

The Possibilities for Digital tools for Writing

Most children find learning to write to be a difficult task; in order to construct a piece of writing, the child has to decide on a storyline, select appropriate vocabulary and grammar, arrange the words with respect to punctuation, decide how to spell words (sometimes making substitutions of words at this point when a spelling is perceived to be too difficult), and finally, he has to physically commit the words to paper.

When children learn to write, they traditionally use a pencil and paper for this physical process and, as they gain competence, they are then encouraged to enter their work into word processing software so it can be edited. Most children eventually become able to construct writing directly at the keyboard as well as on paper. It can be argued that keyboard competence is necessary for mature writers, however, contrary to the view of many technology enthusiasts, the keyboard is not be a particularly good tool for young writers who are still learning all the processes. There are problems with the layout of the keys, possible ergonomic problems that have not been fully researched and the presentation of the writing (in a computer font) may have an affect on the child's understanding of plot and form. One advantage of writing with a pen rather than typing at a keyboard is that for children who are learning to write, the movement involved in forming letters with a pen supports the development of good spelling

Recent technologies including Tablet PCs, Personal Digital Assistants (PDAs) and Digital Pens all offer interesting alternatives to traditional pen and paper; preserving the use of the pen for input whilst allowing for some digital manipulation of the writing once the story has been written. These technologies have not been especially well researched with respect to their usability in classroom environments (surprisingly, neither has the QWERTY keyboard!) and so we have carried out a small investigation of their relative usability with children aged seven and eight in a UK Primary School

The Tablet PC

This was set up to work just like pen and paper, that is, the child was able to write using the stylus (pen) on the screen (paper) that was lined and scrolled down if there was too much writing to fit on the page. Children who used this method seemed to have no problems in using the device to write although watching them, they adopted some strange writing positions as they attempted to see the screen and reach the tablet at the same time. They were able to use the device with very little instruction and only needed help to save their work once they had finished.

The Personal Digital Assistant

We looked at two PDA applications, a cut down version of Microsoft Word® which uses a transcriber tool to change each handwritten letter into ASCII text, and a note-taking tool that saves the handwriting as an image. The children found using the application that ran Microsoft Word® very difficult to use as they were unfamiliar with the transcriber tool and its' functions. They had problems in editing the text they had written as it was unclear how to delete any mistakes that were made. The handwriting recognition struggled with the children's handwriting and quite frequently got the letters they entered wrong. In addition, because the children wrote quite slowly, the software kept putting extra spaces in their words. While this was amusing at first to the children, it soon began to irritate them, again especially because they had such problems repairing the mistakes.

The note-taking tool was the preferred choice of software on the PDA because the children could simply write. However, this application was not without problems; with such a small screen being used, the children found that they had to mostly write one word to a line, which did not help them when trying to write a story. This was not helped by the need to do a lot of scrolling to see what they had previously written.

Using either application, the children struggled to write any kind of stories due to the difficulties they had with the device. One major problem with the PDA was that as the children had such small hands, it was hard for them to write without leaning on the PDA and as the PDA is a touch screen device, whenever the screen is touched unintentionally, additional marks appear on it; the children found this confusing and irritating.

The Digital Pen

The children wrote their stories with digital pens in exactly the same way as if they were using normal pen and paper. This meant that the story quality was unchanged and the children had a paper copy of the story they had written. Using the digital paper, at the end of every page, the user had to tick two boxes to send the writing to a computer and to say that they had finished the page. The children had no problem with this. Once a child had finished their work, the pen was attached to a PC and their story was downloaded from the pen giving them an exact digital replica of what they had written on the paper.

Implications for Learning and Teaching

The PDA was generally unsuitable for the task; there may be other applications for which it can be used by children use but story writing is not one of them! The tablet PC and the digital pen were both very easy to use, the text was highly visible and the potential for later recognition of the writing, and the possibilities for investigation of the writing processes, make them both attractive. We are currently carrying out a large study into the extended usability of these two devices in the primary writing classroom.

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