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TELL for Indigenous Australian languages

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Abstract: The area of technology-enhanced language learning (TELL) has traditionally focused on languages with many speakers and multiple resources available. However, there are numerous affordances of TELL which can support smaller language groups to prepare and deliver language learning programs. This paper discusses some of the issues relating to TELL in the context of Indigenous Australian languages, particularly how Indigenous communities can use TELL to support language work. It goes on to describe a project designed to create an online template using low-cost and low-tech tools. While developed for a specific context – creating online courses for teaching Indigenous languages at university – the Digital Language Shell has a range of possible applications to maintain Indigenous languages under Indigenous authority.

Keywords: Australian Indigenous languages; online learning; Digital Language Shell, computer-assisted language learning

1. Introduction

The area of technology-enhanced language learning (TELL) has traditionally focused on languages with millions of speakers and multiple resources available. However, there are numerous affordances of TELL which can support smaller language groups keen to share their language and culture online. This paper discusses some of the issues relating to TELL in the context of Indigenous Australian languages, particularly how communities can use TELL to support their own aspirations for language work. The variety of language ecologies in Australia means that there is no single tool to meet all needs, however particular questions can be asked to determine appropriate strategies.

Existing TELL tools may not be suitable for Indigenous language contexts, and development of new tools generally requires significant financial and technical investment. This paper describes a project designed to consider the possibilities of creating an online template using low-cost and low-tech tools that Indigenous communities can use for free and with minimal technical proficiency. Consideration of a number of issues – audience, cost, language resources, archiving, access, etc – influenced the development of an online template, now available as the Digital Language Shell (https://language-shell.cdu.edu.au/). While designed to support teaching and learning of Indigenous languages, such a tool can also innovate ways of sharing Indigenous knowledge practices, record endangered language practices, document different dialects or varieties of a language, and incorporate cultural knowledge.

The paper begins with an overview of the Indigenous Australian language context, then outlines the benefits of TELL, and issues relating to development of TELL resources in this space, then goes on to describe the Digital Language Shell and its users. The paper provides insight into an area that is little explored in the literature, with regard to supporting the teaching and learning of less widely taught languages through TELL.

2. Benefits of TELL in the Indigenous Australian language context

While it is estimated that between 250 and 750 distinct languages were spoken in Australia prior to colonisation, the most recent survey (*National Indigenous Languages Report*, 2020) states that only 123 are still in use at some level. Of these, only 12 are still considered ‘strong,’ meaning they are still spoken by all age groups and being passed on to children.

Around 3.3% of Australian population identify as Indigenous (approximately 650,000 people), of which only 10% report speaking an Indigenous language at home (Australian Bureau of Statistics, 2016). These are largely traditional languages, but also include the increasing use of new or 'contact' languages such as Kriol or Yumplatok. Australian language ecologies are constantly in flux, due to the natural process of language change, the impact of policy on language practices in Indigenous communities, and the role of English in Australia.

Technology is commonly used for language documentation and description, which can support the work of revitalisation of endangered languages (Bow, forthcoming; Galla, 2016), however the use of technology to support teaching and learning Indigenous languages are less evident. Some of the recognised benefits of TELL programs, such as improving student multimedia learning experience, enhancing learner autonomy and widening participation (Yang & Rau, 2005), are highly relevant for the Indigenous context. In particular, TELL can transcend geographic distance and enable alternative pedagogical approaches. Australian languages are intimately connected with land, so technology can enable language authorities to stay on their land and teach learners in other locations (Christie, 2010).

TELL generally relies on languages with large speaker bases and significant resources, however there are moves towards drawing on the affordances of computational linguistics and natural language processing (Nerbonne, 2005) to work with low resource languages (Ward, 2015, 2017). Such work requires collection of large corpora to enable processes of speech recognition, machine translation, etc., which are currently not available for any Australian language, however there are efforts in this area (Centre of Excellence for the Dynamics of Language, 2019) and applications becoming available (Foley et al., 2018; Lane & Bird, 2019).

3. Developing TELL for Indigenous languages

The wide range of contexts in which technology can be used to support Indigenous language teaching and learning means there is no single use-case which could address all the needs of different communities or educational contexts. Careful attention to issues such as audience, cost, availability of resources, and access are needed when considering options, as well as taking seriously the cultural authority, protocols and practices of the local Indigenous community of engagement (Christie, Guyula, Gurruwiwi, & Greatorex, 2013).

Potential audiences in both formal and informal contexts include school curricula and community programs, which may involve some heritage learners of the language or may have mostly non-Indigenous learners. University courses may focus on the needs of those working in the language area, either professionals (e.g. in health, education, justice) interacting with speakers of the language, or as researchers with interests in the region (Simpson, 2014).

With small audiences for TELL tools in this context, there is little commercial interest from popular language teaching platforms such as Duolingo and Rosetta Stone. High-quality learning management systems (LMS) such as Blackboard and Moodle may not be appropriate for the Indigenous language context (Hugo, 2014). Indigenous communities and groups vary in their capacity and resources, with some having access to large commercial or institutional platforms for developing and sharing resources, and others needing to seek less expensive options. Some existing apps and tools for language learning can be customised for Indigenous languages, however they may impose a particular academic style that is not compatible with Indigenous pedagogies, or may use graphics and language themes that make them inappropriate for this context (Galla, 2017; Holton, 2011).

Creating new tools from scratch can be expensive, however there are some free and low-cost options which are supported by a community of users, rather than requiring maintenance contracts at additional cost. There may be costs associated with online hosting and storage of resources, and costs saved on buying or maintaining existing tools are likely to be spent on time developing and customising the tool. The greatest cost is likely to be in human resources, so for Indigenous communities with limited resources, the main expense should be paying Indigenous people to develop materials and design curricula, to support local economies and skills development.

There is great variety of the quality and quantity of materials available for teaching and learning Indigenous Australian languages, from a few historical documents to rich grammatical descriptions (Gaby, 2008), and dictionaries (Goddard & Thieberger, 1997). Other sources of material, such as vernacular literacy materials (Bow, Christie, & Devlin, 2017; 'Living Archive of Aboriginal

Languages', 2012), locally produced videos, blog posts, signage, children's stories, musical recordings and other multimedia content, can be identified and examined for content to explain or demonstrate particular linguistic or cultural concepts. New resources can be made simply and inexpensively, using smartphones or digital cameras and voice recorders, and edited using free and simple software (Bow, 2017). Resources either collected or created for TELL in one context may be useful in others, for example, quizzes and tasks produced for TELL contexts can be used for vernacular literacy programs for children or adults, and videos used to demonstrate concepts such as kinship responsibilities or naming practices can serve various purposes for language and cultural programs more widely.

Identifying, collecting and creating appropriate resources is an important part of the process of course development, and such resources should be carefully archived (Nathan & Austin, 2014) to avoid the resources themselves becoming endangered (Bird & Simons, 2003). Storing materials only on websites or local servers is insufficient for ongoing access and sustainability.

The use of technology can be seen as removing certain protections by making things available online, however appropriate tools will have mechanisms for allowing and restricting access to certain users. Careful effort is required to manage the dual responsibilities of providing access and protecting intellectual property (Croft, Toussaint, Meakins, & McConvell, 2019). There are software solutions for storing linguistic and cultural knowledge with carefully thought-out processes and protocols for access, such as Mukurtu (Christen, Merrill, & Wynne, 2017) and Ara Irrititja (Hughes & Dallwitz, 2007). The resources contained in such tools could be shared for teaching and learning, however they are not designed for these practices.

TELL for Indigenous language use does not need to be at the 'bleeding edge' of technological advancement, but can draw on the experiences of bigger language groups in terms of both technology and pedagogy (Ward & van Genabith, 2003). The implication for designers is that awareness of the issues identified here will impact the ways in which development of TELL tools is approached.

4. Digital Language Shell

Consideration of all these issues informed the development of the Digital Language Shell project, designed to consider what was possible with limited resources and limited technical skills. Initially prompted by the lack of opportunities to study Indigenous languages at Australian universities, the goal was to provide a ready-to-use low-cost and low-tech template which draws on the affordances of TELL with considerable flexibility and customisability for different user groups in different contexts. The resulting Digital Language Shell provides a means of compiling and curating materials for language teaching and learning under appropriate Indigenous authority, without requiring much technical support or a large budget.

The project explored the possibilities of assembling a usable tool from off-the-shelf products. The selection process involved research into existing platforms aligned with a set of criteria, including cost (free or very low cost), customisability (of both appearance and functionality), flexibility (adding features for different purposes), simplicity (no coding required), support (free or low cost), multimedia options (supporting different file types for audio, video, text, image, etc), and Unicode-friendly (able to handle special characters).

WordPress was selected as the appropriate platform for the Digital Language Shell, providing a reasonable compromise of technology, budget and flexibility, while meeting all the established criteria. The huge range of plugins available for WordPress can be overwhelming, so the project involved experimenting with different options, reading reviews and checking compatibility. This process means that recommendations can be made, but users can explore further and choose alternate ones. Plugins for the Digital Language Shell include options for quizzes, multimedia playback, design options, survey and form types, security and backup features, discussion forums, payment processes, etc.

WordPress is not a learning management system, but there are several options for installing this functionality on the platform, including both paid and free plugins. For the purposes of this project, only free options were considered, in order to see what was possible for no expense. The idea was that a Digital Language Shell could give people the opportunity to get started in the TELL space, experiment with options, learn some skills, and deliver a customised product. For the Shell a free plugin called LearnPress was selected, which enabled the setting up of courses, units and lessons, plus a login

procedure (with an option to charge for courses), which was then populated with various content (text, media, links, etc.).

The resulting Digital Language Shell (see Figure 1) is a particular configuration of WordPress and a range of plugins, rather than a package that can be shared. A set of instructions has been written so that users can get started, with plenty of flexibility to explore alternative methods of delivery. All that is required to start is an installation of WordPress.org on a hosted server, then users can set up their site by selecting a theme for look and feel, which can be populated with appropriate local images, and plugins can be selected for additional functionality. Once a course is developed, administrators can easily make changes on the fly, rather than relying on external support, and can allow or restrict access to materials through various user profiles.

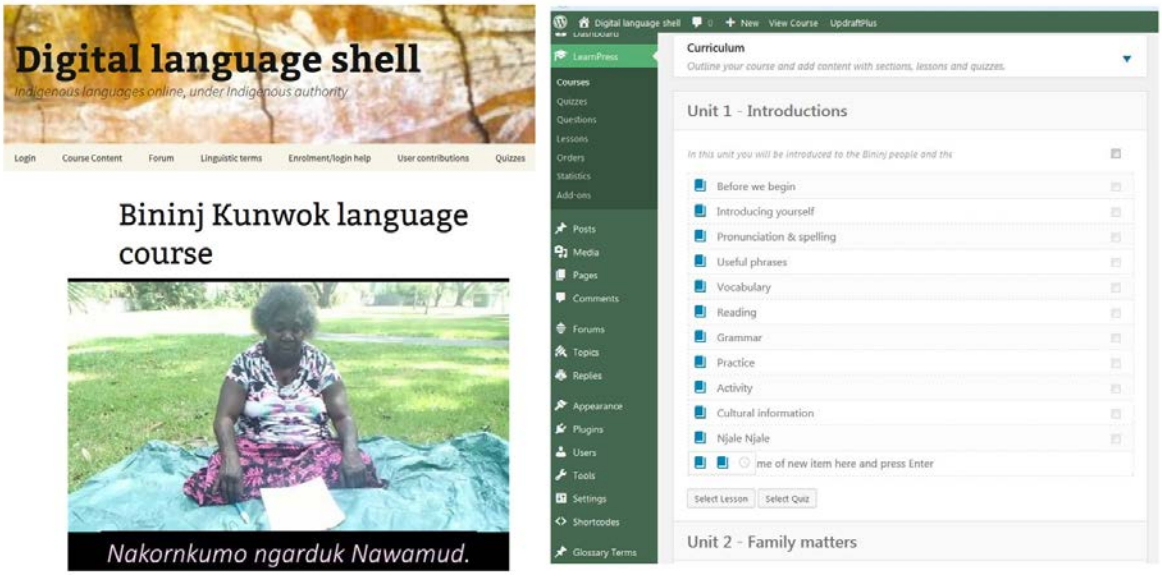

Figure 1. Screenshots from Digital Language Shell and Bininj Kunwok online course

5. Users of Digital Language Shell

The first implementation of the Digital Language Shell was in collaboration with the Bininj Kunwok Regional Language Centre. Bininj Kunwok refers to a chain of related language varieties with around 2000 speakers across West Arnhem Land in the Northern Territory. Committee members from the language centre (who co-designed the curriculum with academic staff from Charles Darwin University) were not familiar with online language teaching tools, nor were they particularly interested in the technology itself. Their motivation was to share their language and culture with non-Indigenous professionals in the community. A pilot course of four units was developed and delivered to over 100 volunteer learners (Bow, 2017), and later this course was extended to a one-semester (12 week) course for university delivery online. The extension involved creating additional units and adding assessment tasks, to conform to the standard required of a university language course. This process led to producing more resources, strengthening teachers, creating student demand, and used Indigenous cultural concepts to build connections between speakers and learners (Bow, 2019). Evaluation of the tool is currently underway.

The second instantiation involved a very different linguistic ecology and academic context. The Muurrbay Aboriginal Language and Culture Co-operative in northern NSW works with a range of Aboriginal groups in language revitalisation. They offer in person classes Gumbaynggirr language, which has good documentation and recordings and a range of teaching materials. Seeking possibilities for an online option to serve the diaspora of Gumbaynggirr people scattered across the region and state, and lacking the capacity to develop their own course, they implemented the Digital Language Shell (Muurrbay Aboriginal Language and Culture Co-operative, 2019). Adapting the Bininj Kunwok course to suit local needs, they plan to use this as a model for teaching other languages of the region.

A number of other groups have expressed interest in using the Digital Language Shell for their purposes. In 2019 at the Puliima Indigenous Language and Technology conference, over 100 people

attended workshops to learn how about build their own courses at low cost and low technical demands. These examples highlight the need for a simple, inexpensive tool that can be used to support the aspirations of Indigenous people for language and cultural work for various purposes.

6. Conclusion

Technology can come to the assistance of Indigenous elders who are keen to share their languages and cultures. The variety of options, and heterogeneity of language contexts, may make it hard to know how to get started. Certain issues need to be addressed in the selection or design of TELL tools, including audience, costs, resources, archiving and access. The experience of the Digital Language Shell project is that it is possible to create a platform using free and open-source tools, with the flexibility to address various needs. The project does not focus on the technology itself but what it affords for Indigenous language groups, who can work collaboratively to design and develop course materials, always keeping in mind the aspirations and goals of the community members.

The Digital Language Shell is available as a model for others to use – it is not meant to be a solution to every problem, nor the best tool for the job, but it demonstrates what can be done little money and little technological skill, while involving Indigenous authorities in the process of course development. Respecting the authority of Indigenous language owners and increasing visibility of these languages can support the aspirations of Indigenous language communities and retain ownership of their knowledge and how it can be appropriately shared. Future directions can explore its application in other language contexts, how it can support the use and development of language documentation, incorporation of language varieties and cultural information, and how Indigenous groups use technology to support their aspirations. Such tools are practical and useful for Indigenous Autralians beyond just language maintenance and revitalisation, but can also serve to enhance community well-being and education. Without the tools and means to implement such programs, these languages are unlikely to ever be made available.

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