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### Using a concept keyboard to improve young children's construction of informational texts

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#### Abstract

Many children do not find it easy to write. They may have difficulty with finding ideas, with sentence structure and/or with the mechanics of writing. The demands of using correct structure in functional writing, considered to be the most important form of writing for children to learn, make these texts even more difficult to create. The use of a concept keyboard as an alternative input device for word processor use, has the potential to help children better structure their writing. This paper describes a research project to investigate the effectiveness of young children using a concept keyboard to assist in creating functional texts.

#### Introduction

Not all children find writing easy. The range of perceived difficulties is long (Cambourne, 1988; Goodman, 1986; Graves, 1983; O'Brien, 1992; Perera, 1984; Snowling, 1985; Walshe, 1981). For example, children may have trouble with the creation or development phase of writing; they may be able to dictate texts but show reluctance to put their thoughts on paper because of inept handwriting (Butler & Turbill, 1984; Graves, 1983), poor spelling, or structural difficulties with sentences and paragraphs (Snowling, 1985).

In particular, children often have difficulties with writing the common forms of functional texts, (e.g. letters, invitations etc.), (Christie, 1986; Collerson, 1988; O'Brien, 1992). Indeed, with the writing of functional texts most children appear to need assistance with structure (Christie, 1986; Collerson, 1988; Rothery, 1992; Sloan & Latham, 1992). As functional texts are those most likely to be used in everyday written communication in childhood as well as in adult life (Collerson, 1988; Wing Jan, 1991; ), it should be useful to identify means by which a teacher can assist children to learn the necessary skills for writing these texts.

#### Children's writing

Over the last 20 years or so, there have been dramatic developments in approaches to researching and teaching writing. A large number of these changes can be related to a shift in

emphasis from the product to the process of writing (Graves, 1975). In this, the work of Graves has been seminal: he suggested that writing was not a single event but rather a process, during which a text might be drafted, discussed, edited and re-drafted a number of times before it was considered to be complete (Graves, 1981). In addition, there has been parallel interest shown in the importance of social context in learning writing (Heath, 1983; Vygotsky, 1978). Both these changes continue to exercise a significant influence on writing pedagogy.

It has been traditional to describe text in various ways and for many years it has been held that of the four broad types of written text (i.e. narration, description, exposition and argumentation) exposition is the most commonly used (Kress, 1982). However, Kress infers that this is not reflected in the teaching of writing; he asks: 'how many school leavers will be

called on to become 'creative' users of language...users of the genres most highly valued in the school, the 'poetic' or literary genres?', (1982, p 125). Indeed, it has been said that the writing most often undertaken in primary schools in particular, is of the narrative type (Collerson, 1988). Collerson (1988), has explained that in primary schools, writing has become synonymous with 'story writing', largely since stories play an important role in the lives of primary school children and because the word 'story' is so often used as a name for the writing session (i.e. 'story writing'). When writing is treated as a curriculum 'subject', the idea of writing taking place in all areas of the curriculum can easily be lost and writing becomes mostly narrative (Collerson, 1988, p 6).

In addressing this situation, there has emerged a school of thought that suggests children should have the opportunity to write many different kinds of texts in all years of their schooling, particularly texts of an expository nature (Collerson, 1988; Derewianka, 1990). It is stressed that teachers need to exercise a positive role to ensure that various text types are taught and that an undue emphasis on 'creative writing' is avoided (Collerson, 1988, p. 8; Christie, 1986). Expository writing has been variously described as: 'the type of writing needed for life', (Collerson, 1988, p 11); the 'type most commonly used' (Kress, 1982, p 125); and, 'a necessary and integral part of the achievement of writing' (Kress, 1982, p 99).

The term genres has, in recent years, come to be used as encompassing all types of written text including narrative and factual. Derewianka (1990, p 19) equates genre with purpose: for example, if the purpose is to provide information then the genre is information report. Here genre is taken to mean the text type

such as a report, a narrative, an explanation, an account, etc., (i.e. as related to purpose) and the term format to indicate the form of the text, such as a letter, science report, news article, historical account, etc., (i.e. related to audience). Within the range of genres available, texts of an expository nature are frequently referred to as informational, functional or transactional and such texts are as described by Perera, (1984, p 216), those 'used to get things done in the real world, to inform, advise, persuade or instruct.' These texts include recounts, reports, procedures, instructions and explanations.

There is little doubt that to be able to convey meaning through writing and more especially to be able to write functional texts effectively is important. If attention is to be given to functional writing, it is of value to consider the place of structure in the teaching and learning of functional texts.

#### Structure

Latham & Sloan (1989, p 6) consider structure in text as a distinct framework unique to a text type and related to that text's particular purpose. Rothery (1985) reinforces this when she discusses the text types, reports and expositions: '...each has different goals and is structured differently to achieve these goals' (cited in Martin, 1985, p 71). Indeed, any particular genre can be partly defined by its schematic structure (Derewianka, 1990, p 7).

Children need to learn to write in a particular genre by identifying and practising its accepted structure. In terms of teaching, this might be encouraged by recourse to a number of standard strategies, for example by modelling and by students practising writing in the correct format (Johnson, 1989; Derewianka, 1990). Knowledge of text structure could also benefit other aspects of children's learning. For example, Jones

and Idol cite evidence supporting the notion that when students are familiar with the structure used in expository texts they are likely to be more successful in comprehension and recall information related to that text type (1990, p 225).

#### Writing and word processing

Much has been written about the use of word processors as an aid to the writing process; in particular, the literature indicates that word processing can provide special benefits to reluctant or less able writers. Particular benefits reported have included:

- improvements in overall quality<sup>1</sup> (Snyder, 1990; Eaton, 1986; Kaplan, 1986; Rosengrant, 1985; Womble, 1984);
- increased output of writing (Dudley-Marling and Oppenheimer, 1990; Dalton & Hannafin, 1987; Crozier, 1986; Fisher, 1983);

- greater learner motivation and increased writing satisfaction (Derewianka, 1990; Snyder, 1990; Crozier, 1986);
- increased learner acceptance of teacher intervention (Snyder, 1991; MacArthur, 1988; Morocco and Neuman, 1986);
- increased peer collaboration (Snyder, 1991; MacArthur, 1988);
- increased levels of revision<sup>2</sup> (Dalton & Hannafin, 1987; Collier, 1981; Daiute, 1986).

However, such findings are not consistently reported within the literature. As Snyder suggests, perhaps the findings of revision studies display the most convergence (Snyder, 1991) whilst those dealing with quality provide the most contradictory messages (Millar, 1984; Duling, 1985; cf, Eaton 1986; Kaplan, 1986).

#### Computers and keyboards

Traditionally, access to a word processor is via a standard qwerty keyboard. Effective use of this keyboard requires a knowledge of its unusual and forbidding layout. For inexperienced keyboard users this takes practice. Indeed, children's lack of ability in being able to use the standard keyboard, often referred to as poor keyboarding skills, may well reduce the advantage of using the word processor for writing (Daiute, 1986; Dybdahl & Shaw, 1989; MacArthur & Schneiderman, 1986; Snyder, 1987).

The Concept Keyboard is an alternative input device now found in many primary schools, which can be used in addition to or instead of, the conventional keyboard. It is a flat, electronic board, with its surface marked into 128 pressure sensitive areas. Each of these areas can be programmed individually or in blocks to produce text on screen. The programming is represented on a paper overlay which is placed over the concept keyboard and when touched, provides the programmed message on the computer screen. When areas of the concept keyboard are grouped, a larger target area is provided on the overlay in which words, pictures, symbols or three dimensional shapes can be used to indicate the matching text programmed for each area. Consequently, it might be expected that use of the concept keyboard could reduce: (i) the need for children to concentrate on the mechanics of their writing; and, (ii) the need for children to have well-developed conventional keyboard skills.

The system is flexible in that overlays can be produced quickly to meet the changing needs of an individual child. For example, it is possible to create an overlay which provides scaffolding to encourage use of correct text structure in writing. This might be achieved by careful placement of text options together with possible colour-coding of text, on the concept keyboard overlay. Also, it is possible to include on an overlay, those words which

a child recognises but finds difficult to say or spell, facilitating writing of an acceptable form. An alphabet can also

be included on the overlay, encouraging a child to write freely without having to laboriously search the standard computer keyboard for the letters needed.

The concept keyboard appears to offer a means of overcoming children's lack of standard keyboarding skills and thereby alleviating some of the difficulties children face in creating texts. With appropriately designed overlays, it may also be possible to provide specific assistance with the creation of correctly structured functional texts.

#### Writing and the concept keyboard

There are few research findings regarding the benefits of the concept keyboard as an alternative input device for word processor use. Much that is available in this area is characterised by anecdotal record. For example, Ward (1986), Read (1986) and Dyson, et al, (1988), report the use of a concept keyboard for particular learning disabled children. Johnson (1989) describes examples of concept keyboard use for language development with young children and suggests that such use can lead to greater writer independence; she also describes use of the concept keyboard specifically as a scaffolding device for writing.

#### The study

The study set out to investigate whether children using a concept keyboard produced better structured writing of recounts (i.e. a text form of the functional genre) than when they use conventional classroom methods such as pen and paper or word processor with a qwerty keyboard.

Twenty-eight year 5 children at a north metropolitan primary school were chosen as subjects for a case study<sup>3</sup>. All children provided a sample of writing in two formats of the text type recount, (i.e. a letter and a science report<sup>4</sup>), at each of four phases in the data collection. For each format and at each phase, these samples were analysed to determine the degree to which they met the criteria for the text type recount based on Sloan & Latham (1992), Derewianka (1990) and Wing Jan (1991). Analysis was completed for individuals and profiles established for each child to chart the nature and amount of writing development over the four phases.

At the first phase in the data collection, children created the texts without previous instruction to determine their existing skills. At phase two they wrote similar texts after being taught

to write a recount by the method and strategies typically used by the classroom teacher. For both these phases, children were free to produce their texts by hand or by use of a word processor in accordance with normal classroom practices<sup>5</sup>.

In the third phase all children completed a text in each of the two forms using the concept keyboard with appropriate overlays designed by the researcher. Revision of schematic structure for recount was provided by the teacher, as part of normal classroom instruction. In addition, deliberate guidance in structure was provided on the concept keyboard overlay via, (i) colour coding to indicate the three main elements of a recount (i.e. orientation, chronological statements and closure); (ii) provision of 'time' words (i.e. for chronological statements); and, (iii) helpful layout of words and phrases to assist with sequencing. In the final phase, children provided their two respective samples of writing using the concept keyboard but with overlays not specially designed to provide guidance for structure<sup>6</sup>.

The analysis of the data collected has still to be completed and will form the basis of a further paper. However, it is already becoming clear that given the on-task support provided by the use of the concept keyboard (i.e. direct support to the creation of correctly structured texts) most learners create significantly better texts of this genre. However, when this direct support is removed, some learners revert back to writing poorly structured texts, even although they continue to use the same medium (i.e. a concept keyboard). In this case, it would appear that some children used the support of an overlay without reference to meaning. For example, some children would identify the correct sequence of text by its colour code; when this code was removed (i.e. at the final phase of data collection), similar text was not sequenced appropriately.

The full range of findings from this research project will be made available within 2-3 months.

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1 Such improvements have been found to correlate with children's  
willingness to revise texts (O'Brien, 1984; Case, 1985).

2 However, Daiute (1986) and Dudley-Marling and Oppenheimer  
(1990), amongst others, have shown that frequently only low-level  
revision occurs, especially with inexperienced writers.

3 Year 5 children were chosen since they are still developing  
skills in writing functional texts and yet would not likely show  
concern about using a concept keyboard for writing.

4 The two formats, letter and science report were chosen as  
representative of the personal (subjective) and distant  
(objective) texts, respectively, mentioned by Perera (1984).

5 During 'writing lessons', it is standard classroom practice for  
approximately 24 (out of 28) children to prefer to write by use  
of a word processor rather than by hand. A small number  
sometimes choose to write by hand if a computer is not available  
when they are ready to write; the remaining children consistently  
choose to write by hand in preference to the word processor.  
There are three computers in the classroom available at all  
times, each running a word processor.

6 It was decided to use the concept keyboard for completion of  
this final phase of writing, to avoid issues that might otherwise  
arise if children returned to text creation by hand or word  
processor use, related to specific transfer, near-transfer or  
negative transfer of skills and domain knowledge .