COS10025 Technology in an Indigenous Context Project

Semester 2 2022

Research Report

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Workshop: Thursday 14:30

Project Title: Digital Connectivity Infrastructure for Remote Indigenous Communications

Project Team: 5

Year: 2022

Project Principal/facilitator: Dr. Kaberi Naznin

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1. Literature review

The purpose of this literature review is to provide a comprehensive understanding of the usage of digital infrastructure and some healthcare problems in some rural areas, especially the indigenous ones, based on several reports and studies. The result will be utilized to aid in the development of a solution for these areas.

Affordability of digital infrastructure

Affordability is one of the primary concerns for rural areas. In Australia, it was reported that those living in rural and regional Australia continued to pay more for Internet access than those in metropolitan areas. (Curtin, 2001). This can be a significant issue for rural residents, whose incomes are much lower and unstable compared to those in cities (Alliance, 2014).

Availability of digital infrastructure

Globally, there is a lack of digital infrastructure in rural areas, and they are also of poor quality and efficiency. The Telecommunications Service Inquiry (Besley) Report (Besley, 2000), which analysed digital connectivity services was published in 2000. According to Besley, almost all Australians have access to the Internet, but different areas will have different Internet speeds based on their geographical locations. The Digital Data Inquiry of Australia determined that 14,4 kbps (kilobit per second) is the speed required to write e-mails and browse websites, while a speed of 28.8 kbps is the optimal speed for more complex tasks such as online video calls or meetings. However, it was reported that 15% of rural Australians did not have 14.4 kbps Internet speed, while the number was only 5% in urban regions. The percentage was even higher for the rural Australians who did not have access to the Internet rates of 28.8 kbps: 40% (Besley 2000). Furthermore, broadband access was also found to be more limited in rural areas than in urban regions in the USA (Administration, 2000). Cable modem and digital subscriber lines were constructed at a rapid rate; however, they were built primarily in metropolitan areas. Large cities, suburbs, and towns had implemented cable-based broadband, which provided most of the broadband service. According to the report, it was found that only 5% of small towns with less than 10000 people had cable modem service, compared to over 65% of all urban areas with populations of over 250,000 (Administration, 2000). The service price for these remote areas is the reason. When it comes to the construction of the wireline, the distance between houses in rural areas was extremely far, so the costs became higher. (Administration, 2000).

Adaptability with advanced digital connectivity infrastructure

Rural communities have struggled to keep up with digital connectivity developments. (Koen Salemink, 2017). This is not only due to the high cost and availability of infrastructure but also to the inability of people in rural areas, particularly indigenous regions, to adapt to the use and change of technology.

Health

Health is always one of the most problematic issues for indigenous or remote communities. It is reported that Indigenous Australians have a great likelihood of being hospitalized and a shorter life expectancy compared to Australians who are not indigenous (Government, 2022). For males, the median age at death for those living in metropolitan areas (approximately 80 years) was much higher compared to it in remote are (from about 65 to 73 years). Similarly, the average life expectancy for females in urban areas was 85 years, whereas it was only 65 years in extremely remote areas (Government, 2022). From 2019 to 2020, it was reported that people living in very remote areas had a hospitalisation rate that was nearly double that of those living in major cities, while those living in remote areas had a hospitalisation rate that was 1.4 times that of those living in metropolitans (Government, 2022). The rural population is also negatively affected by Covid-19 pandemics. Although most Covid-19 cases occur in very large cities such as Melbourne, Sydney, and Canberra, the proportion of residents infected in these cities is low, while COVID-19 affected a high proportion of residents in rural areas. In addition, remote and indigenous communities have to deal with additional difficulties with the pandemic because they lack healthcare resources such as Covid-19 vaccination and testing kits (Government, 2022). In rural Australia, sexual and family violence are also regarded as significant health-related issues. According to some statistics in 2019, people living outside of major metropolitan areas were 1,4 times more likely to face this problem than those residing in major cities. The figure was even greater for extremely rural areas: 24 times more likely compared to large cities (Government, 2022). Finally, gaining the access to a proper healthcare system is also a major challenge for indigenous and rural communities. A vivid illustration for this can be the APY Trade Training Centre. It is one of the buildings of the Umuwa community, located in the north of South Australia. According to the map, the nearest medical facility is in Kaltiji, which is a 30-minute drive away (Centre), which is a very long distance for patients in need of emergency care to travel.

2. Project background

2.1. Project Description

The project analyses the current digital infrastructure in Indigenous communities, particularly in Umuwa, Land of APY, South Australia. Besides, despite the fact that different indigenous and remote communities have distinct characteristics, such as population and culture, they share a number of similarities. For instance, numerous Indigenous Australians who reside in remote areas of Australia have specific needs and face particular obstacles in many aspects. This project will also assess these obstacles and propose suitable solutions for addressing them using advanced digital communications infrastructure.

2.2. Problem Statement

Many Australian remote communities like Umuwa (Land of APY, South Australia) are facing many challenges in their lives because they lack digital connectivity infrastructure. They lack access to modern medical systems, which increases their vulnerability to disease, particularly during this Covid-19 pandemic(Government, 2022). In addition, their life expectancy is lower than that of city dwellers due to the absence of technology that would facilitate access to healthcare services. This issue is extremely significant, and it should be gradually resolved by enhancing the existing digital infrastructure and adding new ones, improving the connection between communities like Umuwa and departments such as health and education, which can considerably improve their lives.

3. Project Goals and Objectives

The essential project goals that must be achieved to finish the project include:

- Analysing Umuwa 's problems that need to be addressed
- Proposing appropriate solutions that solve Umuwa 's issues
- Making the solutions commonly utilized not only in Umuwa but also in other remote areas

In order to achieve the aforementioned primary objectives, we have compiled the following list of secondary objectives:

- Researching for suitable information and references
- Collecting data and statistic
- Creating the outline of the solutions
- Identifying the advantages and disadvantages of each solution

- Identifying the costs, risks, and potential
- Designing the devices
- Making instructions on how to use the digital technology in the solution
- Conducting research to receive feedbacks from the users
- Improving the technology based on the users' feedbacks

4. Desired outcomes and benefits

Our team anticipates developing technologically advanced solutions that can assist rural residents not only in Umuwa but also in other regions. The technology should satisfy all client needs and be accessible to everyone. In the short term, the health of the citizens of Umuwa will be improved, while in the long run, their standard of living and life expectancy will be enhanced.

5. Learning issue/problem (individual)

The learning issue I have been assigned with is Aboriginal health issues. Especially how you can implement digital telecommunication to resolve some problems related to health, while improving the healthcare system in Umuwa, South Australia

This can be a crucial issue to resolve, as it is a very new issue for the group, and it can take a significant amount of time and effort to conduct the necessary research and analysis. The data collected is also a significant challenge, as it must be accurate and current. In addition, the design of the technology must also meet certain requirements. For example, the device must be simple, user-friendly for the inhabitants of Umuwa, and have a great working range. Lastly, expanding indigenous people's understanding of this technology is also a major concern. We must assist them in adapting to the new technological advances, convincing them that the use of this device will greatly improve their standard of living and address a number of their health issues.

6. Project Scope and Exclusions

To achieve the goals and objectives, these two vital tasks must be completed: data collection and technology design. They will need to have some characteristics:

- Data collected will be from reliable sources, articles.
- Data received must not be too out of date (it will be in an acceptable range of time).

- The technology must be able to connect the citizens of Umuwa to departments such as health and education.
- The construction cost of the technology must be reasonable.

Due to our limited time and expertise, we are fully aware that some features may not be fulfilled. Thus, our team will only concentrate on completing the aforementioned tasks effectively before developing new features. This feature includes:
- The technology can store the citizen's information in case of emergency.
- Side-effects of the technology to the surrounding environment will not be assessed.

7. Project Deliverables

The final project deliverable includes:
- ✓ Research report explaining the solutions of the project
- ✓ Presentation of the project
- ✓ Documentations and references
- ✓ Design solutions
- ✓ Innovation concepts

8. Project Management Plan

8.1. Timeline

The following is the overall project schedule:

	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Brainstorming ideas	■	■					
Researching and collecting information		■					
Organizing ideas and designing		■	■				
Receiving feedbacks			■	■	■		

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Project results finalizing						■	■	
Project presentation							■	■

Table 1: Project Timeline

8.2.   Goals and Milestones

1. Goal: Brainstorming ideas
   - Milestone: Thinking of some ideas that can help to identify the problems
2. Goal: Researching and collecting information
   - Milestone: Searching relevant articles, websites, URLs,…
   - Milestone: Gathering useful data, statistic, information
3. Goal: Organizing ideas and designing
   - Milestone: Sum up all the useful information and come up with solutions
   - Milestone: Design the solutions
4. Goal: Receiving feedbacks
   - Milestone: Collect feedbacks from facilitators and the other teams
5. Goal: Project results finalizing
   - Milestone: Adjust the solutions based on the feedbacks
   - Milestone: Completely finalize all the results
6. Goal: Project presentation
   - Milestone: Prepare PowerPoint slides and relevant resources
   - Milestone: Practice the presentation
   - Milestone: Introduce the project

8.3.   Team breakdown and duties

The following table contains all the team members in group 5 and their roles:

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9. Team Member	Role
Nguyen Nam Tung	Researcher, Data Analyst
Phat Tien Dam	Researcher, Designer
Julia	Team Leader, Researcher, Designer
Scott Lee	Researcher, Data Collector
Alvis Hay	Researcher, Designer

Table 2: Team Members and Roles

Word count: 2006

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