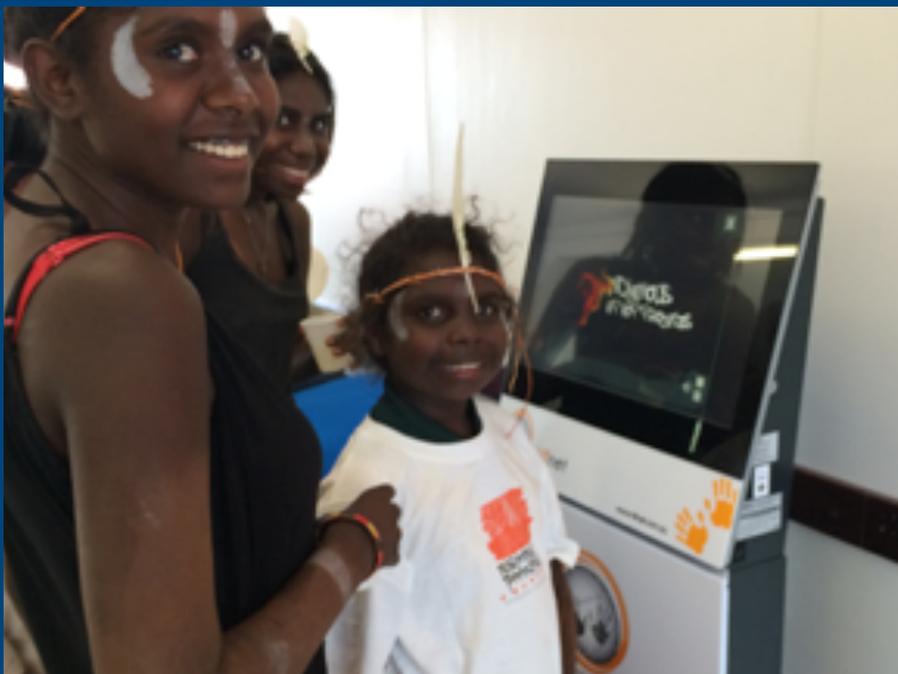


Digital Futures in Indigenous Communities

From Health Kiosks to Community Hubs

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Melbourne
Networked Society
Institute

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Melbourne Networked Society Institute Research Paper 3-2016

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Front cover image

Kristen Smith took this photograph at the opening of the Pormpurkuuyikngathar Culture, Knowledge and Learning Centre in Pormpuraaw in late 2014. Written permissions for the use of photos taken at the ceremony were gained from parents/guardians through Pormpur Paanthu Aboriginal Corporation.

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EXECUTIVE SUMMARY

For indigenous Australians living in rural and remote regions of Australia, poor Internet access has led to a 'digital divide', exacerbating current health and educational inequities. Studies have shown that digital technologies can be used as an effective means to overcome indigenous disadvantage through improving capacity to build local economies, affirming Aboriginal identity, and providing culturally relevant information to rural and remote communities in areas such as health and education (Kral, 2010).

HITnet is a social enterprise that provides learning environments in the form of digital kiosks, reaching some of the most remote areas in Australia. HITnet is committed to building a digital network based on co-creating and sharing targeted, culturally appropriate information. During 2014/15, the Melbourne Networked Society Institute (MNSI) provided funding for researchers from The University of Melbourne and Deakin University to assess a number of existing HITnet kiosks, with the aim of better understanding how they could be adapted to meet the diverse and evolving needs of indigenous people in remote areas of Australia. The research was designed to focus on end-user practices in three Northern Australian communities. By combining ethnographic methods with analysis of HITnet kiosk usage statistics, the project provides an in-depth, nuanced and contextually situated picture of digital technology in relation to community use and needs.

Our findings offered some clear pathways for future development. The majority of people who participated in this study agreed that the kiosks are easy to use, with children and young people being the highest user groups. Our findings also indicate that the HITnet model provides engaging and relevant health information to indigenous communities. This was particularly the case for content that was co-created by the communities that use it, and where stories and knowledge are networked and shared between communities through the kiosks. Participants also saw opportunities for the HITnet kiosk network to be expanded to diversify its communication strategies. In particular, there was interest in the network providing more opportunities for community





participation and employment in the co-production of content. Participants in the study specifically expressed a need for:

1. Access to a broader range of locally relevant information
2. Information that is responsive to community needs
3. Timely provision of information that is regularly updated
4. More input to the information. This would involve a paradigm shift in which the HITnet kiosks would function more as 'community hubs'.

HITnet is currently trialling a number of initiatives to address these possibilities in indigenous Australian communities in remote and regional contexts, including the adaptation of cross platform technologies, such as smart phones and tablets, into the HITnet kiosk network. These developments have the potential to enable the timely narrowcasting of local information, as well as the production of more local content in these regional and remote contexts. Participants in the study expressed the view that the provision of more flexibility around the production and uploading of content would require closer monitoring and mechanism for approval before content is published for public viewing on the kiosks.

This study demonstrates the potential for digital infrastructure such as the HITnet kiosks to generate new evidence about the evolving needs of indigenous people in this space. This is essential in providing a foundation for developing the types of services and facilities that are not only valued, but also contribute to building strong indigenous capacity in digital health literacy.





1 BACKGROUND TO THE PROJECT

1.1 The digital divide in indigenous Australia

Aboriginal and Torres Strait Islander Australians are under-served by digital technologies, with indigenous Australians being 69 per cent less likely than non-indigenous people to have any Internet connection and about half as likely to have broadband access (Notley & Foth, 2008). This ‘digital divide’ contributes to and reinforces educational, income, employment and geographical disadvantage. While recent research indicates high uptake of some digital technologies including mobile phones and social media by Aboriginal youth (Edmonds, Rachinger, Waycott, Morrissey, Kelada, & Nordlinger, 2012), Aboriginal and Torres Strait Islander Australians remain underserved by digital technologies (Swanson, 1999, p. 228). Moreover, far fewer indigenous Australians “are familiar or at ease with computer-based media” (Hunter, Travers, & McCulloch, 2003, p. S52). The Productivity Commission report ‘Closing the Gap’ (SCRGSP 2011) revealed that indigenous disadvantage continues across the key indicators of health, education and criminal justice.

While uneven access remains a particular problem for rural and remote Aboriginal communities, digital technology also provides a way of overcoming indigenous social disadvantage. Recent studies specifically addressing the impact of digital technology on Aboriginal youth in remote communities have recognised its potential to enhance capacity to build the local economy, affirm Aboriginal identity and provide examples for meaningful adult occupations (Kral, 2010). Digital technologies have been successfully used to provide culturally relevant information to regional and remote communities in areas of health and education and to store and circulate cultural knowledge. Examples include the Teaching from Country¹ program and the Ara Irititja Project.²

¹ <http://learnline.cdu.edu.au/inc/tfc/index.html>

² <http://www.irititja.com>





Corn (2013) has described the recent digital uptake in indigenous Australia as the 'Indigital revolution' that "is rapidly changing the way that indigenous communities come to know and interact with the rest of the world, and how the rest of the world comes to know and interact with them" (p.2). Corn is referring here to the fast uptake of small digital devices that coincided with the late rollout of 3G networks in many remote regions. However, it is worth noting that technological developments can also replicate and reinforce disadvantage. This may occur via processes such as the uneven diffusion of technology, increases in social polarisation, and the reinforcement of a digital urban/regional divide due to the concentrated construction of cyberspace in urban locales (Kleine & Unwin, 2009).

1.2 Why and how did we go about this research?

This pilot project, funded by the Melbourne Networked Society Institute (MNSI), aimed to investigate how to foster the provision of culturally relevant information to indigenous Australian communities in the changing conditions precipitated by the introduction of the National Broadband Network (NBN).

The original NBN plan announced by the Rudd government in 2009 aimed to connect 93 per cent of Australian premises directly to fibre optic networks (FTTP). The remaining seven per cent, including most rural and remote areas, were to be connected through fixed wireless and satellite services. Subsequent modification of the NBN to a 'mixed technology model' under the Abbott and Turnbull governments primarily affected the FTTP build, by using existing networks and fibre-to-the-node delivery in some areas. As the Broadband Availability and Quality report noted, inadequate network access is generally concentrated in rural and remote regions (Department of Communications, 2014, p. 4). The launch of NBN's dedicated SkyMuster satellite, which will provide upgraded satellite Internet for regional and remote communities occurred in October 2015, after our fieldwork had concluded.

The study focused on a key digital resource – the network of 40 Touch screen kiosks installed at key community locations in remote, regional and urban communities operated by the social enterprise, HITnet. The project was a preliminary investigation into current end-user practices. This study contributes to evidence-based strategies assisting in the future deployment of digital resources in remote communities.





The primary aims of the project were:

1. To assess current user practices around HITnet kiosks. In particular, we wanted to consider the range of factors contributing to why some installations ‘work’ and others do not (physical placement, digital literacy, relevance of content etc.).
2. To consider how similar facilities might be adapted to meet the evolving and diverse needs of indigenous people in an NBN environment. In particular, we investigated the potential for a transition from kiosk as information delivery system to ‘digital community hubs’ in which new possibilities for local community co-creation/co-management of content could be explored.
3. To investigate if, and how, current digital technology use (such as smart phones) could be usefully integrated, or operate in conjunction with current technology used in kiosks to improve access and usability outcomes for a broader range of individuals and groups within communities.

This pilot project aimed to provide strategic, evidence-based information to stakeholders, including:

- Indigenous communities (including direct feedback to the three communities involved in the project)
- Technology providers
- Social service and healthcare providers
- Local, state and federal governments

The study also contributes to scholarly understandings of digital technology use for indigenous Australians.





The research was designed using an ethnographic approach, in combination with analysis of HITnet kiosk usage statistics to provide a detailed and contextually situated picture of digital technology use and needs. The findings of this project contribute to the current network of HITnet touch-screen kiosks, and to wider digital strategies for indigenous Australia. This project used a mixed method approach, using the following research methods:

- Analysis of routinely collected usage data by HITnet (including a questionnaire deployed during the project timeframe).
- Ethnographic fieldwork using:
 1. Participant observation in and around communities at three case study sites; and,
 2. Semi-structured, in-depth interviews with key stakeholders (including local staff of Shire Councils, health workers, community-based institutions, Elders and community members).

The ethnographic fieldwork component of the research was undertaken at three case study sites, and varied in duration from eight to 15 days at each location. The three field sites were located across northern Australia, in:

1. Kununurra, Western Australia
2. Napranum, Queensland
3. Pormpuraaw, Queensland

HITnet usage data

HITnet provided the researchers with routinely collected usage data of the health kiosks for each of the three communities. This included daily usage data, such as number of purposeful sessions, start and finish time and time of use, content area accessed and whether the individual identified as an elder, adult, teen or child (male or female). HITnet also provided the findings of a brief, nationwide questionnaire they conducted via their network of kiosks. The questionnaire included four close-ended questions about users' perceptions of the kiosks. The questionnaire went live during the fieldwork component of this project and remains active. Due to technical difficulties with the kiosk located in Napranum in early 2015, survey data was not collected,





therefore is unable to be reported on. The data was analysed using ecological epidemiological methods, with a focus on the participating communities, using the nationwide data for further contextualisation. Australian Bureau of Statistics data was also analysed for each of the communities to further inform the HITnet data.

Participant Observation

Participant observation was undertaken at each of the three community case study sites. This research method allowed the researchers to gain an understanding about how local factors shape the usage of the kiosk (for example its physical location) and how usage differs between communities. Participant observation included observation and informal conversation with individuals in each community about their knowledge of the existence of the kiosk, their understanding of what the kiosk is for and what they think other people use it for.

Stakeholder Interviews and Focus Groups

Interviews were conducted with a total of 18 stakeholders across Napranum, Pormpuraaw and Kununurra. In all three locations, the local HITnet kiosk was located within a primary health centre.³ Stakeholders included health personnel, community council members and other community elders and leaders. The fieldwork data was analysed using a combination of thematic, content and critical discourse analysis approaches using NVivo software. Themes emerging from existing literature were distilled along with those that emerged de novo from the findings.

The project received Human Research Ethics approval by the University of Melbourne Health Sciences Human Ethics Sub-Committee on 12th September, 2014 and from the West Australian Aboriginal Health Ethics Committee on 19th May, 2015. Permission to conduct the research was also gained from the relevant community based organisations at each site.

³ In Pormpuraaw an additional kiosk was located in the Knowledge, Learning and Culture Centre





1.3 The development of HITnet: 2001 to 2015

HITnet is an Australian for-profit, social enterprise that was developed in response to the indigenous gap in health outcomes and the digital divide. The organisation has gone through five stages of development, from proof of concept through to social enterprise development (see Table 1). The HITnet kiosks deliver interactive media content using a customised web-based application.

The HITnet network was designed to address ‘information disadvantage’ by using information technology to improve and maintain community connectedness, digital development and digital social inclusion. Content for the information kiosks focuses on a range of critical indigenous health issues including sexual health, cancer, mental health and nutrition. HITnet kiosk content is restricted to G-rated health promotion material. The HITnet network can be used by government agencies and companies to narrowcast information specifically to hard-to-reach communities. HITnet also offers the option of developing local content in partnership with communities. The kiosks provide a gateway to tailor-made interactive content for low literacy and inexperienced technology users. The kiosks are networked via broadband to HITnet’s dedicated server. This system enables remote deployment of content, collection of usage data and monitoring of kiosk functionality.



Figure 1. HITnet Kiosk

⁴ Included an interactive version of the AUDIT – Alcohol Use Disorder Identification Test (Conigrave, Saunders, & Reznik, 1995).





Time Period	Phase	Description
2001-2002	1. Proof of concept (touch, see and hear)	<ul style="list-style-type: none"> Pilot project in two Aboriginal communities, examining the use of diabetes and joint pain management information using touchscreen kiosks. Study demonstrated that people were open to using the technology and that the kiosks could be a useful tool for changing attitudes towards health (Hunter & Travers, 2002; Hunter, Travers, & McCulloch, 2003)
2003-2005	2. Regional expansion and evaluation	<ul style="list-style-type: none"> Kiosks were installed in additional four communities (in Cape York, Qld) Extra modules developed on diabetes, child health and alcohol use Module 'Grog Story' developed in partnership with one community, increasing the kiosk use. The success of co-production led to replication of the model, with a sexual health production filmed in partnership with another community. Economic aspects of the project were explored (Doessel, Travers, & Hunter, 2007). Development of an innovative, more flexible approach to evaluation (Hunter, Travers, Pelham, Gibson, Hermawan, & Corey, 2009).
2005-2008	3. National development program	<ul style="list-style-type: none"> Internet capable, interactive touchscreen kiosks installed in 26 urban and remote locations in QLD, WA & SA. Further development of modules to include: mental health, bush tucker, smoking and cervical cancer. Modes of presentation expanded to include didactic, interactive narrative and games-based approaches. Development of delivery platforms to include interactive touchscreens and practitioner-mediated iDVD resources.
2008-2012	4. Transition to private sector	<ul style="list-style-type: none"> HITnet transitioned away from base at University of Queensland becoming a social enterprise: HITnet Innovations Pty Ltd.
2012-2015	5. Social enterprise development	<ul style="list-style-type: none"> Further diversification of content aimed at migrants and marginalised young people in urban centres. International expansion (Vientiane, Laos)

Table 1. Brief outline of the history of HITnet



2 THE CASE-STUDY SITES



Figure 2. Project case study sites (Kununurra, Napranum & Pormpuraaw)
Source: www.googlemaps.com Accessed 20 August 2015. Copyright Google

HITnet had 40 touchscreen kiosks in operation across Australia in 2015. There were eight located in urban areas, 17 in regional areas and 15 in remote communities. The qualitative research data for this pilot project was collected in two remote (Pormpuraaw, Napranum) and one regional (Kununurra) community. All three case study sites had a HITnet kiosk located within a Primary Healthcare Clinic (PHC) in their communities, with a second kiosk established in Pormpuraaw during the fieldwork period in their newly refurbished Knowledge, Learning and Culture Centre. Internet is available in all three case-study sites, but both household and broadband access is significantly lower than the national average (see Figure 2). There are various specific reasons for the reduced levels of access in each of the communities, but affordability of personal digital devices and the Internet are primary barriers, which are generally dictated by household income.

In the following section, demographic and information gained via the eth-



nographic fieldwork is presented to provide the context for each of the case study sites. The local social and cultural conditions of each community are highly relevant to how the HITnet kiosks are used, the types of information that each community seeks and the effectiveness and uptake of health information.

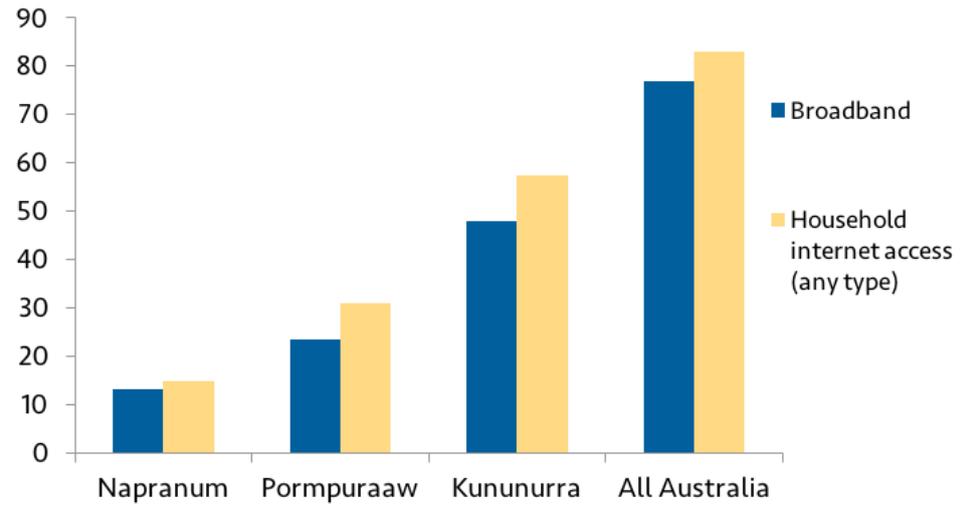


Figure 3. Case-study household and broadband access to Internet (%)
Source: data from Australian Bureau of Statistics (2014)





or out is via light plane. The Pormpuraaw Aboriginal Shire Council runs a small airport situated on the outskirts of the community, with generally one commercial flight scheduled in and out of the community per weekday. The community has a limited number of government and not-for-profit services located in the town, including: a primary school (years one to six), a post office, a primary healthcare centre, an arts centre, a community culture and knowledge centre, a State Government run local store, a licensed venue, an Arts centre, an Anglican Church and several other social services run by the local Aboriginal Corporation.⁵



*Figure 5. Main road from airport into Pormpuraaw
(Photography: Kristen Smith)*

Many of the houses in the community had recently been built under a Commonwealth Government housing scheme. Standard houses are basic two to three bedroom residences (fibro/tin roof). They have front and rear yards separated by wire fences and sandy soil that is not particularly good for growing vegetation – most yards have one or two trees (or none at all), although some yards have established gardens with tropical fruit trees. The main employers in the community include the Shire Council, Pormpur Paanthu Aboriginal Corporation, the Ranger station, the local store and the licensed Sports Club. There is a sports centre, but at the time of fieldwork it had not had any pro-

⁵ Pormpur Paanthu Aboriginal Corporation





grams operating for some time. At the outskirts of the town is a large crocodile farm (around 100m²), fenced off with an approximately eight to nine-foot wire fence.

The Telstra satellite tower located on the outskirts of town is the first sign of habitation when driving into the community. Telstra provides the only available Internet connection, but the connection is relatively reliable given the remoteness of the location. Although the connection slows down considerably in the evenings, there is broadband access in town. There is also access to the 3G mobile network, which provides coverage for the entire township and reaches approximately 2.5 kilometres beyond the perimeter of the town. Even so, under a quarter of the population have access to broadband connections and only approximately 30 per cent have access to the Internet at home from any source (see Figure 3). Although some of the professional workers of the community have Internet enabled phones, smart phones were not yet prevalent at the time of fieldwork. The local Post Office had only started stocking their shelves with low-end smartphones and there were no other mobile phone sales outlets in the community. Those community members with smartphones who discussed this with the project researcher explained they had purchased their mobiles externally.



*Figure 6. Health clinic in Pormpuraaw
(Photography: Kristen Smith)*





One of the HITnet kiosks in Pormpuraaw is located in the Queensland Government Primary Healthcare Centre, which most locals refer to as ‘the hospital’. It is situated on the main road in a central location of the community, in the vicinity of most of the community’s other services such as the Community Justice Centre, the Childcare Centre, the Arts Centre, the Community Development Programme office, the Queensland Government community store and the local Healing Centre. The touchscreen kiosk stands at the front reception area of the health clinic. This area is quite small, with several seats for waiting patients along the wall. This area is also the clinic’s main thoroughfare, leading to the clinical examination area. The kiosk is not particularly noticeable upon entering the reception, as it is positioned beside a stand holding health promotion pamphlets. However, as the area is small it is highly accessible. The positioning of the kiosk provides no privacy for users, as it faces outwards from the wall, in clear sight of the waiting area seats (although not in the line of sight for the medical receptionists). Given the small spatial dimensions of the room and lack of privacy, it is not a particularly user-friendly area to stand and watch the videos or interact with the kiosk for a lengthy period. However, the researcher did note that multiple people in the waiting area were accessing the kiosk during the fieldwork period.





2.2 Napranum



Figure 7. Satellite image of Napranum and Weipa

Source: www.googlemaps.com Accessed 20 August 2015. Copyright Google.

Napranum is a small Aboriginal community in Cape York, located approximately five-minute's drive from the larger, prosperous mining town, Weipa. The word 'Napranum' roughly translates to 'meeting house'. Napranum has a population of 919 people, with over 95 per cent identifying as Aboriginal and/or Torres Strait Islander (Australian Bureau of Statistics, 2014). There are at least 12 different traditional owner groups in the surrounding regions of the community, including the Alngith, Thaynakwith, Lathamngith, Linngithigh, Ndrra'ngith, Araithingwum, Nggoth, Troj, Anhathangayth, Mbiywum and Ndrwa'angayth peoples. Napranum (formerly known as Weipa South) was first established as a Presbyterian Mission in 1898. Although initially settled at a neighbouring inland location (20 Mile⁶), it was relocated to its current position in 1932. The HITnet kiosk in Napranum is located in a Queensland Health managed Primary Healthcare Clinic at the centre of the coastal community.

⁶ 20 Mile is approximately 30 kilometres inland from the current community site





*Figure 8. Entry to Napranum and Rio Tinto pier on the road between Napranum and Weipa
(Photography: Kristen Smith)*

Few local residents have access to the Internet in Napranum (<15%), which this is primarily accessed via smartphones. There was previously an Internet café located in the community that had been established by the Cape York Digital Network (CYDN), but the service had closed several years prior to the fieldwork. In discussions with the mother of a teenage daughter in the community, she expressed concerns regarding the educational disadvantage this reduced access had for children and young people in the community. The mother explained that her daughter (and other children of the community) had previously frequented the Internet café to access the computers and the Internet for homework and other related educational purposes, but there was nowhere in the community to do so any more. In discussions with an employee from CYDN in Cairns, he explained to the researcher that several years before, the State Government had acquired management of the café from CYDN and within six months had closed the service. Although CYDN maintains a wireless hotspot in Napranum, community members need to use their own devices to access the network.

Access to, and reception from Telstra's 3G network is reasonably good in Napranum, although a very expensive option. The fieldwork researcher (Smith) found that even primary school aged children were aware of the high costs pertaining to accessing the Internet using this technology. Smith visited the Police Citizen's Youth Club (PCYC) program centre on several occasions



to discuss the study with different staff and young people. On one afternoon, some of the children frequenting the centre's after-school programs excitedly gathered around her laptop to watch music videos in between organised activities. However, after streaming several music videos (approximately 15 minutes in duration) the children voiced their concern about watching any more, worried it would cost too much. One child explained that her teenage brother had recently been very angry with her when she had streamed music videos on his phone.



*Figure 9. Napranum Primary Health Care Clinic
(Photography: Kristen Smith)*





2.3 Kununurra



*Figure 10. View of Kununurra from Kellys Knob Lookout
(Photography: Kristen Smith)*

Kununurra is a regional city in the far north-east of Western Australia, situated on the Ord River, 37 kilometres from the Northern Territory border. The official population of Kununurra is a little over 8,000 people (Australian Bureau of Statistics, 2014), but there are high levels of seasonal fluctuation, as at different times during each year the inflow of itinerate workers and tourists can increase the town's population to over 10,000. Over one third of the population identify as Aboriginal and/or Torres Strait Islander. The main Aboriginal language spoken in Kununurra is Miriwoong, but other languages that are commonly spoken in the area include Jaminjoong, Gajirawoong, Murrinh-Patha, Ngarinyman and Gurindji.



*Figure 11. Satellite image of Kununurra
Source: www.googlemaps.com Accessed 20 August 2015. Copyright Google.*





The HITnet kiosk in Kununurra is located in the local Aboriginal controlled health clinic, the Ord Valley Aboriginal Health Service (OVAHS). In 2014, the kiosk was only operational (turned on) for 49 days across the full 12 months, or just under 10 (business) weeks of the year. During those 49 days, the machine was in use for a little less than an hour per day on average. The volume of traffic through the OVAHS waiting clinic is relatively high, with the medical receptionists reporting between 80 to 90 patients visiting the clinic per day. Even so, on average, the kiosk was accessed for only one to two purposeful sessions per day during 2015.



*Figure 12 Location of HITnet kiosk and television in OVAHS waiting room
(Photography: Kristen Smith)*

Given this data, it is not surprising that when the researcher first arrived in Kununurra to undertake the fieldwork, the HITnet kiosk in the OVAHS clinic was not functioning. After a telephone discussion with Julie Gibson from HITnet, the researcher was able to quickly restart the kiosk so that it was fully operational again. Julie had explained that the kiosk in the OVAHS was an outdated design and build, and had external buttons beneath the screen that could render it inoperable. This design feature had been phased out of later





models. This initial entrée to the fieldwork in Kununurra revealed several telling factors:

- The clinic manager (and the team of medical receptionists) were unaware that the kiosk was not functioning;
- Although the problem was easily resolved (pushing an external button under the screen), none of the clinic staff were aware of the ‘quick fix’; and,
- No one was aware of the duration that the kiosk had been out of order.

Unlike the waiting areas at the health clinics in Pormpuraaw and Napranum, the OVAHS waiting area was a large, open room with the kiosk situated in the back corner of the room, adjacent to a mounted high definition television at the other end of the room (see Figure 12).



*Figure 13. Ord Valley Aboriginal Health Service
(Photography: Kristen Smith)*





The television was constantly screening pre-loaded content from a USB flash drive that had been curated by the manager of the medical receptionists and her husband. The content screened on the television was a mixture of health-related television and entertainment videos. Some examples included: music videos by the Indigenous Hip-Hop project; advertisements for local Aboriginal organisations including the Wunan Foundation; an episode of NITV's 'Move it Mob Style'⁷; a documentary of the Australian Band 'Midnight Oil' on their 'White fella, black fella' tour; an episode of ABC's Insight focusing on foetal alcohol spectrum disorder; video of a traditional ceremonial dance for the opening of a local building; a Yothu Yindi music video and several other older music videos of Aboriginal artists singing in language. During the periods of observation in the clinic, most people in the waiting room were focused on the television. Although the number of people waiting in the clinic ranged from one to nine people, few approached the HITnet kiosk (see section 8.2 for further details on use and awareness of the kiosks).

⁷This is a children's fitness and dance program showcasing Aboriginal and Torres Strait Islander contemporary and traditional styles of dance from all over Australia, set to Indigenous hip hop and other popular music.





3 USER GROUPS AND KIOSK PHYSICAL ATTRIBUTES

3.1 Who are the main users?

Users of the HITnet kiosks are required to self-report their gender and general age group (child, teen, adult or elder) when initiating a session. Although the evidence gathered through the qualitative fieldwork of this project indicates this data is unlikely to be particularly accurate, it gives a general indication of the predominant user groups for each kiosk. For example, Daniel from Napranum explained his perspective:

Yes but you know, not everyone is going to be honest, yeah, which age group, yeah exactly, that's what I mean not everybody is going to be honest, I've done it, I'll see how I go to an older person, see how the younger ones are. I've done it. We've all done it. Sorry, but yeah...

(Daniel, Napranum)

This self-reported data indicates that the age groups and gender profiles of HITnet users are quite similar nationally, regardless of geography (see Figure 14 and 15). Young people (teenagers) are reported to be the highest user group, followed by adults. This data shows that children, followed by elders, are the two lowest user groups. However, this data was not consistent with the qualitative fieldwork undertaken in this research at the three case study sites for this project, where the observations, discussions and interviews with locals and onsite staff indicated that younger children were the highest user group. For example, participants in all three case study sites indicated that children and young people were the highest users.

Mainly the children, like I said before. The children do. Every time I go in the clinic for my business, it's always on, and there's kids in there watching it...I really thought that thing was for the kids. Some adults turn it on, sometimes I see adults get up to touch it.

(David, Napranum)

Jasmine: Yes, I've seen the kids on it. Basically mostly kids.

Researcher: So when you say kids, do you mean under 10 years old? Or what sort of age group?

Jasmine: Yeah, could be. Mainly the little ones.

(Jasmine, Kununurra)



The kids and the teenagers, they like it. Some of the adults... you don't see as many adults, like in their 40s that use it. They will muck around with it when you've got the teenagers going there first... so they'll be curious, and go and have a sticky-beak.

(Jessica, Pormpuraaw)

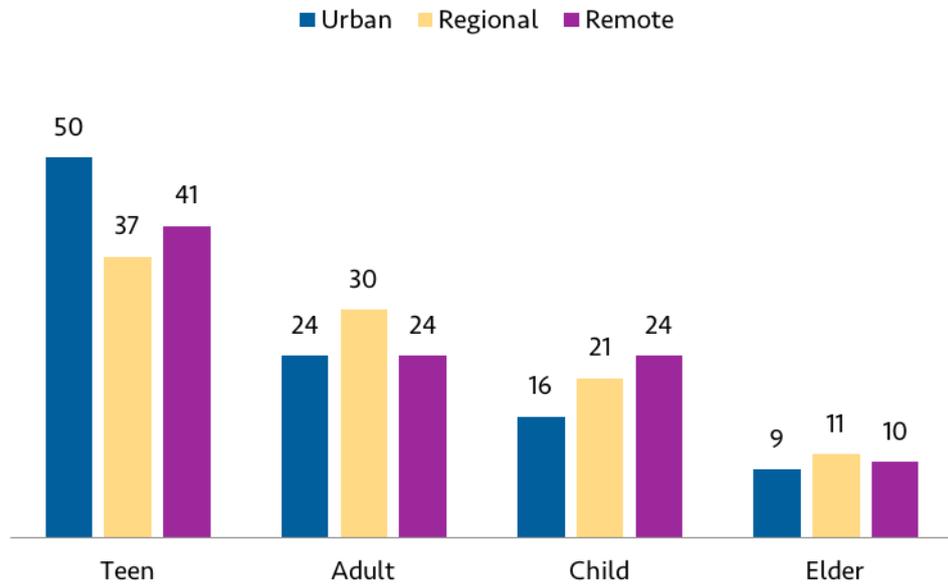


Figure 14. Users by age group and region (%)

Source: www.hitnet.com.au

Participants at all three case-study sites reiterated David, Jasmine and Jessica's observations, with children and young people recognised as the main users by community members and healthcare workers. Fieldwork observations also confirmed that although children did not use the kiosks exclusively, they were the first to notice, approach and use the kiosk at each location. From observations, the next most frequent user group were young people, who were generally more at ease in approaching and using the kiosk. In contrast, adults and elders seemed more hesitant to approach the kiosk and used it for shorter durations than the children and young people. This was particularly the case for elders observed using the kiosks. Conversations with elders in the communities studied revealed that they either found the format too confusing, or that they were not familiar enough with touchscreen technology to know how to use it.





Although there were few participants that discussed a gender division in users, data from the kiosk showed a statistically significant differential, with males as higher users than females. However, a medical receptionist in Pormpuraaw confirmed this demarcation, noting:

I think it's the boys that are using it more. Probably from 15 down that are more boys. You do have a lot of the girls there, but the majority would be boys.
(Jessica, Pormpuraaw)

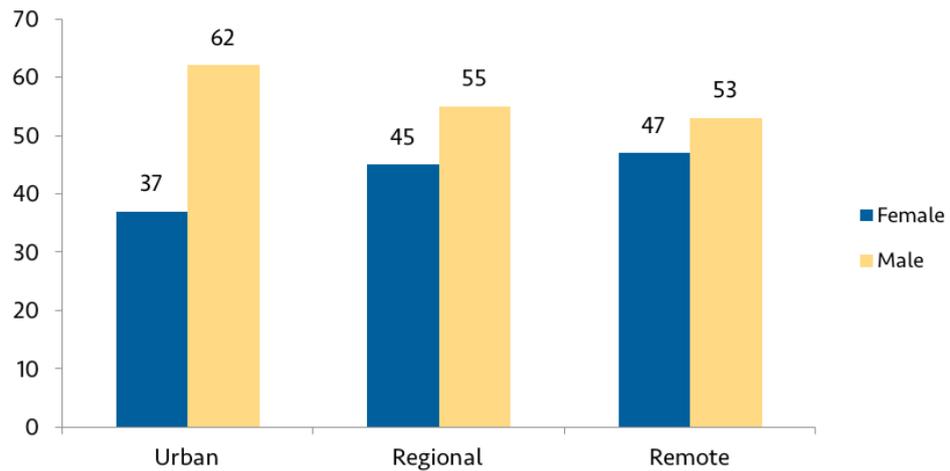


Figure 15. Kiosk users by gender and region (%)
Source: www.hitnet.com.au

3.2 Patterns of use and awareness of the HITnet kiosks

In both remote communities of the study, the vast majority of people seemed aware of the HITnet kiosk and had either used it themselves or had seen it used by others. Conversely, most people in the regional town of Kununurra were unaware of the HITnet kiosk. In Napranum and Pormpuraaw, the HITnet kiosks are located within the only health service in each respective community. For this reason, most community members attend the clinic with some regularity, either for themselves or in relation to family members. By contrast, the kiosk in Kununurra is located in the Ord Valley Aboriginal Health Service (OVAHS), which is one of multiple primary and tertiary health centres in the regional town. During fieldwork in Kununurra, discussions with locals revealed that although many Aboriginal people use the medical services at OVAHS, this was not the case for all, with some groups of people actively avoiding the clinic.⁸ Some young people

⁸ Although several people intimated that some form of divisive local politics was driving a shift away from OVAHS by several groups, the details were not made overtly obvious to the researcher





explained that they preferred to attend the local hospital or other clinics for reasons of privacy, as they didn't want everyone "knowing their business".

There were also differences in the physical location of HITnet kiosks at each site, which seemed to make them more or less visibly obvious or used. In all three locations, the kiosks were situated in the main waiting room. In Kununurra, the waiting room was the largest, with four rows of six to eight seats, and the kiosk located in the back corner of the room. In addition to the kiosk, there was also a television mounted in the adjacent corner of the room, playing similar content on rotation. Lauren, a 22 year-old participant from Kununurra, knew about the kiosk but she initially thought it was a device that was for the staff of the clinic rather than the patients, stating:

*Well, I didn't actually know what it was when I first went there...I've never seen anyone use the kiosk in the past.
(Lauren, Kununurra)*

A health worker at OVAHS in Kununurra concurred with Lauren:

*In the little time that I've gone out there, I don't know that I've seen anyone touch it...Which is not to say that they're not using it. I just haven't seen them use it.
(Amy, Kununurra)*

Lauren went on to note that although she had used the HITnet kiosk on occasion, when she went to the clinic she usually just sat and watched the television. However, she also stated:

*But it would be good to have all of that stuff in the kiosk on the TV as well... something like that, you know? Because - like I said - nobody's got control of it, and it's the only thing in the room going, and it's getting people's attention. Whereas, the kiosk is only getting attention when someone's up there using it. And hardly anybody goes and uses it.
(Lauren, Kununurra)*

The particular location of a kiosk in a waiting room is only one of several issues that may be relevant to its level of use. The lack of awareness or engagement with the kiosk by workers at a kiosk site is another factor. For example, the healthcare clinic staff in Kununurra knew very little about the kiosk. One medical receptionist explained that she "didn't know what the machine was", although she had occasionally noticed some of the children using it (Jasmine, OVAHS, Kununurra). When the researcher asked a clinic manager if she thought people used the kiosk often, she answered:





I don't really think so. Because it took me a while to realise it wasn't even working.

(Amy, Kununurra)

As detailed in section 2.3, the kiosk in Kununurra was out of order when the researcher first visited the clinic. Although the resolution to the particular problem was simple, the lack of knowledge or understanding by local staff could explain the reduced number of days the kiosk was in use and operational annually (see Figure 16).

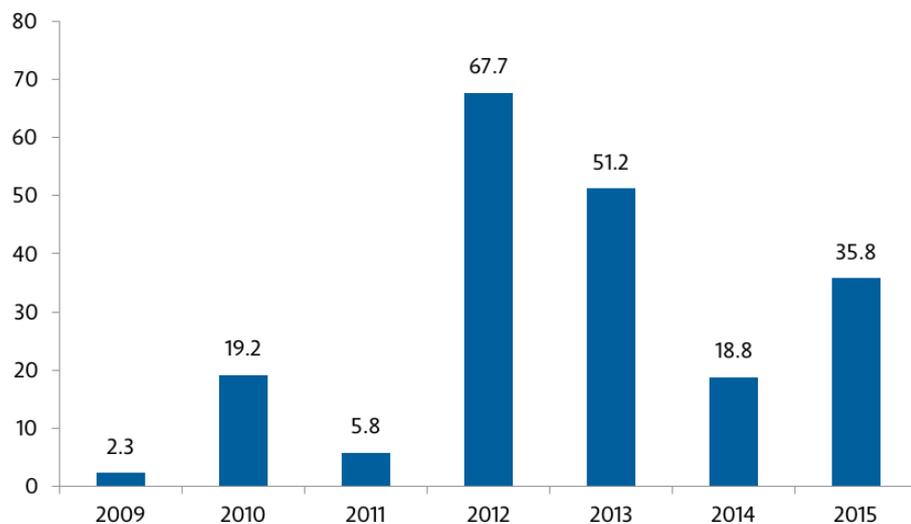


Figure 16. Annual percentage of days kiosk was operational at the OVAHS clinic (Kununurra)

In contrast, the HITnet kiosks in both Napranum and Pormpuraaw were more widely recognised and in prominent positions in both of the comparatively small waiting rooms in the Primary Health Centres (PHC) and in the Culture, Learning and Knowledge Centre in Pormpuraaw. Of the kiosks in the PHCs, both waiting rooms had only one row of chairs all facing in the direction of the kiosk, so could easily be seen by all. When a module is triggered, it is audible and within the view of all in the waiting room. As noted by David, a community member in Napranum:





But its good you know. Every time I go to the clinic my fingers have got to touch it... That little machine helps with the boredom of just waiting for your name to get called out, so you just sit down and watch...sometimes you get into it and you don't hear your name!
(David, Napranum)

3.3 Location

There were two key factors drawn from research observations relating to the location of the touchscreen kiosks. First, most people agreed that health clinics were a good place for the kiosks in terms of the content and accessibility for all of the community. However, many participants also suggested that locating a kiosk outside of health settings would be useful for different reasons. For example, Lauren from Kununurra articulated that some of the preventative health messages may be less useful to people already attending the clinic, as those with the lowest levels of health literacy would be unlikely to attend (or attend irregularly). Her suggestion was to ensure that the kiosks have more impact; they would need to be located in non-health settings that are highly frequented by community members:

Well, it's good that it's there, but I reckon it should be somewhere else too. Somewhere around town, like in the Rec⁹ centre, or in the leisure centre, where they have the gym, where there's other health programs going, like the gym or even in the OPUS centre. Because you know at OVAHS, people are only going to notice it there when they're already there, they're sick or something's already wrong with them, you know. It would be best if they could have it in another place, to prevent things.
(Lauren, Kununurra)

⁹ Recreation Centre





Other participants thought that the kiosks should be located in a range of different services around the communities and used for a range of different applications.

It would be good to have one here when we get this place up and running because you know, a lot of people a lot of kids, a lot of visitors coming through and they might want to find out more information about Napranum. It would be good to have a localised thing, information. Yes, as soon as we get the ranger base up and running, we will have a lot of people coming through. And we have visitors from out of town that come through and do a lot of camping up this way. So places like the ranger base, the new shopping centres down there. One in the hospital there. So places where people are actually going to come.
(James, Napranum)

Somewhere else too, hey [apart from the clinic]. Probably down at the store... yeah, down at the store would be good too.
(Annie, Napranum)



*Figure 16. Local Knowledge, Learning and Culture Centre in Pormpuraaw
(Photography: Kristen Smith)*





In the Kununurra clinic, the local manager explained that she thought the kiosk was located in a poor position for its use, but noted:

... it's a bit of a hard one, because it's in a good spot for privacy, for people to be private, but I think it's tucked in the corner where no one can see that it's there... notice that it's even there.

(Amy, Kununurra)

However, some participants suggested the location was not private enough:

Yeah, it definitely needs more privacy [than] where it's at.

(Lauren, Kununurra)

Other participants were concerned about the kiosks being in more private positions, worried that young children would be able to access inappropriate content:

I think that would be my concern, that part, to watch things in privacy or have things on display that you should or shouldn't be looking at. Just the content of these things to be appropriate, and targeted to the right groups. Because if you mix it up with things that focus on adults that children shouldn't be seeing then it's something that they can't access. Because it's public access. That might be the downfall too.

(James, Napranum)

Many participants discussed how they would like to see the kiosks used more broadly and in different places than in health clinics.

Like I mentioned before if you could have some set up in various spots, like sort of hot spots near the clinic and now when the new civic centre is going to be fully operational as of January.

(Napranum Ranger)

Yeah, because I believe that that education should go into the language centre, you know? We don't reckon there's much programs at all ... not enough. Because people will only go to OVAHS when they're sick. Now people need to have information before they get sick, and children should be educated through their cooking classes and everything so that these kids go home and actually tell their parents too, "Look, these are food good for you, so why can't we have this?" This is changing a little bit of habits too because everybody getting educated, and shouldn't be only at OVAHS. It should be slipped into every official program that you've got out there. Mum's and bub's program, whatever, you





know. The important thing is these young girls get to know the food factor that they have to feed their babies to grow them up, because grandmothers can't do it all the time.

(Emily, Kununurra)

3.4 Ease of use and design

The HITnet touchscreen technology and content is designed to cater to low literacy and inexperienced technology users. The majority of people in the study agreed that the kiosks are easy for most people to use.

I mean, there's health things on that machine, but there's also a lot of singing and dancing. Blackfellas like that, especially kids...it's easy to use. You know with all them little buttons, they come up with "next", "back".

(David, Napranum)

Yeah, it's easy you know. Touch screen, and bang, there you are.

(Harry, Napranum)

I mean, that's a very simple way of getting information across to Aboriginal people.

(Matthew, Pormpuraaw)

I've got a 2-year-old who can manoeuvre, and who knows how to use it. So it's very easy to use. Very user-friendly.

(Emma, Pormpuraaw)

Well, I think that the touch screen is better than the Internet. People can watch the touchscreen, you know, I can watch it.

(Harry, TO, Kununurra)

However, there were several elements of the HITnet kiosks applications and design that some participants found confusing, disconcerting or difficult to use. Multiple participants noted that the initial screen requesting users to identify the person they are most similar to as either confronting or confusing. This screen features a scroll of different cartoons of people of different age groups and genders (e.g. brother, sister, mum, dad). When discussing the feature, Lauren from Kununurra noted:

It was just having everything relevant to the age group, I found that more confusing.

(Lauren, Kununurra)





One of the health workers at the Kununurra clinic explained that asking people to decide which of the characters who were the most like themselves was off-putting for several reasons:

1. People are suspicious of why anyone wanted information about themselves, worrying about what it is used for; and,
2. That it is not explained who has access to this information.

She also expressed her bemusement over the selection of the specific voice chosen for the voice-over, stating:

I think the beginning part's maybe a bit off-putting, where you've got to tap what describes me, or which person is most like me. It's just a really odd voice and a really odd question.

(Amy, Kununurra)

As Amy was a very busy clinician, but also held the responsibility of managing the kiosk, she expressed that it could be useful if she received more regular reminders from the organisation to check on the unit:

They were - for a while - sending me the statistics of how many people used it. It just used me to make sure to go down and turn it on. So if they want to keep sending me little statistics or little prompts or little emails...

(Amy, Kununurra)





4 CONTENT RELATED ISSUES

4.1 Finding and accessing health information

Health promotion material is primarily developed to increase the health literacy of populations. This is because health literacy is understood to be a significant factor in health outcomes and general population burden of disease. The Australian Bureau of Statistics (2009) defines health literacy as:

...the knowledge and skills needed to understand and use information relating to health issues such as drugs and alcohol, disease prevention and treatment, safety and accident prevention, first aid, emergencies and staying healthy.

In a study based in the Northern Territory, Vass, Mitchell, and Dhurrkay (2011) found that for the Yolŋu, health literacy is intimately tied to language and worldview. Their study indicated that for health promotion and health education programs to be successful in indigenous Australian communities, they must acknowledge and engage with the specific worldview and language characteristics of the particular population.

Health information was sought and accessed from a range of different sources by participants at the three case study sites, with many stating they primarily sought information from the Internet.

So yes, most of us I think would use Google.
(*Jasmine, Kununurra*)

They'd go to Google, and each other.
(*Amy, Kununurra*)

Others discussed how this was influenced by factors such as age, gender and occupation. Lauren from Kununurra explained some of the intergenerational differences in how her family finds health information:

I'd go on Google... that's the only way, you know, unless I was able to take him to a doctors then and there. Like, if I wanted to find out, yeah I'd go on Google, and I'm always ringing up my mum [laughs]. The rest of my family... well my dad he's not for the Internet, he doesn't know how to work the Internet really well, and the smart phones, but he... he would go and see a doctor, whereas mum would probably... to me she'd probably be like "oh, go and look it up on Google" [laughs]. So, instead of going to the doctors and checking for herself, they're asking other people and asking around.
(*Lauren, Kununurra*)





4.2 Format & design of content

Very few participants or other community members discussed specific health information messages they had viewed on the kiosk. Instead, most were more interested in the format of the content (game/animation/song) or the participants in the individual modules (such as the people they knew). Data from the survey indicated that the two content formats most liked by users were ‘true life’ narratives or modules in a game format (see Figure 18). The majority of the children the researcher spoke to were most excited about the game modules, many remembering content that had been removed up to one year prior.

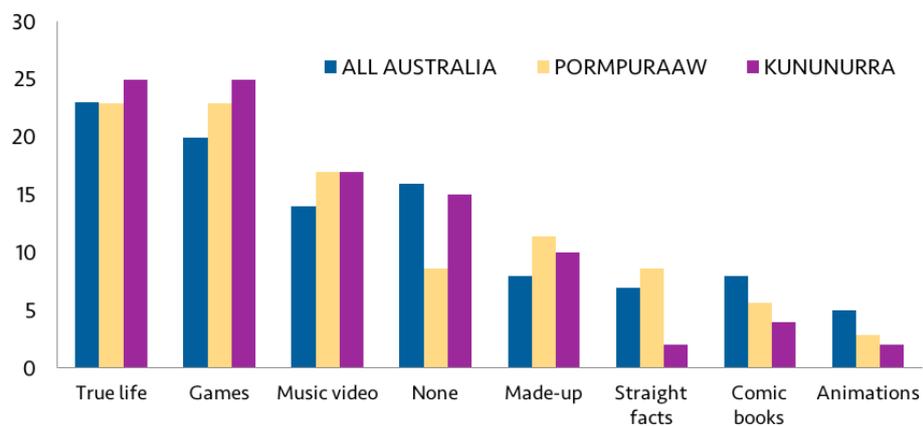


Figure 18. Format preference for HITnet content (%)

Source: HITnet kiosk survey

Many people in the two Cape York community case study sites discussed their preference for the co-produced hip-hop and other music video modules. One community service provider in Pormpuraaw, Emma, explained:

There is some sexual health stuff on there, for example. But the kids haven't really accessed that as much as they've accessed the hip-hop, dancing stuff. So if there's more of a hip-hop feel to it... which is more of what the kids are really into at the moment, and what the youth are into. Maybe that will prompt them to get more into that stuff. Because sexual health is an issue, with our youth and younger adults. So maybe that's the path we should move down, trying to get more of the hip-hop things into that sexual education.

(Emma, Pormpuraaw)

Other participants explained that their interest in the kiosk was derived directly from their interest in the music:

Because there's good music on there. Music with songs that are written by the people on there.

(David, Napranum)





To be honest, it's the same song we generally hear over and over again. And I think the more informative videos on there, the kids aren't interested in. They're interested in the music and the dancing, straight away that's what captures their attention.

(Emma, Pormpuraaw)

4.3 Information priority areas for case-study sites

Some participants mentioned particular modules – past and present - that they thought were useful or informative. For example, Lauren stated: “the smoking one is good, I got that one” (Lauren, Kununurra). The highest burden of illness in many remote and regional indigenous communities in Australia is from chronic, non-communicable disease. The most prevalent of these are diabetes, cardiovascular disease, respiratory and kidney disease. A community elder from Kununurra noted that kidney disease is a high priority area for indigenous groups in the area:

There's modules that you do that will suit the illness that's impacting our people, so if the kidney one is one. Well, the module for the, to clear the kidney, to educate them through it and yes, we've got dialysis machine here but you don't want to go on that. You want to educate people to steer themselves away from there, get back to the healthy eating for their next generation to say that, “This is the food our parents put on the table for us, and this is how we're going to eat,” because your children only follow your footsteps which are learnt now.

(Emily, Kununurra)

Other participants mentioned a range of other health related issues they thought should be addressed:

...but I think like a few more health issues, more stuff for the community, like sexual violence... because that's hidden there, that's sort of hidden... you might know more than me, about this sexual violence and that.

(David, Napranum)

Early prevention would be good because a lot of our kids lack education because they've got no good ears from little one - from swimming and what not - and by the time they're teenagers they're sitting around, they want to listen to music because they can't hear that talking or anything. You know, they've lost...everything, yeah.

(Emily, Kununurra)





I think diabetes. Heart problems, anything that would held... like if they've got diabetes, they could press a button on diabetes. And even though a lot of them can't read, you could have photos or pictures.

(Stephanie, Kununurra)

4.4 Responsive, community driven content

Digital technologies have the potential to provide an effective platform to enable individualised dynamic responses to issues in real time. The most common complaint that was voiced about the HITnet content was related to how infrequently it was updated. As discussed earlier in this report, the Kununurra clinic also had a television running similar health promotion and entertainment content in the same area that the kiosk was located. Most people in the waiting area watched the content on the television, but very few engaged with the kiosk. Amy, the manager of the clinic thought that this was because she regularly updated the content and curated the material responsively to local issues and community interests. Amy noted:

We just did a survey on our waiting room, and the big thing that came up... we've got a TV down there and everyone decided that they are going to watch TV. So we made a USB with 8 hours of stuff to repeat each day. But people didn't want to listen to the same thing each day. And that's what came out of the survey, it wasn't that people didn't want the health messages; they just didn't want the same...

(Amy, Kununurra)

Participants across all three field sites regularly discussed the lack of updated content.

I think the only one that's been updated was the recent Napranum hip-hop song that we did. Plus, all the other communities. Like Mapoon? I think Mapoon is on there.

(Liam, Napranum)

...content not new.

(Lauren, Kununurra)

Because it is good, people do use it, and the stories are getting a bit stale now! People want to see new ones, newer ones... You could bring someone here and teach them. I think kids would understand how to do that, to make their own little videos.

(David, Napranum)





I mentioned it before about updating content and that, having it more community related. I spoke to [X] about it earlier, what I was telling you inside there about it can provide positive influence and have a positive message on it. What it's meant to do now but, to have it updated and have it far more community based.

(James, Napranum)

Although many health problems in communities are either chronic or recurring, acute outbreaks of communicable diseases or infections could be addressed if information and modules could be added to the kiosks in rapid response. An example of one specific health issue that arose at a case study site during the project was an outbreak of a particular sexually transmitted infection (STI) within the community. The high level of diagnosed cases confirmed during a short period of time caused major concern for health providers and other community organisations due to its fast rate of transmission. Service providers discussed the issue, explaining the importance of rapidly providing health information to community members to contain the spread of disease. A local Shire Council worker explained that although they put posters up around the community, he thought that the HITnet kiosk could be another effective platform to disseminate this information if community officials were enabled to do so in a fast and responsive manner.

4.5 The HITnet Frame of Mind Project (Napranum)

As part of their work in Napranum, HITnet partnered with local young people, the Indigenous Hip Hop Project (IHHP), Napranum PCYC, the Napranum Shire Council and Queensland Health to co-produce a music video with a suicide prevention message. The aim of the video was to use culturally sensitive strategies to assist young people in supporting others who may be struggling with substance misuse. By involving the community in the production of the video, the project also sought to address problems faced by disengaged youth, operating in an intergenerational and peer-participatory manner. The project coincided with the suicide of a man in a neighbouring community. As such, it was a very culturally sensitive time. However, the Napranum community welcomed the continuation of the project, offering clear guidelines on how to continue in a culturally sensitive manner.





The video was filmed in Napranum and its surrounds. It was distributed to the kiosk in Napranum, and across the national network. At the time of writing, the song 'Here we go' had been viewed over 37,000 times on YouTube in addition to the 3,000 views it had received on the HITnet kiosks nationally. One participant in the music production discussed the significance of the video being made available on YouTube:

... to broadcast it digitally, have it up there, then it's one of the best things that could ever happen in communities. Because everyone is pretty much on social media.

(Liam, Napranum)

IHHP was central to the creation of the music video, developing the narrative and script. The organisation has a well-developed knowledge base in working with youth mental health and have a long relationship with Beyond Blue. One study evaluating the work of IHHP indicated that young people retain positive mental health messages for at least six months after a community workshop (Katitjin, 2009). Another study of a sexual health workshop IHHP conducted in the Torres Strait found that it increased community awareness about the issue and effectively engaged the target group of young people in the community (McEwan, Crouch, Robertson, & Fagan, 2013).

During the fieldwork of this study, the researcher engaged with multiple participants involved with the 'Here we go' production. All discussed the project extremely positively, expressing their desire to participate in further productions. The vast majority of community members spoken to also expressed their happiness and pride that other communities all over Australia were viewing the production made in Napranum. A participant in the production explained how he felt about the process:

Yes, we managed to do it in one week; it was good, enough for one shift. You felt privileged that the community was working together. Because every other time it's just, well there are lots of layers, if anything. But things like that it helps bring the community together. Helps give the community a sense of belonging and composure and we want to try and maintain that you know. Try and establish a new mindset, make our people think differently. Especially for this generation. Too many generations have been unfortunately led by bad example in certain areas.

(James, Napranum)





Figure 18 On set of the Napranum co-production 'Here we go'
(Photography: provided by HITnet)

4.6 Limitations of digital technology and health information in indigenous contexts

A significant limitation of improving the health of populations through digital health promotion is that there can be major gaps between what is required or recommended for better health outcomes and the lived realities and conditions of different populations. Digital health promotion strategies have drawn criticism for their emphasis on individual responsibility for health through behavioural risk management. This standpoint often neglects the complex dynamics that determine the health of individuals, communities and societies at large. Factors beyond the reach of an individual include broader social, cultural, economic and political factors, which often have a far more significant impact on population health. For example, poor health outcomes have been found to be closely associated to socioeconomic disadvantage, which is experienced by many indigenous Australians, particularly those located in remote areas (Allard, Wilkins, & Berthelot, 2004; Australian Institute of Health and Welfare, 2007; Trewin & Madden, 2005). Low socioeconomic status has been linked to exposure to higher levels of risky behaviour and high-risk environments. These factors are further exacerbated by lack of access to appropriate services due to cost or distance, poor access to healthy food, water and other basic essentials required for healthy lifestyles. A clinician in the health care clinic in Kununurra explained some of the contextual conditions experienced by many indigenous people living in the area:





If you go back, these people live in overcrowded conditions. They can't afford housing. They live on - I think the last statistics in the Kimberley - was \$287 a week. For the Healthy Choices they worked out that you would spend 75 per cent of your budget on the food that the government says that you should eat. So that's 75 per cent of the budget, just on the food to eat. So we go, like, these people come in here and they want to be fixed up here and now, and they've got overcrowded conditions. They don't have money to survive. They've had either their power or their water cut off. I think over 50 per cent of the people down here don't even have proper running water. They've got restrictions in for not paying their water bills. So, we need to go... we can only do so much with what we've got, but these guys out here in the community are living in what I would describe as Third World conditions, and we want to preach to them about being healthy? We can't even provide basic living standards... do you know what I mean? When the basics aren't there, when they don't even have running water to be able to have a shower and wash their clothes, and we want to teach them about this or that. And I think people underestimate how much they know. Like, these guys out here can see people dying from diabetes, it's all their brothers, sisters, aunts, everyone that's over there. They can see that. It doesn't take a brain scientist. So I don't think that these guys here, I don't think that they don't care, or they don't want to know, because there's nothing they can do about it to change, or to have an impact anywhere along these lines.
(Amy, OVAHS, Kununurra)

Broader structural issues of social, economic, employment and educational disadvantage were frequently discussed during the periods of participant observation, with many highlighting how both health and digital disadvantage experienced in indigenous are driven by these causes.

But you know what? We've been, like in small towns like in the Kimberley, I believe that the employment that has to go out to the Aboriginal people is in the health sector but also in the Ranger sector for the healthy people that can sort of work on the land and country and get their dignity back and to work on our health. And this is about putting health workers with a degree to help the grassroots people be educated and move up to the next level.
(Emily, Kununurra)

I would like to see something - because I know it links in a way, you know - how there's kids that are not going to school, not going to high school or whatever. They're coming back here and I don't know how you could link it up. Because they're the ones that are not knowledgeable, in the way that they don't know what to do. They're just sitting around; they're just going to get the dole. They'll get the dole, and some of them - most of them - have children and get on welfare.
(Jessica, Pormpuraaw)





5 FUTURE USE: TRANSITIONING FROM KIOSK TO COMMUNITY HUB

The world is turning into a digital world, so really... if the community itself wants to keep up with what's going on in the mainstream areas, we do have to look more at the digital world, and putting more digital technologies into what we're doing.

(Emma, Pormpuraaw)

There are two key factors that emerged from the qualitative data of this study in relation to the transition of in-place digital information systems such as the HITnet touchscreen kiosks to the role of a digital community hub:

1. Increasing and supporting local ownership of the content, design and processes of technology systems, through mechanisms such as targeted training and education to build local expertise in media and ICT competencies.
2. Increasing the cross-platform adaptability of the kiosks to allow engagement with mobile device applications and social media.

5.1 Technologies of representation: Cultural preservation and reinvigoration

Participants regularly discussed the role that digital technologies can and do play in maintaining and reinvigorating cultural practices. Sloggett and Ormond-Parker have noted that digital media can enable broad intergenerational engagement for Aboriginal communities when it “empowers elders who want important knowledge to be available to youth, and empowers young people as agents in the preservation of this knowledge” (Sloggett & Ormond-Parker, 2013, p. 228).

In Pormpuraaw an intergenerational cultural program was underway where community elders had been teaching the local school children traditional ceremonial dances. Emma explained how digital technologies such as the HITnet kiosks could be used to support this locally driven initiative:

...there is a lot of cultural knowledge on “this is how you weave”, “this is how you collect this”, “this is how you make a spear”, but not much on actual... the stories that they like to tell of how things used to be, and that kind of stuff. Because this community needs something, because there's not a lot going on. I know the school's just started some stuff of the elders coming in and teaching,



I don't know if it's once a week, or it's once a month, or what it is, but... that's what we need more of. Like we've got the elders coming in to teach the kids to dance, but if it's in a format that the kids can watch as well, the Elders don't have to be relied on. Because it's getting hot now, it's a lot harder for them to come out and do stuff as well. I mean they love it too, because it's an interaction for them, but sometimes it's a bit much for them. And if you can have something that's already been done previously, and the kids are learning from something they've previously seen it would be great.

(Emma, Pormpuraaw)

The program's newly formed dance group spanning multiple generations performed at the opening ceremony of the knowledge and cultural centre during a Cape York Youth Summit held in the community during the fieldwork research for this project. The ceremony was filmed by the local Aboriginal Corporation and was hosted on their local HITnet kiosk soon after. This is one example of how digital technologies such as the HITnet kiosks can be utilised in conjunction with local indigenous people to foster and support the transmission of traditional cultural knowledge and practices across generations. Many other study participants discussed the importance of creating further digital content focusing on local traditional knowledge.

Yes, it would be good with more videos. More strange faces, especially the young...the young ones, you know? And, like me, I do... take some of the students out, for the bush tucker and that... make spears. You know, with the young kids, to get young kids get involved, you know?

(Harry, Napranum)

I think there are some things on there where people talk about their country, but we need more of that. Seeing as out here we are on the land, we're not like Cairns or Townsville Murriss... more land, sort of stories.

(David, Napranum)





5.2 Platform for narrowcasting local media

Participants at all three case study sites expressed the desire to actively participate in the production of easily accessible, community-driven content that was relevant to their daily lived experiences. Since the 1980s, various researchers have documented indigenous peoples' engagement with media content (see for example Ginsburg 1991, Kral 2010, Meadows and Molnar 2002, Michaels 1986, 1989). In 1986, Michaels discussed the growth of Yuendumu television and found that the Walpiri were motivated and highly skilled in producing local content with their own styles, genres and transmission styles that were both original, culturally based and enhanced political and social autonomy (1986, p.127). He states:

The findings from the Yuendumu community television experiment indicate that remote people approach innovative technology from a traditional perspective and seek to use the technology in ways as consistent as possible with existing cultural structures and to serve traditional objectives (Michaels 1986: 135)

Michaels also discussed the way in which the indigenous media content developers at Yuendumu, such as Jupurrurla Kelly, were leading cultural brokers who used film and technology to 'express and resolve political, theological and aesthetic contradiction that arise in contemporary circumstances' (Michaels 1987: 26). According to Michaels, television also came with various costs, such as challenging the authority of senior leadership structures and localism of knowledge (1986: 128). Michaels argues that in supporting the creation of local content, indigenous communities need to be provided with training models that are consistent with existing cultural structures; However, the effective creation of local media and information content requires support structures, planning resources and licensing provisions. Bennett and Carter note that indigenous Australians have used media to create new cultural models and methods of distribution (see also Kral 2010). An example of this is the Tanami Network in Central Australia. Using satellite technology, four indigenous communities in 1991 established a compressed videoconferencing network (Molnar 2001). The network was owned by the community and funded by government departments and users connecting Yuendumu, Lajamanu, Kintore and Wilowra with the rest of the world to enable users to make family and ceremonial contacts, to plan service delivery arrangements, undertake secondary and tertiary education, access telemedicine, participate in video-conference auctions of Aboriginal art and enable recruitment and promotional interviews for various agencies (Molnar 2002, p.323).





In many developing nations, technology has facilitated significant improvements to the daily lives of people in marginalised and disadvantaged communities. Technological developments have the potential to disrupt dominant discourses, provide channels for alternative discourses and allow more equitable access to information and resources. Ensuring communities have influence and control over interactive content, through user-centred and participatory design processes, is crucial to achieving these aims. Internationally, there is substantial evidence outlining the benefits of community ‘ownership’ of both digital content and information technology delivery platforms (Agarwal, Kumar, Nanavati, & Rajput, 2010; Smyth, Etherton, & Best, 2010; Srinivasan, 2006).

Ginsburg (2002) contends that the establishment of locally driven media technologies has been a means to empower indigenous Canadian communities. In respect of the formation of the Inuit Broadcast Corporation in Canada in 1981, she notes:

Rather than destroying Inuit cultures as some predicted would happen, these technologies...have played a dynamic and even revitalizing role for Inuit and other First Nations people, as a self-conscious means of cultural preservation and production and a form of political mobilization (p.41).

Community based productions, beyond being “beloved locally and in other Inuit communities” have had wide reaching benefits including re-creating oral traditions, reinforcing language skills of younger members of the community and providing interest and employment for local people (Ginsburg, 2002, p. 42).

Another example of a simple digital information system enabling community content production is the ‘VoiKiosk’ information system that was developed and implemented in a rural village in South India (Agarwal, Kumar, Nanavati, & Rajput, 2010). This interactive community-driven technology system enables simple content creation by community members. The system was created in response to the lack of locally relevant content provided to communities via radio, television, and other public announcement methods in rural India. Over 740 million people reside in rural India, many of whom have very low levels of textual literacy. A rationale for the establishment of this system was to ensure that “semi-literate and illiterate people are more comfortable with speech-based interfaces to access communication services” (Agarwal, Kumar, Nanavati, & Rajput, 2010, p. 21). VoiKiosk is a system of voice-information kiosks, where information can also be accessed at the kiosk, or over the phone





by calling a toll-free number. VoiKiosk provides four main categories of information:

1. Agricultural information
2. Health information
3. Information on a local community centre (all provided by experts)
4. Advertisements for professional services (provided by community members)

Villagers were able to post advertisements or listen to any general information on VoiKiosk by visiting the kiosk or calling the toll-free number. The system was designed by a participatory process involving consultation and testing with villagers and members of local NGOs. Over a nine-month period, the system received approximately 115,000 calls from 6,500 villagers, with the number of calls increasing steadily over the pilot period. User generated content was the most frequently accessed and utilised. Moreover, Agarwal et al. noted “the ad section evolved into a message-board through innovative use of the interface by the villagers” (p.33). Community members reported that they found the system beneficial in that it provided them with timely information about their own village.

Many participants in this research discussed how they wanted to use digital technologies to connect with other communities and as a means to provide locally relevant information to their own community. Many highlighted the need for content to be well tailored to individual contexts by involving the individual communities in the process. Amy explained her frustration at what she perceived a generalised assumption that Aboriginal communities are all the same, regardless of location or community size:

It really needs to be relevant to the community that you're in, and just because it was relevant in Broome, it doesn't mean that it's relevant or right for us. Everyone just goes 'remote and rural Australia' and we're all just lobbed in together. We're a pretty big area you know! And what is right for one place isn't necessarily right for over here...but I think that's what you need, you need to get the local indigenous people involved.

(Amy, Kununurra)





James highlighted the importance of local control over the information:

So if its local ideas, well that's how it should be. We don't mind that there are clips from other communities. It's nice to know about. It's more important that it's all localised because, it's our community at the end of the day. It's the message that we want to put across. The information that Napranum wants to give to Napranum people and to our visitors as well.

(James, Napranum)

Participants in the study also voiced their desire for a local media service and to promote their local communities and services.

They have a community digital promotional thing happening where they promoted health and wellbeing, messages and that. They did have other community notices as well. And it was all Yarrabah; it was all actually on TV. It was broadcasted digitally. So something like that would be good, rather than looking at just a little screen...

(Sam, Napranum)

Yes, a digital community noticeboard, practically. You put updated information on there. And someone from the council puts something from My Pathway. Something from each organisation to say this is what's happening here in community. You know, maybe put on the screen saver that there are job opportunities going in council, in My Pathway. Things like that you know.

(James, Napranum)

Because the majority of the community don't really know what goes on because of all of the social things, all the social indiscrepancies that happen in community, it's always an issue but to have something like this I can see it will make a big impact in community. It will hold its value very well for the purpose of its use.

(Liam, Napranum)

Many community members agreed that training local people in media and ICT skills would also be very positive for their communities, particularly for young people.

Yes, it will be good if someone... came to train those young ones and showed them how to do it. So they get the hang of it, and they could do it themselves.

(Harry, Napranum)





It probably would be a very good activity to give to the youth group, possibly to do. Also, we'd really like, in the outside-school-hours care, with those school kids, to actually work with the Elders in telling stories, and getting old stories digitally recorded.

(Emma, Pormpuraaw)

It'll be a job for someone in community, another job. So things like that. To make it work, they could be like local journalist, if anything. Get in all of these information and link with the key services in community, if they've got anything that they wish to put on to update.

(James, Napranum)

5.3 Interactivity, smart phone applications and social media

The wide availability and dissemination of mobile digital devices such as smart phones and tablets have been argued to be key to reducing the digital divide in underserved populations internationally by enabling Internet connectivity, regardless of remoteness (Fiordelli, Diviani, & Schulz, 2013). Although the uptake and engagement with mobile technology has been far more rapid for indigenous Australians than for any other ICTs, mobile phone ownership remains far lower than the rest of the Australian population (Dyson & Brady, 2013).

For example, there were notable differences in the number of users of mobile technology in the remote case study sites in Cape York, where ownership was reported as remaining relatively low. In comparison, mobile device use was far more common in Kununurra where there had been greater availability of devices and access to the mobile network for a longer period of time. For example, Jasmine from Kununurra explained:

So yes, most of us I think would use Google, and I've seen a lot of... nearly everybody has an iPhone, laptop, iPads, yes.

(Jasmine, Kununurra)



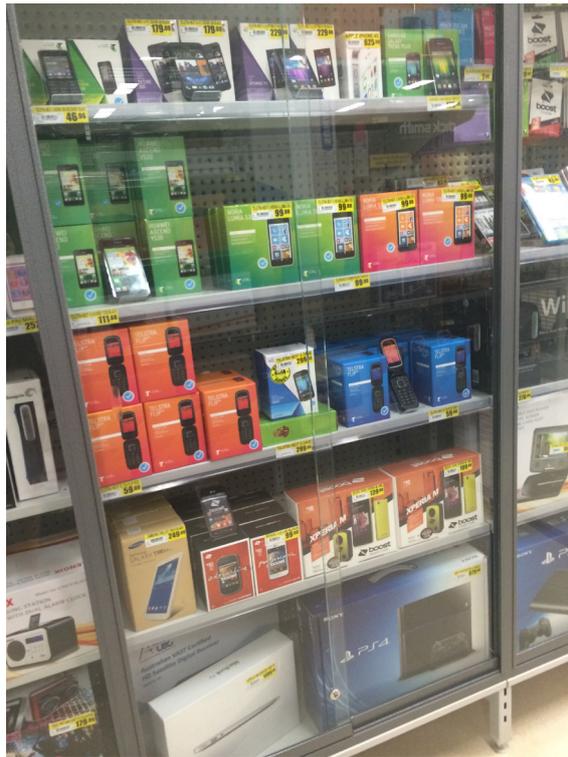


Figure 20. Mobile technology available for purchase in Napranum Store
(Photography: Kristen Smith)

In contrast, Emma from Pormpuraaw noted:

Like I know I've got a smart phone, and there's people you generally see walking around, who are working, who have smart phones, but on the whole I don't see a lot of smart phones generally in use. I see more flip phones. But again, that's because that's what was accessible here last year, whereas this year smart phones have been able to be purchased, here in the community. So maybe it'll change by next year, maybe next year it will be that there's a lot of people with a smart phone, over a flip phone.

(Emma, Pormpuraaw)

There have been many examples of using mobile technology platforms to expand services to indigenous Australians, but very few have been focused on health issues (Wallace, 2009). More broadly, mobile technologies are increasingly used as a platform to extend or complement health services, such as via apps that enable self-monitoring, communication, self-management or to assist in diagnostic capabilities (Chan, Torous, Hinton, & Yellowlees, 2015). The international proliferation of medical and health related apps and the lack of regulatory risk assessment frameworks or accreditation process to ensure their quality have drawn criticism in recent studies (Boulos, Brewer, Karim-





khani, Buller, & Dellavalle, 2014; Chan, Torous, Hinton, & Yellowlees, 2015; Lewis & Wyatt, 2014). Factors such as poor content quality, ineffective matching of information to health literacy levels of users, low security and privacy are seen as potentially presenting high risks for users. Studies examining the use of social media and mobile apps aiming to promote different aspects of health have found that although they appear to hold promise in shifting health behaviours and health outcomes, there is very little evidence supporting their efficacy. Moreover, a scoping study of social media and mobile apps used for health promotion in Australian indigenous populations has shown that the evidence is both limited and mixed (Brusse, Gardner, McAullay, & Dowden, 2014).

Other issues such as the difficulty in targeting specific demographics limit the effectiveness of health promotion applications using mobile technology platforms. However, the higher use of mobile devices by younger populations in Australian indigenous communities could allow specific content to be delivered to this population. For example, Stephanie discussed how smartphones could be used as an effective means to provide relevant information on relevant health issues for young people such as Sexually Transmitted Infections (STI):

And that's good because, it'd be good for the teenagers with the STIs. That's a big thing here, amongst our teens, is the STIs. And they could easily do that. And a lot of them could get it with their phones, and it'd be good because of their shameness thing... they don't want to talk about what they've got because they're ashamed. It'd be good for the young... for the teenagers, yeah.
(Stephanie, Kununurra)

Lauren explained how she engaged with information on her smartphone, highlighting that there are particular cues that motivate her to engage with mobile applications:

Like, I'm one of the people, I'm always on my phone, and something has come up, and you know I'm curious about it. Especially if it's the way it is, like if it says, the way I was talking about before, "Want to know about your health? Download this app". Like you know, I'm 22, and that would get to me, probably because I'm a mum as well. You might get your 7-year-olds that want to know more as well...
(Lauren, Kununurra)





Most participants in this study agreed that engagement with content on mobile devices would be far more likely if communities were enabled to create their own content. However, many were highly concerned about the approval process of the locally created content if it were to be available for public viewing. A potential opportunity to increase the regularity of content could be via expanding the use of the kiosks to allow local groups, government or other local organisations to narrowcast information in other areas (beyond health) such as education, employment and relevant community affairs as noted in section 5.2.

One factor that has been suggested to improve the effectiveness and outcomes of eHealth programs internationally is through undertaking them in conjunction with advice and engagement with local health professionals. Several service providers participating in this study similarly stated that they believed the kiosks could become more effective if they were utilised in conjunction with other educational practices being undertaken by local service providers or for cross-promotional purposes that are relevant to the local community. Amy from Kununurra suggested that monthly health related themes could be one useful way to entice more people to use the kiosk, where the themes could be tied into national health weeks and promotions:

Because they do things like national heart week, national kidney week, HIV week...they do have. And that's Australia-wide, like your national cancer week. If you had a promotion, like even for that month, doing it for a week isn't a very long time...so if you had a...I'm going to make it up, say if kidney is June, have it for the entire month of June.

(Amy, Kununurra)





Emma, a child service provider in Pormpuraaw, thought that if the HITnet kiosk was linked with specific programs undertaken locally it would encourage greater engagement with the content. She noted:

...even if you connect with the kiosk in some way. So say if it did do a sexual education information session, or something on there that... say, a sporting celebrity is doing something. But then have maybe cards that go with that, so there's two different mediums that you're getting that information through. So it could be, this is what's on here, but these are also the cards that go along with it. So you've got two different ways of talking about it, and you could be doing those cards but also going into the HITnet at the same time, and using them together. Maybe that's a way of using it in a different way, to be more interactive. Because at the moment, we're not using that so much as a learning tool. Like, I don't use it as a learning tool. And maybe that is something it could be used as down the track. It could even be a specific poster that goes... each week it could focus on a specific poster that has to do with one of the videos on there.

(Emma, Pormpuraaw)





6 CONCLUSION

Focusing on the network of touchscreen kiosks installed in communities across Australia, this project has provided an in-depth picture of current end-user practices. It also contributes to evidence-based strategies for the future deployment of digital resources in remote communities. Content provided via digital technologies has greater potential for ‘stickiness’ when local people and communities drive and shape content. This is because the social and cultural relevance of the content encourages greater engagement with the material. Thus, the HITnet methodology for content co-production with local Aboriginal communities has been very successful in creating and presenting digital information that people generally find accessible, engaging, informative and fun to watch. However, as digital technologies change, people engage with them in new and transformative ways.

Although the current application of HITnet kiosks is relatively narrow, there is a great potential to provide more relevant, engaging and more regularly updated content by enabling local groups, government and/or other private organisations to narrowcast information in locally relevant issues pertaining to health, education, employment, traditional knowledge and other relevant local/community affairs. The significant gap in the provision of - and access to - digital technologies in remote and regional Aboriginal communities also needs to be addressed at a structural level. Important mechanisms include targeted education, cheaper, faster and more reliable Internet provision, and consistent, affordable access to new technologies such as smart phones. Although the indigenous digital divide can be lessened by creating better pathways and access to digital technologies, to foster a tangible ‘Indigital revolution’, these strategies must be complemented with mechanisms and resources that build and support strong indigenous capacity in broad based digital literacies. This would address critical issues such as indigenous control, participation, agency and contribution, by creating a new generation skilled in digital technologies who can go on to become the designers, guardians and innovators of digital futures in Australian indigenous communities.



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