine lessons, consisting of one lesson in each class across the primary three cohort. The lessons were presented by teachers as being typical of their teaching of reading at this level. The interviews and observations were audio recorded

(except for one teacher) and transcribed maintaining anonymity and confidentiality. The broad sweep afforded by the interviews and observations enabled the identification and contextualisation of a common preferred reading pedagogy. The audio recordings of some of the lessons were then analysed in more detail using interaction analysis in order to study the relationship between this pedagogy and the texts chosen by teachers to teach reading in these lessons. Textual analysis therefore was part of this stage of the project. In addition, teachers' concerns about pupils' reading in the different disciplines then led to a broadening of the analysis of texts to include those from textbooks in subjects apart from English, in particular maths and science, and so to consider the implications for a rethinking of our teaching of reading in English.

2. Recontextualising reading

2.1 Texts: types and genres in school

Genre theory acknowledges that texts are constructed socially for particular audiences and purposes. It is the writer's purpose and idea of audience as well as the situation and cultural context which largely determine the register of the language of the text and its structure or genre or type (Christie 1998; Derewianka 1990). Traditionally we have divided texts, especially those used in schools, into two broad categories of narrative or fiction, and nonfiction or information texts. The purpose of most narrative is to present representations of our world, with an emphasis usually on character motivation and action (Rothery and Stenglin 1997). On the other hand, nonfiction or information texts serve to reinterpret our world either in technical or abstract terms (Unsworth 2001). However, it has been noted that in the U.K., children in lower primary read more narrative than other genres (Wray and Lewis 1997), perhaps because these types of texts are closer to home experience and to spoken language. It is likely that in Singapore children coming to school probably have more experience of narrative in English than other genres, but it

is also noted by Unsworth (2001) and Christie (1998) that written language of all text types is different to spoken language in terms of organisation, grammar and vocabulary. Children therefore have to learn to read this 'book' or technical language of both nonfiction and fiction in order to gain access to the various subjects of the school English medium curriculum.

Some of the common generic text types of primary school which have been identified are narrative, recount, information report, explanation, procedure and argument, (Derewianka 1990; Wong 2003). Derwianka (1990) classifies fiction solely into narrative and recount while Wong (2003) further classifies fiction into traditional narrative, for example fables, folktales, myths and modern narrative, for example contemporary realistic fiction and fantasy. In addition to this pedagogic classification directed by teaching in the English subject class, there is a preference for certain text types or genres in the different school disciplines. Unsworth writes:

The principal genres of different school subjects are distinguished by the relative frequency of their occurrence and use as well as by their differential valuing within the discipline area. For example, although historical recounts occur in science, much more prominence tends to be given to scientific reports and explanation genres (2001, 122/127).

Moreover, although textbook writers have always made use of the visual as well as the verbal both to help children learn in the subjects of school and to teach them to read the visuals valued by the different disciplines, developing a "grammar" of the visual has been a fairly recent theoretical development (Kress and Van Leuven 1996). Unsworth remarks that 'a great deal of work at the interface of theory and practice remains to be done' regarding the relation of image to text and how this can be taught (2001, 69). Unsworth also points out that:

subject areas have their own characteristic language forms and hence entail distinctive literate practices. The distinctive use of language in different school subject areas extends from word level (vocabulary) to grammar and the organization of whole texts (genres or text types) (2001, 122).

Therefore, the language, the visuals and the textual organisation of the school subjects depends on the function of the subject within a culture and on how each discipline arranges and prioritises information. Consequently, reading the characteristic structures and language forms of texts in the different school subjects requires particular ways of thinking or 'literate practices', which involve the recognition of the purposes of the subjects and texts and the application of reading strategies and schema appropriate for them.

However, Wray and Lewis (1997) in their writing about U.K., note that it is rare for teachers to teach children to read in subject lessons other than English. Although there is no research evidence from the classroom in Singapore to show that reading is not taught in subjects other than English, an online search of the syllabi of science, maths and social studies for primary schools found only a few references to reading. In the science syllabus there was one instance of 'reading relevant materials' (Ministry of Education 2008, 15) and one instance of taking 'a reading' (Ministry of Education 2008, 46). In maths although 'reading' is included as a learning outcome and there are 17 references to it; these are to the reading and writing of numbers and reading and interpreting graphs and charts (Ministry of Education 2007). In social studies 'reading' is not mentioned but there are 27 references to 'understanding' in terms of the content of social studies (Ministry of Education 2006).

Most usually in Singapore reading is taught in English lessons using English textbooks which include a variety of text types such as narratives, information reports and explanations, which are not, however, specific to the disciplines of the subjects in the curriculum but related thematically in units which are taught over about two weeks. In the U.S.A. teaching children to read in the content areas is a common topic in primary teaching and teacher education (for

example, Gunning 2010; Kragler, Walker and Martin 2005; Neufeld 2005; Vacca and Vacca 2005). In the U.K., although Wray and Lewis (1997) note that reading is mainly taught in English lessons, there is some attention to the area of 'reading to learn' or reading 'across the curriculum' (for example, Arnold 1998; Bearne 1998; Lewis, Wray and Rospigliosi 1994). However, in Singapore teaching reading is not carried out specific to a subject, for example maths or science, in the actual subject lesson, but is the responsibility of the English teacher and is taught in English lessons. So it seems that children may have little opportunity to reflect on the reading of the text genres of the different disciplines they encounter in the primary three curriculum and to practise applying the reading strategies and schema appropriate to these disciplines.

2.2 Learning to read the subjects of school

Wray and Medwell describe learning as the 'expansion and modification of existing ways of conceiving the world in the light of alternative ways' (1991, 9). Children draw on their existing situated, linguistic and schematic knowledge of the world and of text genres, in order to accommodate 'alternative' skills and knowledge. During the process of thinking and reading, they will add to, or restructure this knowledge and so have a broader resource from which to draw in future. As well as the cognitive aspects of learning, there is the fact that teaching and learning is situated in particular social and historical contexts. Heap (1991) shows that pupils learn what counts as reading in their school and subject context through situated participation in actual classroom interaction. Wray and Lewis (1997), drawing on the work of Lave and Wenger (1991) describe learning as a process of apprenticeship, which is situated in a social context. In addition, Gutierrez and Rogoff (2003) note the importance of guided participation in cultural contexts and conceptualise learning as changes in these ways of participation. Arnold (1998) more particularly describes children's learning to read and write as socialisation into the different ways of thinking required by school subjects which are themselves products of culture

and history. In this way children may be socialised into the ways of thinking required by the different disciplines in school through guided participation in the kinds of reading required by these subjects. Theories of situated learning therefore suggest that the teaching and learning of reading in the different school subjects is most effective when it takes place within the subjects themselves.

With regard to English lessons, teaching children to read as a form of guided participation has been developed in reading strategy instruction. A number of comprehension instruction frameworks for teaching reading strategies have been developed which have been helpfully categorised by Liang and Dole (2006) into two groups of frameworks: content frameworks and process frameworks. The major focus of content frameworks is to teach understanding of content, for example, Questioning the Author by Beck, McKeowan, Hamilton and Kucan (1997) and Know What Learnt + by Carr and Ogle (1987). The major focus of process frameworks is to explicitly teach and model reading strategies, for example, Reciprocal Teaching by Palinscar, Brown and Campione (1993) and Transactional Strategy Instruction by Pressley, El Dinary, Gaskins, Schuder, Bergaman, Almasi and Brown (1992). Content frameworks are thought to enable the acquisition of appropriate reading strategies through participation in reading activities with the consequent transfer of these strategies to other texts and situations through children's repeated practice within these frameworks. On the other hand, process frameworks may be more likely to help children achieve transfer because of attention to the explicit teaching of the metacognitive strategies of monitoring and control of reading. However, according to Pressley and Hilden writing about the U.S.A. the issue of children's transfer of reading strategies to new situations and texts remains a 'great challenge' for teachers (2006, 52). The reasons for this are first because of the complexity and fine distinctions among the school genres and texts across the curriculum. This requires pupils to read texts with apparently similar characteristics for different purposes in the different school disciplines,

applying different schema and strategies as they do so. The second reason is because of the very situated nature of the teaching and learning of reading.

3. Analysis of school textbooks

In Singapore the Ministry of Education approves textbooks written by various publishing companies for use in schools. Approval is shown by a stamp on the inside page and a list of approved textbooks is published on the Ministry of Education website (www.moe.gov.sg). The books approved for use in primary English, maths and science are shown in Table 1 below.

Table 1
English, maths and science textbooks approved for use in primary schools by the Ministry of Education

English		maths		science	
title	publisher	title	publisher	title	publisher
<i>In Step</i>	Panpac Education	<i>Discover Maths</i>	Panpac Education	<i>i-Science</i>	Panpac Education
<i>My Pals are Here! English</i>	Federal Publications	<i>My Pals are Here! Maths</i>	Federal Publications	<i>My Pals are Here! Science</i>	Federal Publications
		<i>Shaping Maths</i>	Federal Publications		
<i>Celebrate English</i>	Pearson Education Asia			<i>Perfect Match Science</i>	Pearson Education Asia
		<i>New Syllabus Primary Mathematics</i>	Shing Lee Publishers		
				<i>Science Works!</i>	Starpub

In fact, it is argued that in Singapore the textbooks, in particular the English ones, have become the de facto syllabus (Cheah 2003). Below I analyse extracts and tasks from some of the more commonly used textbooks for English, maths and science: *In Step*, *Shaping Maths*, *i-science* and *My Pals are Here! Science*. The text from *In Step* was used by teachers in two of the nine English reading lessons observed in the school reading project and the maths and science textbooks are those used in the school at one time or another. In order to analyse these texts I use the theoretical pedagogic frameworks of genre theory for a preliminary classification of text type on a macro level. I then refer to theories of schema and reading skills and strategies to show on a

micro level the reading strategies and schematic knowledge required by the particular text as suggested by Beach and Appelman (1984) and Unsworth (2001). The analysis shows not only what children are expected to read, but gives examples of how they are expected to read in English, maths and science in primary three in Singapore.

3.1 English

Often at primary three textbook writers make use of folk tales to teach reading in English. Of the three English textbooks *In Step, My Pals are Here!* and *Celebrate English* to be used in the later half of the school year in primary three, all have folktales linked to one of the thematic units in the book. I have chosen one of the texts used by teachers in the school reading project from *In Step 3B* by Wee (2002a, 51-53) to examine some of the reading strategies children are expected to use and learn when reading a folktale in English lessons. The title of the text is 'The Monkey and the Turtle'. It is an Asian folktale and begins with the formulaic 'Long ago'. It is about specific participants - monkeys and turtles who show human characteristics - and their motivation drives the plot. The folktale follows a conventional narrative structure as in Derewianka (1990). It begins with an orientation about how a turtle, who enjoyed eating figs, left his wife and children in order to live under a fig tree from which a monkey threw down figs. The initiating event occurs when Mrs Turtle's neighbour told her about the turtle and the monkey's friendship. Therefore Mrs. Turtle and her neighbour hatched a plan to get the turtle to come back. The plan involved Mrs. Turtle pretending to be sick and telling her husband that the only cure would be for her to eat a monkey's heart so introducing the complication in the narrative. The turtle plans to kill the monkey but is so sad that he tells him of his intentions on their journey to the turtle's home. The monkey tricks the turtle by saying he has forgotten his heart and returns to his tree. The tale is resolved when the turtle is then very angry because he had betrayed his friend for his wife's trick. There are various lies told throughout the folktale

and various moral sayings quoted by the animal characters at the end. This extract below shows some of the conventional language features of narrative (Derewianka 1990):

The monkey trusted the turtle. He jumped onto the turtles' back and they set off. When the turtle thought of his evil plan to kill the monkey, tears fell down his cheeks.

"My dear friend what's the matter?" asked the monkey.

"My wife is very sick," replied the turtle.

"Don't be sad. We'll find a cure for her," the monkey comforted him.

"That's why I'm sad," replied the turtle." The doctor said the only cure for her illness is a monkey's heart, so I'll need to kill you to cure my wife. (Wee 2002a, 52)

The tale is written in the third person and the action is in the past tense, for example, 'jumped', 'set off'. There are also verbs to show characters' mental processes reflecting motivation, for example, 'trusted', 'thought' and 'comforted' as well as verbs associated with dialogue for example, 'asked' and 'replied'.

The purpose of the reading is given in the subtitle of instruction 'Read and enjoy the story' (Wee 2002a, 51). In order to do this, children have to be involved in the chronological flow of a sequence of events, reading from beginning to end as the context of the narrative unfolds (Beach and Appelman 1984; Gunning 2010). This will enable them to respond to the humour of each character's trick within the narrative (Beach and Appelman 1984; Rosenblatt, 1994). There are water colour pictures of the turtle and the monkey on each page of the text which show the setting and the main actions of the story. These pictures support the text in encouraging response but do not have an important role in furthering comprehension. In responding, pupils have to suspend their disbelief and apply an interpretive frame which accepts the fact that animals in the story behave as if human. The schematic knowledge children need to draw on to interpret and enjoy the story is that of character motivation and family relationships

(Rothery and Stenglin 1997). The questions asked in the accompanying workbook (Wee 2002b, 46-47), encourage children to use certain reading strategies and in so doing, show them what reading in the English classroom entails. The first question asks children to search for information directly stated in the text (Gunning 2010; Pressley and Hilden 2006), 'According to Mrs. Turtle's neighbour, why had the turtle not seen his family for a long time?' (Wee 2002b, 46). The next question builds on this information in order to show children how to use it in conjunction with their own experience (Gunning 2010) in order to answer, 'Do you think the turtle had really forgotten his wife? Give a reason for your answer,' (Wee 2002b, 46). Through answering the question children are shown how to infer meaning drawing on both the text and their schematic knowledge of personal relationships (Beach and Appelman 1984; Gunning 2010; Paris et al. 1991).

In this text children are also expected to infer meaning through interpreting direct and indirect speech (Beach and Appelman 1984; Gunning 2010; Paris et al. 1991). They have to relate the differing lies told, to the underlying motivation of the characters, by completing a table in which each lie is related to its 'desired result' (Wee 2002b, 47). In doing this, children have to switch their frames of reference among the different characters to appreciate the different goals and points of view of each (Beach and Appelman 1984; Rosenblatt 1994). This switching is extended later by the question 'If you were the turtle and found that your wife's illness was a lie, what would you do?' (Wee 2002b, 47). Children are also asked to evaluate the behaviour of the various characters by deciding who is responsible for ending the friendship between the turtle and the monkey (Beach and Appelman 1984; Rosenblatt 1994). The fact that this text is to do with human behaviour and has a moral purpose is made clear by a question asking what can be learnt from the story. The learning here is about human actions and relationships and is different in degree and kind from that expected in maths and science.

3.2 Maths

There has been discussion over the issue of the coding of maths into narrative. For example, Solomon and O'Neill (1998), through a consideration of the history of mathematical expression and a reference to genre theory, argue that the chronological organisation of narrative cannot suit the logical relations of mathematics. On the other hand, Wray and Medwell (1991) point out that coding maths into narrative is a way of situating mathematical operations in an authentic context and showing children their relevance in the world. Wood (1998) suggests that mathematical narrative may be best suited to problems to do with speed and money in that these are common real life applications. However, it is true that 'story sums', or what appear to be very short narratives in which maths operations are embedded, are a staple of Singapore primary school maths textbooks. In *Shaping Maths 3A* (Collers, Koay, Lee, and Tan 2003) four of the five units end with a double page entitled 'Solving Word Problems'. In *Discover Maths 3A* (Law and Sachidanandan 2006) out of nine chapters, two are devoted to solving word problems and in each chapter, except the first, there are example word problems for pupils to complete. Similarly, in *My Pals are Here! Maths 3A* (Fong, Ramakrishnan and Choo 2003) out of nine chapters, two are devoted to word problems. In *New Syllabus Primary Maths 3A* (Lu 2007) out of seven chapters, there are at least four pages of word problems in six of these chapters. According to the introduction of *Shaping Maths 3A* (Collers et al. 2003) at primary three the mathematical operations are taught first and then contextualized in the 'story' or 'word' sums. An analysis of the text structure, task and consequent reading strategies of one of these 'word' sums shows how children are expected to read in the context of the maths class.

I have chosen as an example a page from *Shaping Maths 3A* (Collers et al. 2003, 36) on which a word problem is given, as well as the guiding of children's thinking by means of some speech and thought bubbles of child characters depicted on the page. It is laid out in four stages. In the first, a child character tells the reader the word problem. Three other stages are labelled 'understanding', 'planning and doing' and 'checking' (Pressley 2002). There is also a diagram

of the mathematical model which underpins the sum. The title of the page is 'Solving Word Problems'. This gives us the type of text, 'word problems', and the purpose of reading which is to solve a problem (Gunning 2010; Pressley 2002). Here the goal of the text expressed in the title is similar to that of a procedural or instructional text. The problem is:

Yesterday I went to a tour fair with my family.

The fair had 3588 visitors.

1835 of the visitors were adults. The rest were children.

The first 2350 visitors were each given a gift.

How many visitors did not receive gifts? (Collers et al. 2003, 36).

This text has some features of narrative in that there is an adverbial of time 'yesterday' and mention of the 'family' and 'adults' and 'children', on family outings. Children here might be tempted to access their content schema (Anderson 1994) or background knowledge of the experience of going out with their families, or going on tours. They might also start to wonder what a 'tour fair' is and how it might be different from other kinds of fairs, as they would when reading narrative. This would distract them from the purpose of this maths text though, and be inappropriate here.

The text is also different from narrative most obviously in the use of numbers, but also in the way every sentence except one is laid out line by line. This layout is effectively a series of steps in a procedure with the information necessary for its operation given line by line. Unlike narrative which is to be understood according to chronological sequence, this text is not to be read as a flow of chronological events, but in terms of information and its importance in relation to the final question 'how many visitors did not receive gifts?' So in the child's thought bubble of the 'understanding' section, the first question directs pupils to notice what was given out at the fair which is expressed in the fourth line of the problem, rather than at the beginning. In

addition, although the problem is similar to a procedural text, the actual mathematical procedure has to be inferred by the reader (Wood 1998). Here children are helped to learn how to do this by means of the diagram further down the page.

3.3 Science

Unsworth states that, 'School science texts provide a basis for apprenticing students to the technical nature of scientific English,' (2001, 138). In addition, these school books also apprentice pupils into how to use reading strategies appropriately for the genres of the subject. I discuss two texts from a primary three topic about classification of living things to show this. One is an information report from the textbook *i-Science* and deals with 'The characteristics of fungi', (Tho, Ho and Goh 2001, 27), and the other is an explanation from the textbook *My Pals are Here! Science* dealing with 'How fungi reproduce', (Teo-Gwan, Kwa and Lee 2001, 76).

Tho et al. state in the foreword to the textbook, that:

A conscious effort has been made to encourage pupils to develop habits of mind and attitudes necessary for scientific enquiry through the use of questions throughout the text. These prompt the pupils to think and process the information provided in the text, so as to make useful application of it (2001, v).

In the information text 'Characteristics of fungi', these questions are asked: 'Does a mushroom look more like a plant or an animal? Is the mushroom a plant, an animal or does it belong to another group of living things?' (Tho et al. 2001, 27). These questions encourage the activation of pupils' schemata of mushrooms from their comparative observation of mushrooms, plants and animals (Anderson 1994). From there the children have to integrate this observed knowledge with information already presented in the text about 'living things' and predict based on this observation and contextual knowledge that there may be another category of living things,

especially when related back to the title, ‘Characteristics of fungi’ (Gunning 2010; Pressley 2002). Then pupils are directed to the information text itself:

Living things such as mushroom, toadstools, mould and yeast have many characteristics that plants have, but, unlike plants, they cannot make their own food. They belong to a group of living things called **fungi** (singular: **fungus**) (Tho et al. 2001, 27)

In the text which is written in the timeless present tense, the generalised participants ‘mushrooms’ and ‘toadstools’ are classified and are given the technical name of ‘fungi’. They are classified by reference to common characteristics and how they are like and unlike other living things. This follows the purpose of information texts which, according to Derewianka is to ‘document, organize and store factual information on a topic’ (1990, 51). There is attention to the precise nomenclature of science as the singular form of ‘fungi’ is introduced.

‘How fungi reproduce’, (Teo-Gwan et al. 2001,76) is a three paragraph explanation text integrated with large photographic visuals. Although Derewianka (1990) notes that this explanation genre still has not been studied extensively, according to Unsworth (2001) it is one of the more common genres of science. Below is the extract:

Fungi reproduce by producing spores. Spores are very small. They look like brown dust to your eyes. In mushrooms, the spores are found in the gills.

The tiny black dots you see on mouldy bread are spore cases. Each of these spore cases contains many spores inside.

When a fungus releases its spores, the wind carries them in the air. Some of these spores land on suitable places and they grow into new fungi (Teo-Gwan et al. 2001, 76).

The text consists of an explanation of a natural phenomenon as in Derewianka (1990). The language is typical of explanation in that it includes the generalised participants of 'fungi', 'mushrooms' and 'spores', and there is attention to introducing precise technical vocabulary such as 'gills'. The timeless present tense is used throughout and action verbs are common especially in the process sequence. Conventionally the passive might be expected for expressions such as 'the wind carries them [spores] in the air'. However this is a pedagogic science text in an English medium primary curriculum and as such has to balance the genre conventionality with pupils' familiarity with language forms such as the passive at primary three.

Structurally and in layout, this text also includes features typical of explanation. The title identifies a phenomenon in the environment and then the text consists of a sequence of explanation, that is, from spore production and identification, to spore release, wind dispersal and new growth. The writers spend the first two paragraphs helping the reader identify spores. Underneath the first paragraph there is a photograph of a mushroom which shows the relationship of the parts of the stalk, the gills and the cap to the whole of the mushroom (Unsworth 2001). The label of the 'gills' is to be related to the paragraph, 'Spores are very small. They look like brown dust to your eyes. In mushrooms, the spores are found in the gills', (Teo-Gwan et al. 2001, 76). The comparison to 'brown dust' is an exact one, not related to the imagination as in figurative language in narrative, but related to looking and observing. The reader here is taught to recode personal experience of the world and commonsense language into scientific knowledge.

The next paragraph states, 'The tiny black dots you see on mouldy bread are spore cases,' (Teo-Gwan et al. 2001, 76), which again requires readers to access personal experience, 'tiny black dots' and relate it to scientific terminology 'spore cases' (Gunning 2010; Pressley 2002). This text should be integrated with a photograph of a mouldy slice of bread with a

microscope zoom-in labelled, 'spores in spore case' positioned next to the two last paragraphs on the left side of the page (Gunning 2010). Similar to the previous one, this photograph shows the relationship of a part to the whole but uses the zoom-in technique as well as labelling (Unsworth 2001). In this instance it is very important that the reader access personal experience or background knowledge (Anderson 1994; Pressley 2002) but it should be the particular experience of careful observation of phenomenon in the environment. The importance of observation is emphasised by the use of the visuals and photographs in the text.

4. Rethinking Teaching

4.1 Discussion

The analysis of three texts from primary three textbooks in English, maths and science shows how reading in each subject requires children to draw on different knowledge resources (Anderson 1994). In order to read the folk tale in English, children need schematic knowledge of human relationships and motivation which will enable them to respond to the folktale, in the maths 'story sum' they should draw on knowledge of a procedure to solve a problem, while in science they need knowledge of natural phenomenon to observe and learn. When reading the maths text, pupils must put their personal experience of human motivation on one side as they approach the reading of the procedure, while in the narrative children must suspend disbelief in order to accept the customary anthropomorphism in folk tales and yet bring their knowledge of human relationships to bear on the reading. Moreover, children need to refer to their background knowledge through a framework of or an attitude to reading in the particular subject. This way of thinking about the subject is derived from an awareness of the purpose of reading which is particular to the subject. In the examples I have chosen, the English text required response, the maths text required solving and the science text required observation.

In addition to these knowledge resources, children need to develop familiarity with the text types common to the different school disciplines. According to Carrell and Eisterhold readers have:

background knowledge about, and expectations of, differences among rhetorical structures, such as differences in genre, differences in the structure of fables, simple stories, scientific texts, newspaper articles, poetry and so forth. Our schema for simple stories, for example, includes the information that the story should have, minimally, a setting, a beginning, a development and an ending (Carrell and Eisterhold 1988, 79).

Some examples of rhetorical structure mentioned in Ambruster, Anderson and Ostertag (1989) are description, sequence, cause and effect, compare and contrast and problem solution. Knowledge of text structures is very helpful in facilitating reading because the reader can recognise organisational patterns and therefore understand relationships among parts of the text, as well as anticipate what is to come in the text, (Ambruster et al. 1989; Grabe and Stoller 2002; Gunning 2010).

While sometimes similarities in texts across subjects can be helpful for children learning to read, at other times the complexity of the school genres and the fine distinctions and apparent overlaps and similarities among them make great demands on pupils' reading. As children move from lower to upper primary they encounter a greater variety and complexity of text types associated with the different subjects of school. Common to science texts and shown in the analysis above, is the sequence of explanation and the important relationships of text to visual necessary for comprehension and learning. In contrast, the sequence of the folk tale is chronological and the visual here is less significant serving as a support or mirror to the text. When reading the maths story sum, children must realise that although it has narrative features, the maths genre is actually a procedure which is shown in its completed state in the diagram. In

addition, in each subject, although superficially similar, language is used differently, for example in science, comparisons are to do with careful observation and not to do with the achievement of literary effect and in maths the language is a vehicle for the mathematical procedure and not to be responded to with pleasure, unlike in the narrative. So apart from what we might call the 'macro' or generic text types such as information report, narrative, explanation, recount, procedure and argument so presented in English textbooks or class readings, and the reading of which we presume will enable children to learn to read across the curriculum, children have to learn to read and negotiate the 'micro' complexities and subtle distinctions and variations among the texts of different subjects. They have to learn about the ways in which texts are written, their purposes and how they are meant to be read and thought about in situ, that is, in the contexts of the different school subjects.

Further to the idea of the complexities of the texts of school is the question of how children are expected to apply reading strategies in order to read the varied genres appropriately (Beach and Appelman 1984; Unsworth 2001). In fact, although the actual strategies used on different texts may be the same, for example, prediction, inference, connection to personal experience and background knowledge, location of and integration of information, response and evaluation, linking the text to visuals and so on, the way the strategies are applied, as a reader proceeds through a reading will differ according to the overall purpose of the subject, the purpose of that particular reading, in that particular situation on that particular text. When the school curriculum in Singapore expands in primary three and children study science and social studies as well as the curriculum of primary one and two, some children find learning in the school subjects difficult. If they have been reading mostly fiction in the lower primary curriculum in the same way as children in the U.K. as suggested by Wray and Lewis (1997), they may find reading in maths and science difficult or at least different in primary three. Sometimes it is children who are very proficient readers in lower primary who experience

difficulty and frustration in primary three, in that they approach texts in, for example maths and science, with those very strategies they have found to be successful for reading narrative texts in English lessons and those which have therefore become practised and hidden from conscious attention, as in Stanovich (1980). Often, however, this difficulty is too readily attributed to the content of the subject and remediation focuses on subject specific content rather than on subject specific reading.

In the discussion above I have argued that reading should be taught within the different subjects of the primary school. However, this is just one aspect of a coherent reading curriculum, another aspect raised by the analysis of the school texts concerns the way we teach reading in English lessons. Unsworth states that:

it is no longer appropriate to talk about 'literacy across the curriculum'. Instead there is a need to delineate 'curriculum literacies', specifying the interface between a specific curriculum and its literacies rather than imagining there is a singular literacy that could be spread homogenously across the curriculum (2001, 11).

Therefore, in rethinking our teaching we might consider the relative potential of the various comprehension frameworks for teaching reading identified and categorized by Liang and Dole (2006) and how to use each most effectively. Some can be used for teaching comprehension of content and for practising appropriate strategy application and others for explicit reading strategy instruction. We can consider how to sequence our use of both types of frameworks for a coherent comprehension curriculum in English lessons. Both kinds of frameworks can help children effect strategy transfer from English lessons to other texts and in other subjects if there is also an emphasis on teaching the metacognitive reading strategies needed for appropriate control and monitoring during reading (Garner 1987, 1992; Paris et al. 1991; Pressley 2002). We can achieve this through talking with children about how they read, about what strategies they

use on which texts, about what knowledge resources are necessary, and about the texts themselves in all the different subjects. We can also encourage children to talk to each other about how they read. This kind of reflective talk will bring the process of reading to children's attention. It will first, help the development of a metalanguage necessary for the conduct of the discussion and second, help children develop those metacognitive reading strategies which will enable them to monitor their reading of different texts in different situations so as to help ensure that they can read appropriately in all curriculum subjects. Consequently, we teachers will learn more about how children read in English and in the other school subjects and will be able to develop ways of teaching and talking for English reading lessons which will eventually enable us to branch off from or add to instructional frameworks and to further develop our own personal expertise in different contexts so as to guide children in their discipline specific reading with flexibility and precision.

In this article I have focused on rethinking the teaching of reading in the upper primary using the theories of genre, reading strategies and situated learning. In maintaining this focus, I do not wish to underestimate the importance of the other aspects of teaching reading in the school disciplines such as practical activity or experience and the associated attention to language which, despite the differences between spoken and written language, can serve as a foundation for developing subject specific reading. For example, Gibbons manages this using 'the mode continuum' (2002, 40). In this classroom sequence children's experience of conducting a science experiment is recontextualised into the spoken register of science through teacher guiding pupils' reporting before the report is written down and read about. In this way scientific concepts and the appropriate language for their expression can serve as foundations for reading and writing.

A final issue arising from the recontextualisation of reading relates to our role as teachers. As Unsworth (2001) suggests, we need to concern ourselves with discipline specific

reading. In order to do this we must first analyse the texts of the different subjects, as I have done above, to understand the ways of reading required by the different school subjects. The examination and analysis of sample texts in these different disciplines will reveal the complexities of knowledge and particular combinations of reading strategies needed for effective reading across the different school subjects. As teachers we then reposition ourselves as analysts of texts and reading practices in curriculum literacies as well as in English lessons. Armed with this expertise we will be better able to mediate children's learning to read both in English lessons and in and for the lessons of the different school subjects.

4.2 Conclusions

In conclusion, in this article I have shown how teaching reading in the Singapore English medium primary school can be recontextualised by viewing it as situated within particular school subjects in addition to English lessons. The analysis of sample genres of some of the school disciplines shows that what pupils are expected to read and how they are expected to read makes the reading task in upper primary very complex. The purposes and genres of the texts of school subjects entail particular ways of thinking about and attitudes to these school subjects. Moreover, their complexity requires the appropriate application of reading strategies but more importantly, an awareness of this application on the part of pupils. I have argued that the implications for a rethinking of teaching can be reduced to two suggestions both of which are to do with increasing our knowledge and understanding and which will lead to an increased flexibility and expertise in teaching. The first suggestion is to increase our knowledge of how children are reading through talking with them about the reading process and helping them to develop a metalanguage with which to do this. The second is to increase our knowledge of discipline specific genres and texts through analysing them. Engaging in these processes of our own education will enable the addition of 'micro' to 'macro' in understanding discipline specific genres and flexibility to frameworks in teaching reading in English and other subjects.

5. References

- Anderson, R. C. (1994). Role of the reader's schema in comprehension, learning and memory. In R. B. Ruddell, M. R. Ruddell & H. Singer (Eds.), *Theoretical models and processes of reading* (4th ed., pp. 469-495). Newark, Delaware: International Reading Association.
- Ambruster, B., Anderson, T. H., & Ostertag, J. (1989). Teaching text structure to improve reading and writing. *The Reading Teacher*, 43(2), 130-137.
- Arnold, H. (1998). 'I want to find out': what is involved in reading for learning? In E. Bearne (Ed.), *Use of language across the primary curriculum* (pp. 32-40). London: Routledge.
- Beach, R., & Appelman, D. (1984). Reading strategies for expository and literary text types. In A. C. Purves & O. Niles (Eds.), *Becoming readers in a complex society. 83rd. yearbook of the National Society for the Study of Education. Part 1* (pp. 115-143). Chicago, Illinois: National Society for the Study of Education, distributed by the University of Chicago Press.
- Bearne, E. (Ed.). (1998). *Use of language across the primary curriculum*. London: Routledge.
- Beck, I. L., McKeowan, R., Hamilton, R., & Kucan, L. (1997). *Questioning the author: An approach for enhancing student engagement with text*. Newark, Delaware: International Reading Association.
- Carr, E., & Ogle, D. (1987). K-W-L Plus: A strategy for comprehension and summarization. *Journal of Reading*, 30(7), 626-630.
- Carrell, P. L., & Eisterhold, J. C. (1988). Schema theory and E.S. L. reading pedagogy. In P. L. Carrell, J. Devine & D. E. Eskey (Eds.), *Interactive approaches to second language reading* (pp. 73-92). Cambridge: Cambridge University Press.
- Cheah, Y. M. (2003). English language teaching in Singapore today. In W. K. Ho & R. Y. L. Wong (Eds.), *English language teaching in East Asia today: Changing policies and practices* (pp. 351-374.).
- Christie, F. (1998). Learning the literacies of primary and secondary schooling. In F. Christie & R. Misson (Eds.), *Literacy and schooling* (pp. 47-73). New York: Routledge.
- Collers, C., Koay, P. L., Lee, N. H., & Tan, C. S. (2003). *Shaping maths, Coursebook 3A*. Singapore: Federal Publications.
- Derewianka, B. (1990). *Exploring how texts work*. Newtown, NSW: Primary English Teaching Association.
- Fong, H. K., Ramakrishnan, C., & Choo, M. (2003). *My pals are here! Maths 3A*. Singapore: Federal Publications.
- Garner, R. (1992). Metacognition and self monitoring strategies. In S. J. Samuels & A. E. Farstrup (Eds.), *What research has to say about reading instruction* (pp. 236-252.). Newark Delaware: International Reading Association.
- Garner, R. (1987). *Metacognition and reading comprehension*. Norwood, NJ: Ablex Publishing Corporation.
- Gibbons, P. (2002). *Scaffolding language scaffolding learning: Teaching second language learners in the mainstream classroom*. Portsmouth, NH: Heinemann.
- Grabe, W., & Stoller, F. (2002). *Teaching and researching reading*. Harlow: Pearson Education.
- Gunning, T. G. (2010). *Creating literacy instruction for all students* (7th ed.). Boston: Allyn & Bacon.

- Gutierrez, C., & Rogoff, B. (2003). Cultural ways of learning: Individual traits or repertoires of practice. *Educational Researcher*, 32(5), 19-25.
- Heap, J. (1991). A situated perspective on what counts as reading. In C. D. Baker & A. Luke (Eds.), *Towards a critical sociology of reading pedagogy* (pp. 103-139). Amsterdam: John Benjamins Publishing Company.
- Kragler, S., Walker, C. A., & Martin, L. E. (2005). Strategy instruction in primary content textbooks. *The Reading Teacher*, 59(3), 254-261.
- Kress, G., & van Leeuwen, T. (1996). *Reading images: The grammar of visual design*. London; New York: Routledge.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Law, C. H., & Sachidanandan, R. (2006). *Discover maths 3A textbook*. Singapore: Panpac Education Pte. Ltd.
- Lewis, M., Wray, D., & Rospigliosi, P. (1994). " ... And I want it in your own words". *The Reading Teacher*, 47(7), 528-536.
- Liang, L. A., & Dole, J. A. (2006). Help with teaching reading comprehension: Comprehension instructional frameworks. *Reading Teacher*, 59(8), 742-753.
- Lu, J. (2007). *New syllabus primary mathematics 3A*. Singapore: Shinglee Publishers Pte. Ltd.
- Ministry of Education (2008) Science (Primary) Syllabus, Ministry of Education: Singapore
Retrieved February 2, 2009 from <http://www.moe.gov.sg/education/syllabuses/sciences/files/science-primary-2008.pdf>
- Ministry of Education (2007) Mathematics (Primary) Syllabus, Ministry of Education: Singapore
Retrieved February 2, 2009 from <http://www.moe.gov.sg/education/syllabuses/sciences/files/maths-primary-2007.pdf>
- Ministry of Education (2006) Social Studies (Primary) Syllabus, Ministry of Education: Singapore
Retrieved February 2, 2009 from <http://www.moe.gov.sg/education/syllabuses/humanities-and-aesthetics/files/social-studies-primary-2006.pdf>
- Ministry of Education (2009) Approved Textbook List: Primary
Retrieved February 2, 2009 from http://nsintel.moe.edu.sg/project/db/at1/db_puat1.nsf
- Neufeld, P. (2005). Comprehension instruction in content area classes. *The Reading Teacher*, 59(4), 302-312.
- Paris, S., G., Wasik, B.A., & Turner, J.C. (1991). The development of strategic reading. In R. Barr, M. L. Kamil, P. B. Mosenthal & P. D. Pearson (Eds.), *Handbook of reading research* (Vol. 2, pp. 609-640). New York: Longman.
- Palinscar, A. S., Brown, A. L., & Campione, J. C. (1993). First-grade dialogues for knowledge acquisition and use. In E. A. Forman, N. Minick & C. Addison Stone (Eds.), *Contexts for learning: Sociocultural dynamics in children's development*. New York: Oxford University Press.
- Pressley, M. (2002). Metacognition and self-regulated comprehension. In A. E. Farstrup & S. J. Samuels (Eds.), *What research has to say about reading instruction* (3rd ed., pp. 291-309.). Newark: International Reading Association.
- Pressley, M., & Hilden, K. (2006). Teaching reading comprehension. In A. McKeough, L. M. Phillips, V. Timmons & J. L. Lupart (Eds.), *Understanding literacy development: A global view*. (pp. 49-64). Mahwah, New Jersey: Lawrence Erlbaum.

- Pressley, M., El Dinary, P., Gaskins, I., Schuder, T., Bergaman, J., Almasi, J., et al. (1992). Beyond direct explanation: Transactional strategy instruction of reading comprehension strategies. *Elementary School Journal*, 92(5), 513-555.
- Rosenblatt, L. M. (1994). The transactional theory of reading and writing. In R. B. Ruddell, M. R. Ruddell & H. Singer (Eds.), *Theoretical models and processes of reading* (4th ed., pp. 1057-1092). Newark, Delaware: International Reading Association.
- Rothery, J., & Stenglin, M. (1997). Exploring experience through story. In F. Christie & J. R. Martin (Eds.), *Genre and institutions in the workplace and school* (pp. 231-263). London: Cassell.
- Solomon, Y., & O'Neill, J. (1998). Mathematics and narrative. *Language and Education*, 12(3), 210 – 221.
- Stanovich, K. E. (1980). Toward an interactive-compensatory model of individual differences in the development of reading fluency. *Reading Research Quarterly*, 16(1), 32-71.
- Teo-Gwan, W. L., Kwa, S. H., & Lee, S. K. (2001). *My Pals are Here! Science 3A*. Singapore: Federal Publications.
- Tho, L. H., Ho, P. L., & Goh, N. K. (2001). *i-Science Primary 3*. Singapore: SNP Pan Pac.
- Unsworth, L. (2001). *Teaching multiliteracies across the curriculum: changing contexts of text and image in classroom practice*. Buckingham: Open University Press.
- Wee, W. F. (2002a). *In Step: A course in English for primary schools*. Singapore: SNP Pan Pacific Publishing.
- Wee, W. F. (2002b). *In Step: A course in English for primary schools, Activity Book*. Singapore: SNP Pan Pacific Publishing.
- Wing Jan, L. (2001). *Write ways: Modelling writing forms*. Melbourne: Oxford University Press.
- Wong, R. (2003). *Teaching text types in the Singapore primary classroom*. Singapore: Prentice Hall.
- Wood, D. (1998). *How children think and learn* (2nd ed.). Oxford: Blackwell Publishers.
- Wray, D., & Lewis, M. (1997). *Extending literacy: Children reading and writing non-fiction*. London: RoutledgeFalmer.
- Wray, D., & Medwell, J. (1991). *Literacy and language in the primary years*. London: Routledge.
- Vacca, R. T., & Vacca, J. L. (2005). *Content area reading: Literacy and language across the curriculum*. Boston: Pearson/Allyn and Bacon.