Reading with new technologies:
How do CD-ROM storybooks affect young children's attitudes towards
reading?

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Abstract
The advent of CD—ROM and multimedia technologies has provided a new
reading resource — the interactive 'story book'. This paper describes
the potential benefits of young children using storybooks to improve
both their performance in, and their attitude towards, reading; it also
describes how young children interact with story books and how their
reading of them is likely to differ from their reading of traditional
books. This paper also presents some of the findings from two
investigations currently being conducted into the use of CD—ROM
storybooks, by staff and research students at Edith Cowan University.
With rapid growth in the use of interactive story books, both in the
home and school settings, these findings should be of central interest
to both teachers and parents.

Reading and computers
We know quite a lot about children and reading; for example:
•not all children like to read;
•Not all children are receptive to the four main approaches to reading
in Western Australian and other schools — e.g. Basal Reader;
Individualised Reading Scheme; Language Experience; Eclectic approach;
•Current practices in teaching children to read often overlook the
importance of motivating children to read (Wallace, 1992);
•Reluctant readers associate books as boring and functional (Pilla,
1987).

Using computers to help teach reading is a technique that has been
applied since computers were first introduced into schools some 15—20
years ago. Computers are perceived as motivating for reluctant readers;
as being well suited to breaking the reading act into component parts,
a notion congruent with some reading process models (Lesgold, 1983);
and as providing frequent feedback on progress. It has been suggested,
however, that to date, the use of computer technology to help teach
reading has largely concentrated upon word recognition skills and not
upon higher order reading skills such as comprehension (Miller, et al,
1994). As such, the use of computers has also failed to reflect recent
trends towards holistic approaches to teaching reading, with the
provision of quality children's literature to foster reading ability

and interest (Hladczuk and Eller, 1992).

Storybooks
The advent of CD–ROM and multimedia technology has been seen by some educators as providing the means to address such omissions. For example, such technology allows for the integrated use of text, static and animated graphics, video, sound and music. There are various examples of CD ROM interactive story books available and from a range of publishers. In addition to the well–known examples from Broderbund (e.g. Just Grandma and Me; New Kid on the Block), and Discis Books (e.g. Scary Poems for Rotten Kids; Moving Gives Me a Stomach Ache), there are others available from different publishers. Currently, at least 8 publishers offer CD ROM story book titles. Discis 'Kids Can

Read Interactive Story books Series' offer perhaps the best examples of this new reading medium. Story books are complete books made accessible on a computer, that provide help and support in the reading process on demand by an individual reader; in particular, they provide a range of features that facilitate the learning of meaning in text. For example, story books allow a reader to have the text read aloud by a human voice (either male or female), either as the complete text or selected parts of the text. They also encourage the exploring of the text though both fixed and animated graphics.

Figure 1. A page from Broderbund's Just Grandma and Me

A story book can be personalised by each reader according to their preferences. For example, customisation can specify which of the mouse options (i.e. click, double-click, or press and hold) will access assistance for the reader in the pronunciation of words and syllables, in the provision of word definitions and in the use of graphic-word recognition. Also, a menu option ('Recall') tracks all words for which a reader requested assistance in any one session, providing a useful record keeping function for later reading diagnosis.

All these features of story books facilitate unconditional access to the type of assistance that might normally be expected in a one-to-one teacher–to–child learning situation. Furthermore, the learner is placed in the controlling position being able to explore text according to individual need and want.

It is worth considering here, that interactive storybooks use the models provided by traditional books – that is, reading is seen as a linear process, where readers progress from page to page and in one direction, according to the plot as it determined by the author. Storybooks could just as easily support a different kind of reading process, where readers follow a more dynamic pathway through the text, using hypermedia links to tract and even construct their own story from

the text offered. In this context, readers could repeatedly read the same storybook, following a different pathway through the storybook on each reading.

Figure 2. A page from Discis book, Heather Hits Her First Home Run

Storybooks and reading
'The best form of reading program provides children with the opportunity to explore the widest range of books possible and to read them independently' (Holdaway, 1980). However, to date, computer based developments for teaching reading by such holistic methods have been extremely limited. Furthermore, reading storybooks aloud to children is recognised as a crucial component in total literacy development (Teale, 1981). However, in classroom settings the practice of reading aloud gives very little control of the learning process to the child: the child cannot easily stop the teacher and ask for the meaning or pronunciation of a word.

The use of story books perhaps provides an unique resource that best addresses these two points. In addition, story books provide other features that seem ideally placed to promote new ways for learners to interact with text and to help advance reading skills. For example, children can obtain feedback whenever they make a miscue (particularly one which interferes with their comprehension of the plot or characters) allowing them to get help with the pronunciation of a word or phrase, for example. Furthermore, the words and phrases of the

storybook are highlighted when they are read by the computer, facilitating audio-visual recognition and thereby reducing the level of difficulty of the reading task. Also, feedback obtained from the computer is always non-judgemental (unlike some teachers' feedback). Finally, the control given to the child in controlling their interaction with the text, allows them to reflect freely upon various aspects of their reading - for example, on the meanings of words.

Medium or message?
It is perhaps worthwhile to counsel caution about the likely effects of storybooks on young children's attitudes towards reading. From an earlier study, it was found that children of Year 2 (6-7 years), much preferred reading books from Broderbund's Living Book series than reading traditional books - perhaps not a surprising finding, particularly when the multimedia experience was new to the children and introduced over a short time-span (3 weeks). However, what this earlier study failed to do was to distinguish between children's enjoyment of the task and their enjoyment of the technology. It is important to discover if children enjoy the task of reading more using the new media because, perhaps, that media makes that task itself more accessible. If the positive effect is carried by the media alone, then once that media

is either removed or becomes the norm in children's experiences, the
effect will become much less and perhaps even negligible. If, however,
the reading task is made more enjoyable, then the effect is more likely
to last.

This issue might be compared to the use of word processors in schools —
initially children were motivated to write using a computer simply
because it was a computer and its use was both a novelty and a means of
doing something 'special'. But once writing using computers became the
norm (as it now has for some children in some schools), we find that
writing using the electronic medium is enjoyed not for its novelty
value but because the task is made easier and more accessible with
children often perceiving that word processors make them better
writers. In other words, children form positive attitudes towards the
writing task using the word processor rather than to the technology,
per se.

Figure 3. A text page from Discis book, Heather Hits Her First Home Run

Improving reading performance using storybooks
There are specific characteristics of storybooks that might be expected
to impact favourably upon children's reading skills and performance.
For example, the visual cues provided in storybooks might help children
develop their comprehension of texts. When children read, they form a
mental model of the story which they are reading and illustrations
integrated within the text can help children enrich that model . For
example, when single pictures (perhaps providing the opening scene of
key parts of the story) are provided to the young reader, we know from
research studies that they have an enormous impact on their
understanding of plot, character and events by the time they have
completed their reading of that story — they better comprehend the
story.

However, not all storybooks provide the same type of illustrations or
visual stimuli. For example, Broderbund's Living Book series are
storybooks that provide multiple and disparate images which are often
only incidentally relevant to the text . It is highly likely in this
case, that the type of images provided will detract from children's
comprehension of the story and interfere with their reading. This
hypothesis is currently being tested with children of Year 3 (7-8

years) and early findings tend to support it.

Also, the fact of reading from a screen might interfere with children's
reading performance as well as their attitude towards electronic books —
research into the physiological effects of reading using an electronic
medium suggests that people get anxious and nervous when reading from
computer screens for any length of time; and that most of us prefer to

read from paper. Indeed, until the resolution of screens gets considerably better than it is currently, children are unlikely to show conscious or unconscious preference for reading from computer screens.

An investigation into the benefits of storybooks
It would seem sensible to suggest that story books are useful resources in the classroom and that children who are exposed to them will benefit in some way. As a focus for an investigation into such benefits, two studies are currently being conducted by staff and graduate students at Edith Cowan University that target young readers and in particular, reluctant readers. The findings of these investigations will identify the benefits that storybooks have for young children, in terms of reading performance as well as reading attitude. For example, there are substantial numbers of children who can be classified as reluctant readers — children who, at an early age, demonstrate a reluctance to read traditional reading materials. If we are to improve these children's reading skills and performance, we must first find a way to help them develop a more positive attitude towards their reading.

The following questions have been framed, to guide our investigations:
1What can be learnt about a child's reading strategies when using story books?
2How does a child interact with a story book in their reading of it?
3Does the use of story books lead to significant improvements in children's reading performance when compared with their reading of traditional books?
4Does the use of storybooks as a strategy for teaching reading encourage reluctant readers to demonstrate more positive attitudes towards reading?
5Are the attitudes developed by both reluctant and willing readers in their reading of storybooks more positive than those demonstrated towards their traditional reading material?
To explore these questions, we have put into place two parallel investigations: one that targets the wider use of storybooks over a relatively long period of time (64 children, over 8 weeks); and one that is concerned to investigate the use of storybooks in greater depth (targeting only four children, over about 8 weeks). Resources for both investigations include 6 multimedia computers, together with 16 Discis storybooks and 8 Broderbund storybooks. All children are aged 7–8 years (Year 3).

Full details of these investigations and their findings will be published elsewhere. However, some of the early results to come out of the projects to date are presented below.

●Those children who can be classified as able readers (i.e. the majority of children in these studies) were initially motivated by the use of the storybooks but over time this motivation declined. Towards the end of the studies, these children generally preferred to read traditional reading materials rather than electronic storybooks. They

found that the process of reading storybooks was a different one to reading paper books and the amount of distraction (visual and audio) detracted from their enjoyment and their reading rhythm. In other words, it seems that willing and able readers, who have already 'cracked the reading code', do not need the supports provided by the

CD–ROM storybooks.
●All children classified as less–able readers preferred to read storybooks rather than traditional reading materials – because they found reading easier when provided with the reading supports in the storybooks. Initially these children were motivated by the use of the computer itself and at the end of the study were found to be motivated by the reading task (and, of course, the facilities in the storybooks that made that task easier and more under their own control).
●Although all reluctant readers were found to improve attitudes towards their reading of storybooks, this change of attitude only transferred to their reading of traditional materials (paper books) for some children. It may be that other reluctant readers needed more time to develop greater success and independence in their reading of storybooks before they could enjoy their reading of traditional materials.

The attitudes of willing readers to the reading task have, as yet, showed no development – they have maintained a willingness to read and have continued to enjoy it as they did prior to these studies. In other words, the storybooks made no difference to them overall; except that they preferred to read traditional reading materials after their initial experience with CD ROM storybooks.

● It seems that storybooks do have a beneficial effect on the reading performances of all children – in other words, the use of storybooks over time, does lead to children developing a larger vocabulary, greater understanding of word meanings and a greater comprehension of story plot, characters and events.

Conclusion
It would seem then, that some types of storybooks (not all) do have something to offer young children in their development of reading skills and attitudes. However, the full implications of the findings described above, as well as other findings that are yet to emerge from current investigations into the use of storybooks, are reserved for publication elsewhere. This paper simply serves to draw attention largely to the potential effects of using CD–ROM storybooks with young children.

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