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Talking books for children's home use in a minority Indigenous Australian language context

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Members of the Kunibidji community are the traditional owners of the lands and seas around Maningrida, a remote community in Northern Australia. Most of the 200 members of the Kunibidji Community speak Ndjëbbana as their first language. This study reports on the complexities of transforming technology to provide Kunibidji children with access to digital texts at home. The printed Ndjëbbana texts that were kept at school were transformed to Ndjëbbana talking books displayed on touch screen computers in the children's homes. Some results of the children's interaction around these touch screens are presented as well as some quantitative results of the computer viewing in the homes. The processes of rejecting technological determinism, upholding linguistic human rights of speakers of minority languages and viewing technology as practice rather than a set of artefacts are discussed in this paper. The results of this study highlight the need for speakers of minority Indigenous Australian languages to have access to texts in their threatened languages on technologies at home.

Introduction

When I first flew the 500 kilometres from Darwin to Maningrida, my knowledge of the community and surrounding Arnhem Land was limited. Although I knew I would be teaching Kunibidji children at primary school, I was not aware that Kunibidji children learnt English as a third or fourth language and preferred to speak their first language, Ndjëbbana, at home. During my many years in the community I formed strong relationships with many members of the Kunibidji community. There are only 200 members of the Kunibidji community, making Ndjëbbana a minority Indigenous Australian language. Their strong respect for the land, culture and language was complemented by the respect they showed to the Indigenous and non-Indigenous visitors living on their land. I write this article from the perspective of a non-Indigenous teacher and researcher who became interested in Kunibidji children's right to access Ndjëbbana texts at home.

When Kunibidji children enter school they learn to read and write Ndjëbbana texts as part of the Ndjëbbana Two Way Learning Program. By reading printed Ndjëbbana texts when they first enter school, Kunibidji children make strong links to the social and cognitive practices of literacy which they can later draw upon when learning to read English. When I began teaching Kunibidji preschool aged children I was interested to know if the children wanted to read Ndjëbbana texts at home. This was important to me as teacher. If they did not want to do read first language texts then why was I supporting these literacies at school? If they did want to read these texts, then why were all the Ndjëbbana texts stored only at school? Ndjëbbana texts were limited in the community and the idea of providing the children with access to the texts on computers emerged as a viable way of providing texts at home. This study reports the children's reaction when they were provided with access to Ndjëbbana Talking Books (NTB) on touch screen computers at home.

Linguistic human rights

Pinker (1994) has suggested that 'the loss of a language is part of a more general loss being suffered by the world, the loss of diversity of all things' (p.261). While an approach to uphold the diversity of languages in the world is akin to language as an organism, Eisenlohr (2004) suggests that language loss is more to do with the 'perceived dangers to the reproduction of ethnic or other forms of groupness that often motivate activism on behalf of a less-used language' (p.23). Dixon (1980) has suggested 'if a minority group is to maintain its ethnic identity and social cohesion it must retain its language' (p.79).

Underpinning these concepts of group identity and language use in a minority Indigenous Australian language context is an individual's linguistic human rights. Linguistic human rights uphold the rights of individuals to have access to education in their preferred language. Linguistic majorities take it for granted that their education will be in the medium of their own language (Skutnabb-Kangas, 2000). This study upholds the linguistic human rights of Kunibidji children by improving their access to texts in their first language at home. In order to uphold the linguistic human rights of Kunibidji children, I aimed to challenge the status quo of Kunibidji homes devoid of Ndjëbbana texts and computers. I was searching for evidence that would clarify the relative importance the children would place on access to NTB at home. The choices provided to the Kunibidji children to improve their access to NTB were a prime concern when conceiving this study.
Contested nature of literacy

Street's (1984) autonomous and ideological models of literacy are particularly useful in positioning the NTB and the social practices of literacy surrounding their creation and use. In an autonomous approach to literacy, people are subjugated to the skills of decoding and coding texts, which is seen as literacy. The fact that the children had access to Ndjebbana texts only at school prior to this study suggests the school was supporting an autonomous approach to Ndjebbana print literacy.

The 'ideological' model of literacy, on the other hand, incorporates 'the site of tension between authority and power on one hand and individual resistance and creativity on the other' (Street, 1984). The ideological model of literacy operated on a two fronts in this study. First there was my individual resistance to the limited access the children had to texts in their first language. Had this not been the case I might have submitted to the authority and power of the school to continue the restricted access to the Ndjebbana texts to use in the classroom. The second ideological dimension to this study concerned the expected interactions of the children when viewing the NTB. The ways of knowing and ways of being that the children bring to the readings of the texts at home could provide important knowledge for effective classroom teaching. Even if the children reject the opportunities to read the NTB, they will expose their values and attitudes towards reading Ndjebbana texts.

The ideological approach to literacy is important where Indigenous languages are being mediated on new technologies. (Eisenlohr, 2004) has suggested that the 'predominant ideological formulations of the link between language and community play a crucial role in determining whether practices of digital mediation in a lesser-used language will promote off-line or off-screen routine use of the language' (p.37). In the case of Kunibidji children, Ndjebbana is their preferred language of communication, so the mediation of their lesser used language would be English. Nonetheless the ideological formations that link their use of Ndjebbana and their everyday social practices in the community will be enacted in the viewing of NTB at home.

Primary and secondary discourses

Gee (1996) uses the terms primary and secondary discourses to distinguish between home and school social practices. Primary discourses are those to which people are apprenticed early in life during their primary socialisation as members of particular families within their sociocultural settings (Gee, 1996, p.137). Gee's (1996) concept of primary discourses is strongly linked to understandings of funds of knowledge. Moll, Amanti, Neff and Gonzalez (1992) have used the term 'funds of knowledge' to describe the 'historically accumulated and culturally developed bodies of knowledge and skills essential for household or individual functioning and well-being' (p. 133). Secondary discourses, on the other hand, are those to which people are apprenticed as part of their socialisation within various local, state and national groups and institutions outside early home and peer-group socialisation (Gee, 1996, p.137).

While the same people move in and out of these two contested spaces, I noted an absence of the Ndjebbana texts and computers in the primary discourses of members of the Kunibidji community. This absence of computers in the homes lead presents two important questions. Do the members of the Kunibidji not want computers at home? Do members of the Kunibidji want computers at home, but do not have the power to make it happen?

The presence or absence of technology in the children's homes was not as important as the ethical dilemma I faced when I began thinking about how far I could ethically influence the primary discourses of my students. I had to question what right had I, as a non-Indigenous outsider, to provide Kunibidji children with new technologies of apprenticeship in their family context? However in similar circumstances, I noticed that the school did not enter into a dialogue with members of the community when the Internet was being introduced.

As a way through this dilemma, I asked a few parents and Indigenous Australian educational workers who worked with me in the preschool, what they thought of the idea of their children being able to access Ndjebbana stories on computers at home. Their response was positive. They also highlighted that part of this response involved their respect for my relationship with their children. After being in the community for nearly ten years the ontological nature of their response was to be expected. Smith (1999, p.120) suggests that all sound participatory research practice should be based on a sense of 'respect'. The movement of computers from the school as a secondary discourse to the children's homes as their primary discourse was done out of my respect for the children's learning opportunities and their linguistic human rights.

Gee (1996) has stated that 'acquisition must (at least partially) precede learning; apprenticeship must precede overt teaching. Classrooms that do not properly balance acquisition and learning, and realise which is which simply privilege those students who have already begun the acquisition process outside the school' (p.139). I aimed to promote the children's acquisition of some of the social practices of reading Ndjebbana through
the use of NTB. Hopefully the development of the skills at school could be continued in a more meaningful way. This study provided children with the opportunities to incorporate NTB in their funds of knowledge that they bring to school. At the same time I was open to the children and their parents rejecting the use of computers at home, in which case I could renegotiate the role of Ndjébbana literacy as an exclusive secondary discourse by the children.

**Evolution of technological literacies**

Another useful theoretical perspective for this study is the evolution of technological literacies as outlined by Bruce (1998), who suggested that literacy in relation to technologies develops over time in the following stages:

- Primitive symbol systems
- Complex oral language
- Manuscript literacy
- Print literacy
- Video literacy
- Digital / multimedia / hypertext literacy
- Virtual reality

The evolution of technological literacies proposed by Bruce (1998) is associated with the dominant literacy practices of many privileged speakers of majority languages in affluent societies. Kunibidji children have a different history of technological literacies associated with Ndjébbana to that presented above. A chronology of technological literacies used by Kunibidji children highlights this difference.

**Methodology**

I knew that if the children were to be provided with access to the Ndjébbana stories at home I would need to intervene in the digitisation. As a consequence, they have had limited opportunities to develop the social practices associated with reading and writing in their first language. Another difference between the two evolutions of technological literacy is the limited access members of the community have had to graphic and digital texts in Ndjébbana. Kunibidji children have not had opportunities to integrate graphic and digital forms of Ndjébbana texts into their everyday social practices at home.

Transforming the printed Ndjébbana books to multimodal NTB was done to improve the children’s access to the content of the texts. Nathan (2000) has suggested that the one-directional form of communication found in print makes knowledge cold and unchangeable to Indigenous people. Knowledge associated with primary discourses is often open to negotiation. In making the NTB accessible to Kunibidji children, the experience of accessing the texts needed to invite them to consider that there was no onus on the children to access the texts at home. Zammit and Downes (2002, p.25) suggest that a feature of multimodal texts is their interconnectedness with the form, content and the possibilities of learning. The NTB were linked to make access to each text easier than physically selecting printed books.

Alternative technological evolutions to that proposed by Bruce (1998) and associated with literacies in minority Indigenous Australian languages are not exclusive to members of the Kunibidji community. Laughren (2000, p.1) suggests that, as the number of Indigenous Australian languages has decreased, those that remain have been represented in a variety of media. No doubt each of these media have a different set of technological literacies associated with their use and there is a variety of Indigenous chronologies associated with new technologies. Warschauer and Donaghy (1997), for example, have documented the use of a bulletin board system that provided meaningful language interaction between speakers of an Indigenous language who resided in a number of islands in Hawaii. As the majority of Indigenous people are multilingual (Skutnabb-Kangas 2000), it is not surprising that technological literacies will be borrowed from one language and applied to another. What underpins the use of new technologies in this study is a belief that contested literacy practices drive the evolution of new technological literacies. The home environment would be a prime place to see these contested practices in action.
human rights of the children and overcoming a silence that they faced at home in their everyday social practice.

**The design of the Ndjébbana talking books**

The NTBs were developed in Macromedia Director, a multimedia authoring program. Each NTB simultaneously represent pictures, printed text and sound. The development of the Ndjébbana talking books was designed to be as transparent as possible to members of the Kunibidji community, while some aspects of the computer were redesigned to improve transparency.

Warnick's (2002, p.10) concept of transparency was particularly useful in approaching the design of the NTB. Transparency is the condition in which the user forgets or is unaware of the presence of the medium (Warnick, 2002, p.10). The NTB were designed to be as transparent as possible to members of the Kunibidji community, while some aspects of the computer were redesigned to improve transparency.

The first element of transparency in the design of the NTB was that members of the Kunibidji community encountered only the Ndjébbana language when viewing the computer. There were no menus across the top of the screen in English or navigational buttons in English as part of the multimedia program. This transparent feature of the Ndjébbana talking books demonstrated to members of the Kunibidji community that computers could be used to support Ndjébbana acquisition and learning by the children. Speakers of Ndjébbana did not need to have an English—Ndjébbana hybrid language experience when accessing texts in their first language. Important to the NTB was the inclusion of sound in the computer that supported English in the offices and school in Maningrida, to one that supported Ndjébbana in the homes of Kunibidji children.

A second transparent design feature of the NTB was a trace that was activated every time the children selected a text, turned a page of the text or quit the text. The trace was recorded on the hard drive of the computer as it displayed the choices made by the children. I entered this study gaining approval from the parents and members of the Kunibidji community to collect this quantitative data while the stories were being read.

An third, important transparent feature implicit in the design of the NTB was that there was no need for a keyboard to access the texts. Keyboards are central to the affordance of most computers. The affordances of an object relates to the characteristics that make it obvious how it is to be used (Norman, 1988). Considering that most Kunibidji do not know how to read printed Ndjébbana texts, by removing the keyboard I was reducing the possibility of the keyboard being perceived by some members of the community as an inhibitor or constraint to the viewing of the NTB.

**The development of the Ndjébbana talking books**

In collaboration with members of the Kunibidji community we planned what NTB would be constructed. There were about 250 Ndjébbana printed texts that had been created since 1975 as part of the school's Ndjébbana Bilingual program. These texts formed the basis for construction of the NTB with community members. Some texts used old black and white drawings that were scanned into a computer and coloured. Other texts used digital pictures taken by the children during excursions. Some texts used digital pictures of the children acting out stories that had previously used black and white drawings. Some texts were created using digital images of everyday social practices experienced by the children. A range of texts were created in an attempt to represent the diverse social practices enacted by members of the Kunibidji community. When children went on homeland excursions as part of the Ndjébbana Two Way Learning program, the digital photos they took provided the basis for some new NTBs. Figure 1 shows an example of a page from one of these talking books. The photos taken by the children involved social practices that the children identified as important. As a result, the NTB archived older texts while including many of the latest stories the children had created in Ndjébbana as part of their learning at school.

Transforming the Ndjébbana printed texts to NTB drew on audio, visual and linguistic modes of representation. An important design element used in the talking books was sound. The inclusion of sound in the NTBs reflected the strong oral tradition amongst members of the Kunibidji community. When accessing the NTBs, the children could hear their relatives and known community members reading each page of the text. This was an attempt to make the knowledge in the texts inviting to Kunibidji children.

The use of sound and pictures in the texts meant that members of the Kunibidji community who were not print literate could contribute to the text production process. In some texts, adults who could not read were recorded after they repeated what another person had read. When children
accessed these texts an adult who could not read Ndjébbana, but was well respected in the community read the texts to them.

Relston ká-rama ka-rénjdjeya mikkombo.

Figure 1: A page from a Ndjébbana talking book. The photo was taken on an excursion to land owned by some members of the Kunibidji community.

The reproduction of the text ‘Kánbaya Nganeyabba Kayóra’ (A Crocodile Went Along) demonstrated the kind of community involvement that could be achieved in the production of the NTBs. The original book, upon which this text is based, was made in 1980 when a member of the community told a literacy worker at the school a story about a crocodile. The literacy worker transcribed the story and the pictures were drawn to match the text. Many years later during this study, the literacy worker’s daughter read the story back to the same community member who originally told the story. As this person repeated orally what was being read, her voice was recorded. These sounds were used in the Ndjébbana talking book that was originally told by her. When the children access this text they not only hear the book being read by somebody who cannot read printed Ndjébbana, but the words are highlighted as she says them.

In a productive effort by members of the Kunibidji community, ninety-six NTBs were created for the purposes of this study. To access each book the children had to click on a button that represented the title and front page of the book. Six buttons were presented on 16 different screens that the children could scroll between by clicking on arrows to move between the screens. An example of one of these screens is shown in Figure 2.

Figure 2: One of the 16 screens used to display links to the Ndjébbana talking books. This screen had a mixture of illustrations and scanned photos from previously produced Ndjébbana texts.

Changing the technological practice

There were two transformations of the computer that attempted to make the texts transparent. The first was relatively simple and involved unplugging the computer from the Internet. The online connectedness offered by computers in Maningrida did not appear to be the best way to support Kunibidji children’s access to NTB at home. For a start there were no Ndjébbana texts accessible on the web. Very few homes had telephones and power was limited in some locations. There were constant issues of outstanding telephone accounts that made an online investigation of computer use a difficult issue to incorporate into the study. NTBs were designed in this study to support a specific set of literacies that were best accessed by Kunibidji children in an off line environment.
Another transformation of the computer was the use of a touch screen. Touch screens operate by placing a touch sensitive material over the screen of the monitor. The touch screen hardware is linked to computer software that simulates a mouse click at the exact location where the screen is touched. This made the touch screen invisible to the members of the community as they accessed the texts. All of this technology was able to fit into an older style iMac computer, which meant the screen and the central processing unit were combined. This had the advantage of requiring only the power to be plugged into the back of the computer and no other leads were necessary for the touch screen to operate, which was particularly appropriate given the dusty conditions where the computers were located.

The use of touch sensitive screens is not a new technology in an Indigenous Australian context. Dench (1990) used touch sensitive boards with computers to support the learning of Wangkatja and English through a variety of interactive strategies. Touch sensitive boards were used in activities such as matching words and pictures, or creating short sentences by touching words displayed on the screen. The computer in Dench’s (1990) study, however, took the role of a tutor. Taylor (1980, p.3) suggested that where computers are used to evaluate the students’ interactions, computers take the role of a tutor. The focus of this study, however, was to use the technology to improve Kuninbiidji children’s access to Ndjebbana texts. So the designs of the texts and the selective uses of computer technology that mediated the texts were attempts to keep the technology of this study transparent to Kuninbiidji children. The transparency of the Ndjebbana talking books in this research was critical since Kuninbiidji children would be acquiring the social practices that were associated with reading these texts. Unlike Dench’s (1990) study, support to mediate the texts on the computer was not available from teachers or researchers.

The community was familiar with the technology that was to be used to present the tools of this research before the study began. When a touch screen computer was used for part of this study, most Kuninbiidji community members knew about the capacity of the computer to display interactive texts to the children. However for the first time the children had access to ninety six NTBs on the touch screen computers at home. The use of touch screen computers to mediate a relatively large number of NTBs for this study was a new experience for Kuninbiidji children. Importantly, the novelty of the media was not a central issue as the children had previous access to the touch screen computers.

The ninety six NTBs were placed on three touch screen computers. The children’s interactions with one touch screen were recorded on video over a six month period during which time I collected about forty hours of video. I used a different computer each week during these trials to make sure the software and hardware was working so each computer could eventually be left in the homes. A typical literacy event with the a touch screen computer is presented in Figure 3.

Figure 3: Members of the Kuninbiidji community viewing Ndjebbana talking books on a touch screen computer.

Qualitative results

As the NTBs read the stories to the children, the printed code in the texts was unpacked for the children. Considering that only a small number of the Kuninbiidji children can read Ndjebbana printed texts, this decoding of the sentences transformed the literacies needed to negotiate the meanings of the texts. The transformation from Ndjebbana printed books to NTBs places a focus on the children viewing rather than reading the texts.

The transparency of the technology supported the children’s strong desire to access the NTBs. The children established turn taking routines to maintain some form of social order around the computer which was in high demand. In one instance the children could be seen using the same routine with a buffalo bone. The were sharing the meat on the bone while at the same time sharing access to the texts on the computer. Children appeared to move seamlessly between the routines, taking turns at touching the computer while others were taking turns at eating the bone.
The fact that children share food, artefacts and time is not remarkable but the speed at which the NTBs were appropriated by the children is noteworthy.

An important feature of the technological transformation was that access to the texts supported the everyday social practices that the children were using around their homes. Technology was not determining human behaviour but rather fitting into the practices that already were operating in the children’s homes.

The children talked together around the computer as the texts were being read to them. The discourse below was spoken amongst five children who were amongst the eleven children at the computer at the time. They said the following while choosing a new text to view in Ndjebbana language. The English translation of their interaction is provided below. I have put my interpretation of what the children meant in brackets after the English translation.

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crocodile (choose the story with the crocodile in it)
pick the rain one (choose the story about the rain)
no pick the crocodile one
finish that, this mob this mob (don’t look at any of those books, look at the book with these people in it)
he got the crocodile one (we are on the page with the crocodile book)
all the little kids (there is the book with all the little kids)
all the little kids are going to fight (in that book all the little kids are going to fight)
```

An important feature of this discourse was that it took less than five seconds. Although only one child was touching the computer, many others were participating in the choices of texts available that were showing to the child in control of the computer. The above discourse demonstrates that the children were using their knowledge of Ndjëbbana to participate in the negotiation process of choosing the next text.

Kunibidji children also demonstrated their ability to be critical of normative behaviour while accessing the talking books. When Kunibidji children violated the norms of turn taking and page turning, for example, they were criticised by other children and adults near the computer. An example of this breakdown in turn taking behaviour was captured on one video. One of the older boys began violating his turn and after fifteen minutes one child complained, commenting that the older boy was ‘acting like a Balanda’. This is a term used by members of the Kunibidji community for non-Indigenous Australians. It was used in this context in an attempt to lever 'Bradley' away from the computer and to give somebody else a turn. According to the child who made the comment, the child was comparing Bradley’s behaviour with the ‘other’ social practices of using computers exemplified by Balandas and using this comparison to insult Bradley’s behaviour. Obviously this comment demonstrates that Kunibidji children know when a child is behaving badly. The comment also indicates how Kunibidji children can unpack other knowledge systems to criticise individuals deviating from normal behaviour.

Quantitative results

While the qualitative data in the video recording of the literacy events provided evidence of the children’s desire to access the NTBs at home, the quantitative data of Kunibidji access to NTBs was recorded in my absence. The quantitative study was designed to gauge the desire by members of the Kunibidji community to access the Ndjëbbana texts independent of my presence as a researcher.

The main evidence showing the Kunibidji children’s desire to access the NTB came from the quantitative data collected from three touch screens located in different homes in the community. This quantitative data was generated as the children accessed the computer in my absence. While my intention was to provide unlimited access, I realised the children needed to negotiate logistical realities such as social relations and physical settings in order to watch the computer. The children’s access to the NTB on the touch screen computers may have been limited by the absence of electricity in the house, the physical location of the computer, the social relations around the computer and unforseen technical problems, just to name a few. Given these limitations, the children’s displayed their desire to access the Ndjëbbana talking books. The interactions recorded by the computer are shown in Table 1.

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Table 1: The number of taps recorded on the touch screen in the community

<table>
<thead>
<tr>
<th>Location</th>
<th>Days available</th>
<th>Number of taps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>47</td>
<td>76,508</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>20,763</td>
</tr>
<tr>
<td>3</td>
<td>18</td>
<td>15,209</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>112,480</td>
</tr>
</tbody>
</table>
```

While the data was being collected regular contact by the researcher was made with members of each house to check that the computer was still working and they were happy to continue with the study. The adults of many households told me that for the majority of the time the children were using the touch screens in the homes, with parents sometimes looking at the stories also. When the children came to school, usually accompanied
by their parents, I was repeatedly informed that the children were using
the computer at home. This information was offered without any
prompting on my part as a teacher or researcher.

The large number of taps on the touch screen computers demonstrates a
desire by Kunibidji children to access the NTB in their own homes. This
was independent of any Balanda’s understandings about the merits of
acquiring Ndjebbana text based literacy. What adds to these results is that
the children had access to the same NTB at school for several months
before this study took place. This suggests that the results were not
influenced by the novelty of the content of the NTB. As previously
outlined, Kunibidji children also had access to touch screen computers
displaying NTB in the community, so the technology was not new to them.
What was new, however, was their unprecedented access to Ndjebbana
texts in their own homes.

The large number of pages viewed by the children suggests that they
wanted to access texts in their first language at home using technology that
makes the narratives understandable. The large number of pages read by
the children suggests that the combination of texts and technology used in
this study was attractive to the children. The transformation of the
technology played an important role in providing new choices to members
of the Kunibidji community.

**Implications**

The implications of the children’s responses to these texts are not limited to
the local context of Maningrida. The following are ideas that might be used
when considering other learning contexts where texts are produced and
consumed for a local audience. Like many of the residents of Maningrida,
the ideas presented below support the use of technology to enhance local
literacy practices in the face of global changes.

**Rejecting technological determinism**

A deterministic or substantive theory of technology suggests that the social
world is being restructured as an object of technological control that
constitutes a new cultural system (Heidegger, 1977). According to Ellul
(1964) a deterministic approach to technology continues to subjugate our
humanity and determines how we behave. Supporters of a deterministic
approach to technology often overlook the complex social environment
that frames the access and use of technology by people. The findings of this
study highlight the importance of trying to find technologies to match the
social contexts where minority Indigenous Australian languages are
spoken. The NTBs were not designed to determine the behaviour of
Kunibidji children.

Similarly, Levy (1997a, p.xi) argues against being ‘led purely by the
capabilities of the latest technical innovation’ when using computers to
support language learning. By not being led by the latest technological
innovation, which was the Internet at the time of this study, a space was
provided to develop the NTBs. The results of this study suggest that
Indigenous languages can be supported by technological configurations
that are not the latest innovation, but are still highly effective in supporting
their use. Considering the limited resources available in many remote
locations where these languages are spoken, alternatives to the latest
technology might be more practical in terms of economy and reliability.

Levy (1997b) suggests that the tool should match the task it is meant to
support. When technology is used to support minority Indigenous
Australian languages the primary task is to extend the choices the speakers
have in their threatened languages. The choices available to the speakers of
such languages should not be limited to the latest use of technology by
speakers of majority languages. The tool in this case matched the need to
provide children with access to texts at home.

**Issues of access and design**

In this study the children’s desire to access the NTBs can be viewed from
different perspectives. In an ideological perspective, the children’s access to
the NTB is important. Underpinning the children’s desire to access the
NTBs was their right and opportunity to access the texts. This opportunity
was not provided for the children in a home context before this study
began, because the Ndjebbana texts were not available in a form that made
the meanings of the texts accessible to the children. Speakers of minority
Indigenous Australian languages, however, have a right to access texts in
their threatened language at home. When faced with unlimited access to
texts in their first language, members of the Kunibidji community have
recorded their preferences to access their language on new technologies.
The 112,000 taps on the touch screen was their way of telling the world that
their use of their language on new technologies was important to them.
They were also telling the world that the content on the computer was
engaging. An example of this is demonstrated in Figure 4.

This was interesting considering that the texts were designed primarily by
an non-Indigenous person and developed with community involvement.
The popularity of the NTBs would suggest that members of the Kunibidji
community were pragmatic enough about the design of the NTBs in the
absence of any other Ndjebbana text at home. The members of the
Kunibidji community may value the contested nature of developing the texts and their consequent use more highly than any understanding of design. Feenberg (2002, p.14), on the other hand, suggests a focus should be placed on design, not just use of technology if people are to gain real power and self determination through technological practices. Maybe Feenberg’s ideas are based on evidence where linguistic majorities take for granted that technologies will be designed to support the use of their dominant language.

Barra-róddjiba barra-rówa barra-réndjeya mikkombo.

Figure 4: A page from a Ndjébbana talking book recounting a camping trip to favourite fishing spot.

Technology as a practice

Another important understanding from this study comes from Frankin’s (1990, p.12) work suggesting that technology is best seen as a practice. The importance of this understanding came to me when I realised the practices that were incorporated in the NTBs that were reproduced. Each text represented a unique set of collaborations between Indigenous and non-Indigenous people as they participated in the Ndjébbana Bilingual Program. The new texts made in this study, the NTBs, were not just artefacts but products that valued collaboration between Indigenous and non-Indigenous people. Perhaps part of the attraction the children found in the NTBs was the variety of these values embedded in the ninety-six texts.

The social aspects of technological use and design are more important than the artefact's attributes in a minority Indigenous Australian language context, where the purpose of the technology is to support the threatened language. An understanding of how the speakers of such languages approach the contested nature of new technological literacies will provide some key insights into the ontological ways of the participants.

Understandings of the participants have been a strong feature in effective literacy pedagogy. Street (2001) has suggested that effective literacy pedagogy begins by 'understanding the literacy practices target groups and communities are engaged in' (p.1), and learning how to design more culturally sensitive programs rather than programs based on what people are assumed to need (p.15).

Where technology is seen as a practice in a minority Indigenous Australian context, the practice might begin by obtaining evidence on text choices in their first language. While many speakers of minority Indigenous Australian languages do not have their language represented on new technologies at home, rudimentary texts such as the NTBs could be used to gauge the merits of further production. The evidence teachers glean from the children's technological practices with texts in their first language at home will have direct impact on the effectiveness of the literacy programs at school.

Conclusion

This study has reported on an innovative use of technology to provide marginalised Indigenous Australian children access to texts in their first language at home. In one sense the provision of this access was an end in itself in respecting the linguistic human rights of the child. The choices the children made were of secondary importance. In this study, however, the children's overwhelming response to viewing Ndjébbana texts at home, further justifies exploring new technological configurations in home contexts where minority Indigenous languages are spoken. Rather than determining what speakers of Indigenous Australian languages need in relation to technology, more work should be done to find which of the contested configurations of technology align with the home practices of the speakers.
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References


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