

# Demonstrating CobWeb – An Innovative Writing Environment for Children

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**Abstract:** This is a demonstration of a handwriting recognition based writing environment for children aged between 6 and 9. The design of the writing environment is outlined and reference is made to some of the usability issues that had to be overcome to produce a workable prototype. The software that is demonstrated shows the immediate usability of the interface and presents some of the training applications that were implemented to support the children.

## Introduction

The process approach to writing is the approach currently favoured for composition activities within school curricula; this method emphasizes the planning, drafting, editing and publishing of written work (Graves 1983). This approach is well suited to word processing and text manipulation as the relative ease with which words can be moved, deleted and inserted makes revision and editing very straightforward (White and Arndt 1991). Research on the effects of word processing on children's writing produces mixed messages; it is suggested that the high visibility of the text results in more discussion (Kurth 1987), but there is little evidence to suggest that children make anything more than surface word edits once they have written their stories (Hult 1986).

Watching children writing with pencils and paper, it is evident that the determination of the appropriate grammar, the choice of punctuation and concerns over the spelling of individual words cause different levels of anxiety amongst young writers. Some children become anxious about these things but it is more common to find them 'trying out' their ideas and making their own spellings. When children write at the QWERTY keyboard they have been seen to be more anxious about spellings and less work is produced than when writing with pen and paper {paper under review}.

Research has indicated that children who use cursive handwriting become better at spelling; one reason for this is that a record of the movement that the child makes when handwriting is stored in a different section of memory than the visual image (Bearne 1998).

Handwriting recognition technology relies on the electronic capturing of pen strokes using a graphics tablet, digital paper, or a touch sensitive screen. The resultant pen strokes are then 'recognised' and ASCII text is produced. This recognition process relies on the characters being correctly formed by the writer and even then, there may be errors due to the similarity of certain characters.

## The Design of CobWeb

The handwriting recognition based writing interface that is presented in this demonstration uses a graphics tablet and pen, attached to a regular PC. The software has been developed using Visual Basic® and the Calligrapher SDK®. The acronym CobWeb was used as it was an abbreviation for Computer Based writing environment as well as indicating the ‘scribble; that can sometimes be the result of children’s writing!

The application being demonstrated comprises two parts, a training system, and a handwriting text entry screen. The handwriting screen has links to other screens where the child can plan their stories – thus supporting the process approach.

The writing interface is uncluttered as work by the authors has indicated that when the pen is being used both as a writing tool and a selection tool, there is a propensity for mode errors. This has led to the placing all the controls to the application at the bottom of the screen (Read, MacFarlane and Casey 2002).

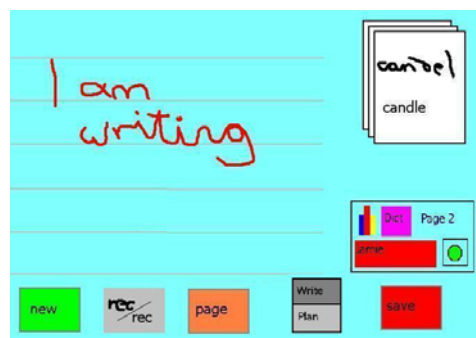


Figure 1: The Writing Interface

The writing space includes ruled lines to assist the children in their work, and it is as large as possible as children have indicated that they want a large writing space. On the right hand side of the main writing screen – a ‘post it notes’ space is available that can be used for spellings, pictures, notes or other ‘aide-memoir’ s’.

There is a fully functional training application which provides video instruction on how to use the application, practice on using the pen for writing (using a practice screen) and a method for determining whether or not the recognition component will work for any particular child.

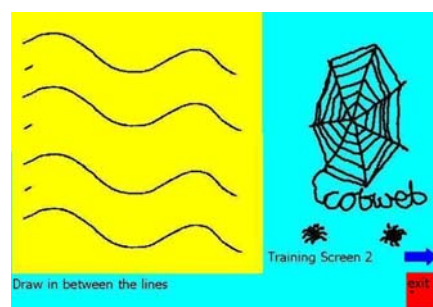


Figure 2: One of the training activities

The demonstration of this software shows the training screens, the planning screens and the writing screens. It incorporates all the functionality that is normally expected from a research prototype. It can be operated by

adults or children using a standard PC and a graphics tablet. Trials using the application on a tablet PC are currently underway and the tablet version may also be available at the demo. It is too early to say whether or not the children's writing is improved by extensive use of the interface, but it is apparent that the handwriting of the children is improved as they realize that for good recognition, their letters have to be formed in the correct way.

## References

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