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Section A: Teaching and Learning

What Can We Say about 112,000 Taps on a Ndjebbana Touch Screen?

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Abstract

This paper reports on the use of touch screens to display simple talking books in a minority Indigenous Australian language. Three touch screens are located in an informal context in a remote Indigenous Australian community. The popularity of the computers can be explained by the form of the touch screen and by the intertextual and hybrid nature of the talking books. The results suggest the Kunibídji choose to transform their own culture by including new digital technologies which represent their social practice.

Introduction

As the relationship between computers and language learning is becoming more integrated (Warschauer, 1996), a new electronic literacy is developing (Warschauer, 1999). Computers have been used to promote the teaching and learning of English with Indigenous Australian students (Steen, 1997; Fryer, 1987; O'Donoghue, 1992). There are only a few studies which report on the computer being used to support Indigenous Australian languages (Dench, 1991; Darvall, 1986) and culture (Henderson, 1996; Nathan 2000; Tafler, 2000). The majority of the studies of computer use by Indigenous Australian students have been conducted in the school context (Woodside, 1985; Fleer, 1989; Coldwell, 1988).

This study takes place in Maningrida with the Kunibídji people who all speak Ndjébbana as their first language. About 200 Kunibídji live in Maningrida, along with1800 Indigenous Australians and 100 Balanda (non-Indigenous Australians). This study investigates the use of the computers to support the teaching and learning of Ndjébbana in an informal setting. For the purposes of this study electronic Ndjébbana Talking Books were created and displayed on touch screen computers placed in the children's homes.

This study is important as it exposures the Kunibídji children to electronic literacies in their first language.   As the number of Indigenous languages is rapidly decreasing (Dixon, 1991; Kraus, 1992), the study will provide knowledge about whether the Kunibídji choose to use the computer to access the Ndjébbana Talking Books on the touch screen computers. As the electronic literacies are becoming a new powerful global discourse (New London Group, 1996; Warschauer, 1999:10), the Kunibídji should have the choice to access these new literacies in their first language for their empowerment.

Project methods

For the purposes of this project, 96 Ndjébbana Talking Books were created in Macromedia *Director*®, a multimedia-authoring program, using digital cameras, scanned pictures, recorded sound and text. The Talking Books are displayed on special Apple Imac computers with a touch screen over the monitor. This means the students can access the electronic talking books without the need for a mouse or keyboard as touching the screen is the same as clicking the mouse. The interface of the touch screen is completely in Ndjébbana and operated in an off-line environment. There is no menu across the top of the interface in English and the Ndjébbana Talking Books begins as the touch screen starts up.

A button displaying the picture and title represents each talking book. As the print literacy of the children reading the books is limited, the buttons were made fairly large, with six of these on one screen. There are 16 pages, each with six buttons for six different books. These are presented in a cyclical fashion so there is no first or last page. There are arrows at the bottom of the screen which turned another 'page'. Turning over page 16, the children come to page 1 and *visa versa*. When the children quit a book, they are sent randomly, by the touch screen, to one of these pages of buttons. This was part of the design of the Ndjébbana Talking Books so that children would become familiar with the different buttons available.

When the children press a button the specified book is opened. Each Ndjébbana Talking Book is presented as a series of pages with elements of text, sound and pictures. Each page has a picture and some text. When a page is opened, the sound plays and each word of the text of that page highlighted as it is read. There are three buttons at the bottom of each page, two for turning the pages and one to stop the book.

The stories in the Ndjébbana Talking Books reflect the range of Kunibídji lifeworlds and social practice. Some Ndjébbana Talking Books report the many trips to the Kunibídji country where links with the land and sea are reinforced, while others are of daily life in Maningrida.   These stories were captured on digital camera. From these pictures texts were developed, and then sound recorded. Other Ndjébbana Talking Books were made from colouring the black and white pages from old Ndjébbana printed books made over 20 years ago.

Embedded in the design of the Ndjébbana Talking Books is a series of counters. The counters are activated by opening a book, turning a page in a book or by turning a page of buttons. The book number, page and time are recorded, as well as the button page and time. However, the batteries operating the clock went dead half way through the project, so the times recorded are wrong. These counters did provide data on which book was opened and what button pages were flicked through before the next book was chosen.

There were several reasons for collecting these data. Firstly, due to the informal context of the study, it would show whether the children wanted to access the computer at home. While they appear to enjoy using the computers at school, they may be only a marginally better choice than listening to the non-Indigenous teachers speak English. The results would tell us if the children like accessing the computers around their houses. A second reason was that the data would reflect the independence of the children's access. The children were not observed in this study around the touch screens. The quantitative data from the counters were the only data

recorded, which was invisible to the Kunibídji using the computer. A third reason for collecting these data was that the results would give the Kunibídji a voice about the use of touch screens in such a context for their own language purposes. All the individual interactions with the computer can be aggregated to provide the rest of the world with a message from the Kunibídji.

Results

The results from the interaction around the touch screens are listed below. There were three computers.

Location	Dates available	Days available	No. of taps
1	25/11/01-10/1/02	47	76508
2	25/11/01-9/12/01	15	20763
3	23/12/01-10/01/02	18	15209

- § Number of days the touch screens were in the houses: 80
- § Number of button pages accessed: 45,614
- § Number of pages of Ndjébbana Talking Books accessed: 66,671
- § Total taps on the touch screens: 112,480
- § Number of times the buttons to book links were touched: 11,214
- § Number of times the book to button links were touched: 10,585

While the results show the popularity of each book, they are not presented here, as the variation of text sound and pictures makes analysis complex. The complexity and length of the text was different between books. Younger children spoke in some books, while adults spoke in others. Digital photographs and hand drawings were used as the pictures in different books. The age of the photographs, texts and sound varied as well. Trying to work out why a book was popular was difficult with these confounding variables. The results do not explain who used the books. Parents have told me that the children were the main users; however adults were sometimes watching and telling the children to open specific books.

Discussion

The popularity of the touch screens and of the Ndjébbana Talking Books is discussed below. The results are examined from a variety of perspectives to explain why the combination of touch screen form and Ndjébbana Talking Book content was a successful way to approach Computer Assisted Ndjébbana.

The Kunibídji formed a strong relationship with the computer. There are two elements to the Kunibídji relationship with the touch screen. First, the touch screens were displayed near where English videos were shown on television. This gave the children a choice of two languages. Lee and Brown (1994) suggest agency is a 'gathering of things in which our humanity is said to reside'. The large numbers of interactions with the touch screen may be a function of children choosing to access Ndjébbana on a new medium. The Kunibídji's interaction with contextualised resources on the touch screen suggests that
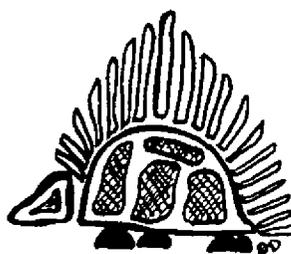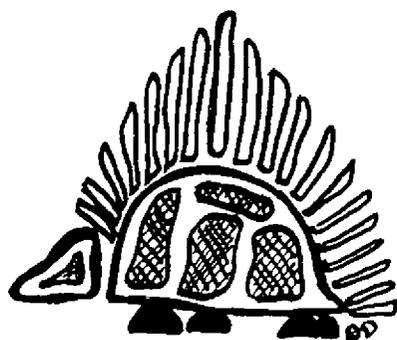
simple Ndjébbana Talking Books compete rather well with television.

A second feature of the interaction with the touch screen is the large number of taps on the button pages. From the results, 40% of the interaction with the computer was turning the button pages to access specific books. This result could be seen from two perspectives. Firstly, the large number of books gave the Kunibídji a choice of books to access. One person could stay at the computer a long time to read all the books. The large number of turns of the button pages could be seen as the user learning to navigate through the large number of books. A second way the figure could be explained is the contextualisation of the resource to the user. While all the books were in Ndjébbana, they could be contextualised even further by choosing books that were read by relatives or had images of relatives on specific pages.

The results also suggest the transformation of the computer has been successful. Transformations are the basis of any successful networks (Latour, 1999:15-16) and in this case the computer has been transformed to accommodate its new use by the Kunibídji. The computer was transformed from a single user, interconnected machine in a school or office to a multiple-user touch screen displaying contextual literacy resources on demand. If the high number of taps on the touch screen is a measure of its success, then the transformation of the computer is important in providing access to the Talking Books by a large number of Kunibídji. Levy (1997) suggests the computer needs to be transparent, which was achieved in this project by the creation of simple Ndjébbana Talking Books presented on the touch screens located in an informal context.

The results suggest the transformation of Kunibídji social practice is also occurring. While the results could be used to support a repetitive learning style, as outlined by Harris (1980:84), the interaction with the computer is best described in a willingness by the Kunibídji to be transformed by a new technological literacy. Transformed

practice as defined by the New London Group (1996) as 'transforming meaning to work in other contexts or cultural sites'. The results demonstrate how Kunibídji can be constructed as 'masters at transformed practice' (Nakata, 2000:119). From the results, the Kunibídji are choosing to use simple electronic literacies to support the teaching and learning of Ndjébbana. However, implicit in the development of the Talking Books are Indigenous and non-Indigenous collaborations which transform the available literacies of both groups. When the Talking Books on touch screens are available to the Kunibídji in their homes, these informal contexts are transformed into sites where Kunibídji social practice is represented by a new digital literacy.
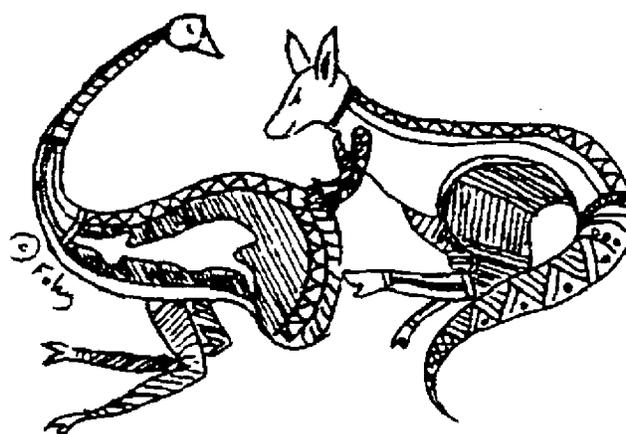
The independence of this transformation is important. While the design and creation of the Talking Books were reliant on collaborative Indigenous and non-Indigenous partnerships, the Kunibídji independently accessed the finished Ndjébbana Talking Books on the touch screens. The results demonstrate the Kunibídji's choice to learn new literacies which will transform their situated practice. Whether linguists have been criticised for 'reducing Pacific languages to writings' (Mulhauser, 1990) or promoting a literacy that 'reflects the truth' (Mulhauser, 1996), the Kunibídji choose to read the writings of the Talking Books which contain a new intertextuality

The popularity of the Talking Books may be described by their intertextuality. Kristeva (1980:69) identified intertextuality as a process of connecting texts to other texts and connecting the reader to the author. The Ndjébbana Talking

Books connect the user of the computer to the reader of the text. Because the reader's voice can be identified, the user of the touch screen can connect to the reader through a myriad of relationships. The intertextuality of this new sound channel means the users are more connected to digital texts than printed books.

The intertextuality of linking texts to each other is also found in the results. There were 11,214 buttons tapped to link buttons to books and the books were linked back to the buttons 10,585 times. This intertextualisation of a Kunibídji cultural resource means different users could find a book to suit their needs. This connectedness of different Kunibídji to a range of Talking Books may be important in explaining the high frequency of use of the touchscreens.

Along with intertextuality, the hybridity of the resource needs to be established. The hybridity draws on the available designs of meaning to make new ones (Cope and Kalantsis, 2000). Both oral and written Ndjébbana were valued in the production of the Ndjébbana Talking Books in a collaborative process between Indigenous and non-Indigenous people. Young children who were learning to speak Ndjébbana were constructed as valued contributors when their reading was recorded and used in the pages of the books. Older Kunibídji with a strong oral tradition became active contributors to the new hybrid texts. Some older Kunibíjdi, who could not read, were happy to repeat the text after another person read the text. When the Talking Books were completed, children could hear these older people read the stories and watch the text highlight each word as it was read. The situational and participatory nature of oracy (Ong, 1982:45-50) is reflected in the design of the Ndjébbana Talking Books contributing to their hybridity. The Talking Books represent a hybridity between oral and printed Ndjébbana, which valued every Kunibídji as a potential contributor.

Implications

There are several implications of the results of this study. The first implication of this study concerns two-way education. One of the dilemmas of parental demands of Indigenous Australian children is that they should respect the Indigenous way while being powerful in wider society by being critically literate (Parkin, 1997). This computer may be able to satisfy both demands on Kunibídji children, when their culture is constructed as 'dynamic, open and forever undergoing transformation' (Cope and Kalantsis, 2000:205). The acceptance of the computer displaying Talking Books in their houses suggest the Kunibídji children are learning more than cultural identity and the skills of print literacy in their first language. They are exposed to understandings of multimodality and socio-technical literacy, which will provide strong foundation in critical social literacy. The acceptance of the touch screen suggests the technologising of Ndjébbana is a path the Kunibídji intend to pursue. As we move to 'superculture in a communication age' (Lull, 2000), the Kunibídji are carving out their own digital space where Ndjébbana language and Kunibídji culture are represented in a unique off line environment.

The second implication comes from the Kunibídji voice behind the results. This is important, as many alienated minority groups have trouble articulating and realising their own research interests (Ivanitz, 1999). The Kunibídji have spoken by collaboratively creating the 96 Ndjébbana Talking Books and their voices are also embedded in the demonstrated machine agency with the touch screens. Using a broad social semiotic perspective, as outlined by Kress (1985: 99), the creation and interaction with the Ndjébbana Talking Books is systemically meaningful. The results suggest the Kunibídji value the Ndjébbana Talking Books on touch screens in an informal context. This unique form of media provides new possibilities in a flexible mode of delivering Indigenous issues back to the community. The archival role of the touch screens may have some application in storing

reports which are presented on demand in an accessible form.

The final implication is the transferability of the study to other two-way learning programs. Barson (1997) suggests the form and design refer to the product or process of project-orientated approaches to computers. Given the diversity found in Indigenous Australian education (Davies, Grove and Wilkes, 1997; Partington, 1998), the form or product relating to the Talking Books on the touch screen may have limited transferability. This range suggests a similar transformation of the computer may not be the best solution for another minority Indigenous Australian language program. Warshauer and Donaghy (1997), for example, highlight how an Indigenous people who speak a common vernacular language in more than one location can use the computer in a connected way to create and communicate texts.

The stages of design, creation and presentation of this project may have some use when planning to implement computer-assisted language for a minority Indigenous Australian language. Part of the reason for such a large number of taps on the touch screen is due to keeping the phases of design, creation and presentation separate. The design phase of this study began by identifying the 'sociotechnical practices that construct what counts as the ability to read' (Bruce, 1997) and then using specific software and hardware for the project. The creation phase matched the computer's capabilities to the demands of the specific Indigenous language-learning context (Wyatt ,1988) in the production of electronic texts. The presentation phase was aligned to a critical view of technology (Feenberg, 1991) where Indigenous Australians struggle for access and command of new technologies.

Conclusion

Given the choice, the Kunibídji access Ndjébbana Talking Books on touch screens in their own homes. The large number of taps on the touch screen suggests the computer could be a useful tool in an informal context to expose the Kunibídji children to electronic literacies in Ndjébbana.

The children would learn aspects of intertextualisation and hybridity in the Ndjébbana Talking Books which can be applied to other media and other languages.

The Kunibídji have spoken through the creation of the Ndjébbana Talking Books and the 112,480 taps on the touch screens around their houses. The process of hearing the Kunibídji voice through the interaction around the touch screens is an important process in the empowerment of the Kunibídji people. The implications of this choice of technology needs further consideration by both Kunibídji and non-Kunibídji stakeholders.

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