School of Science, Computing and Engineering Technologies

SWINBURNE UNIVERSITY OF TECHNOLOGY

COS10025

Technology in an Indigenous Context Project

Final project reflection report

Project Title: Project Reflection Report.

Student Name: Dave Nguyen (Nguyen Quang Anh).

Student ID: 104697710.

Date: 20/05/2024

Acknowledgement of Country:

I really like this example from Sharon McDonough and Narelle Lemon's article "Stepping into a shared vulnerability" (Chapter 14, *Creating a place for self-care and wellbeing in higher education: finding meaning across academia*, 2022, Narelle Lemon, editor):

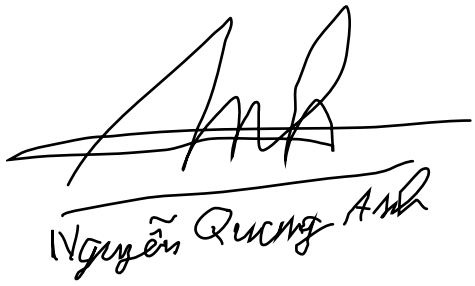
"Narelle wrote this chapter in Beech Forest, on the lands of The Eastern Maar People, and in Melbourne on the lands of Wurundjeri People, and I wish to acknowledge both as Traditional Owners. I would also like to pay my respects to their Elders, past and present, and Aboriginal Elders of other communities who may be here today.

Sharon wrote this chapter while living and working on the lands and waters of the Wadawurrung People. I wish to acknowledge them as Traditional Owners and acknowledge that sovereignty was never ceded. I pay my respects to their Elders, and to the Elders of all First Nations peoples. Always was, always will be."

Declaration

I declare that this report is my individual work. I have not copied from any other student's work or from any other source except where due acknowledgment is made explicitly in the text, nor has any part of this submission been written for me by another person.

Signature:



Part A:

Introduction (Project Description)

Yuendumu is a rural settlement in Australia's Northern Territory, some 293 kilometers northwest of Alice Springs and on the border of the Tanami Desert (Musharbash, 2008). The Yuendumu village is having challenges with its treated water source owing to the area's terrain formations and weather (Beavan, 2019). Yuendumu is suffering from a lack of clean and enough water, emphasizing the vital need to improve access to clean water for daily requirements (Chaseling & Rangiah, 2023). Residents require aid in obtaining clean and consistent sources of water for drinking, food preparation, sanitation, and hygiene. According to the Power and Water Corporation, the water deficit is caused by a variety of causes, including the area's natural drought, the community's rising demand for water resources, and the significant implications of climate change on water availability and quality (Chlanda, 2018). A common example is leaky faucets, and a protracted drought has contributed to a lack of consistent water supply and clean water sources for the community to utilize (Beavan, 2019).

Access to safe drinking water is vital to a person's well-being and health in the Yuendumu community. Inadequate water supply poses significant health risks and impedes overall community growth and development (Chlanda, 2018). To address the issue of water supply and clean water in Yuendumu, I and the other members of Team-1/The Fantastic 6 intend to evaluate the existing water infrastructure, identify significant obstacles, investigate potential solutions, and develop a practical strategy to improve water accessibility, quality, and sustainability within the Yuendumu community. All of this will be accomplished by adopting my design, which includes a few separate technologies and instruments or tools for water storage and purification. My design is called: Rain Radar and Automatic Water Pump System.

The design is useful to the community since it is inexpensive. The rain radar, filters, and wires may all be created at home. Furthermore, the Automatic Water Pump system employs a simple, tiny, and cost-effective circuit based on a single NAND gate chip. It runs on 12 V DC and consumes very little power (AI Exhibition Platform, 2020). The entire system is user-friendly and easy to maintain over time. For example, Natural Filtration may be updated because it comprises gravel, sand, and minerals. The same goes with the bamboo charcoal filter. Also, the systems are simple to use and install. The design proposal will address the community's water issues. It has the potential to significantly alter the community's dynamics. If the Yuendumu community knows and masters technology, future challenges will be solved more easily. The design concept and technology will enable future generations of the Yuendumu community to actively seek adjustments and solutions to better their community. The device design idea is automatic, apart from the maintenance component, which requires human intervention; the bulk of the technologies/devices used in the design are long-term, which is around 7-8 years if the user does regular maintenance. The design proposal will assist the community financially because the technology can be homemade, except for the

Automatic water pump, which the community must purchase. After all, it cannot be homemade. However, an Automatic Water Pump with full gears, such as a gauge and a high-tensile steel shaft tube, costs less than AUD 200.

Part B: Project reflection

Group Work Reflection

My team originally consisted of 6 members, however, due to one of our team members suddenly deciding to not attend the COS-10025 course near the end of the academic semester and not participate in the final group presentation, my team now only has 5 members. The Fantastic 5 team includes Dave Nguyen (me), Myra Isabelle Rajah, Atifa Sahira Binti Mohamad Romi, Jeren Tang, and Aaryan Pai.

My team strategy was to assign specific roles to each of the members and all members must agree to the Plans and Roles agreement document in week 2 and all members take full responsibility for the role that is assigned to the members themselves. This ensures all team members know what they will be doing thus reducing the chances of someone in the team don't know what they are doing when doing tasks. Myra Isabelle Rajah who was also our team leader was taking care of Organising and facilitating weekly team meetings, and Jeren Tang was making sure of Submitting all the weekly tasks and assignments. Aaryan Pai was Recording meeting minutes and Atifa Sahira Binti Mohamad Romi was Cooperatively allocating tasks to team members. If any members are absent without giving the team leader a message, that member will be reported to the tutor. The leader will inform the facilitator regarding the issue/problem with the team member in the case that the team member does not respond or take any action before week 4. Along with that, my team came up with a timeline strategy so that we could control our workload. This will make us strictly follow the deadlines and there aren't going to be any tasks that would be left until the first Innovation Concept Report. To make sure my team is on the right track, at every meeting we all discuss our tasks and cross-check with the timeline My team timeline is separated into 4 phases, Phase 1 (week 1 to week 4) is Problem identification, Phase 2 (week 5 to week 7) – Develop design ideas/alternatives for a particular problem, and Phase 3 (week 8 to week 10) – Design selection and justification and Phase 4 (week 11 & week 12) – Presentation and project reflection. At the end of each phase, we all have a face-to-face meeting to finalize the goal. For example, since phase 1 is Problem identification, at the end of phase 1 which is week 4 my team will finalize all the problems identified. The results of these 2 strategies are very unexpected, as our work had been praised by our tutor and our strict timeline has made us overcome the hardships despite losing a team member during critical times.

During the final design presentation and delivery of the Innovation concept, that's where everyone works tirelessly. We all attended the meeting and rehearsal the

presentation scripts, 2 weeks before the presentation. Myra and Atifa even let Me, Aaryan, and Jeren come to their dorm room so that we could have a place to prepare before the final presentation. During the finalizing of the Innovation concept, we all stayed up at 3 in the morning fixing our work mistakes and that shows how dedicated we are toward this course. Based on the time I spent with the Fantastic 5 team, I would say that when I'm doing group work in the future, I will improve future team communication. To make sure that everyone will get the latest news of the current situation of the team. The loss of a member of our team was unexpected as when we received the news of a member leaving the course, that member already leave before the notice came in. Which caught us by surprise, and I don't want to experience that in the future.

Group name

The Fantastic 6

Group style and roles (in detail)

- *Jeren Tang - Submit all the weekly tasks and assignments.*
- *Dave Nguyen - Organising and facilitating weekly team meetings.*
- *Myra Rajah - Organising and facilitating weekly team meetings.*

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- *Aaryan Pai - Record meeting minutes.*
- *U Shwee - Leading the development of project tasks.*
- *Atifa Sahira - Cooperatively allocating tasks to team members.*

Pic.1: All team members roles.

Timeline (in detail)

- *The team aims to finish the project or assignment before the due weekend and use Saturday to re-read and make necessary changes. Furthermore, the team aims to submit the project or assignment 24 hours before the task is due.*

- *Phase 1 (week 1 to week 4) – Problem identification*
  - ➔ *Meeting 1 (week 2): Complete this group agreement document and finish Workshop 2 tasks*
  - ➔ *Meeting 2 (week 3): Find out the township/community in Australia that has issues and research a list of problems that exist in the chosen township/community. For instance, look for the challenges faced by the community*
  - ➔ *Meeting 3 (week 4): Finalise all the problems identified*

- *Phase 2 (week 5 to week 7) – Develop design ideas/alternatives for a particular problem*
  - ➔ *Meeting 4 (week 5): Research and choose (10 max - 6 ideas) design ideas to work on based on previous research and problem identification.*
  - ➔ *Meeting 5 (week 6): Finalise the selected design ideas*

- *Phase 3 (week 8 to week 10) – Design selection and justification*
  - ➔ *Meeting 7 (week 8): The team will discuss and justify the selected or chosen design ideas*
  - ➔ *Meeting 8 (week 9): Understand other members' design ideas and assist other team members with their ideas*
  - ➔ *Meeting 9 (week 10): Read and double-check each other's' design ideas*

- *Phase 4 (week 11 & week 12) – Presentation and project reflection*

Pic.2: Detail of the Timeline.

- *Phase 4 (week 11 & week 12) – Presentation and project reflection*

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Unit CC

➔ *Meeting 10 (week 11): Prepare presentation slides and speech*
➔ *Meeting 11 (week 12): Practise as a team and* finalize *the presentation flow*

Pic.3: Detail of the Timeline.

Individual Work Reflection

During phase 1 (from weeks 2-4) which is Identifying the township and the team problem, my tasks were very simple. In week 2, I needed to complete the group agreement document and finish Workshop 2 tasks. Which was answering the following 3 questions: "Why do you need to understand the terminology and language?", "Why is terminology important for Indigenous Australian people/s?", and "List out at least ten different communities and their language spoken in different parts of Australia.". In the group agreement document, I help my team out by proposing Communication plans in detail (which basically like what will our team use to communicate with each other), On-track behavior and Off-track behavior in detail (On-track behavior and Off-track behavior are rules and schedule that I created to reduce the chances of members of the team slacking off, this prevent any unfinished works being pile up at the end of the week 12). In week 3, my tasks were to find out the township/community in Australia that has issues and research a list of problems that exist in the chosen township/community. As well as looking for the challenges faced by the community. The township I found is called: Meanjin/Magandjin, and it is located in the outskirts of Brisbane City. I also needed to answer 7 questions based on Technology/Technologies in week 3 activities, in which the questions mainly ask about: "What is meant by technology/technologies?", "What is the technology for?", "What is the cost per user?", "How useful is it for an application or multipurpose?", and "Any maintenance challenges?". Week 4 of phase 1 is the time when I and other members of the team finalize all the problems identified. During the week 4 class, my team already finished the research about all the townships that we found and I along with others agreed that the townships that fit our project in the future the most is called: Yuendumu. The townships have problems with finding clean water sources, so it fits my ideas and others perfectly. I was then assigned to answer 2 questions "What does a design idea mean to you and your team?" and "What are those guiding principles while proposing a design idea?".

Next is phase 2, which is about developing design ideas, using design criteria to make standard design ideas, and analysing the benefits, and impacts of each design idea. This phase occurred from week 5 to week 7. My task during week 5 was to Research and choose (10 max - 6 ideas) design ideas to work on based on previous research and problem identification, and this was the week where I started to find ideas that make the foundation for my final design. I came up with the first design idea which is taking water from the tree and the technologies I found for the design are Spile/Bamboo charcoal filter. After that, I found different approaches and technologies that could be used for my final design. Week 6 of phase 2 was where I finalized the selected design ideas. My task was to answer the form created by my tutor, the form asks about the approaches of the design and technologies that were going to be used in the design. Also, week 6 was when I submitted my final design. Phase 3 is about Design selection and justification. This phase occurred during week 8 to 10. My task in week 8 was to justify the selected or chosen design ideas, I also needed to do the problem statement and write a description of the design idea, Design Specifications, Benefits of the design idea, and Constraints of the design idea for the final concept report. Week 9 of phase 3 was where I needed to understand other members' design ideas and assist other team members with their ideas, along with making the first few drafts and notes of what the team needed to put in the presentation slides. Week 10 was about reading and double-checking other members' design ideas to make sure there were no overlapping ideas and other mistakes and preparing presentation slides and speeches. The final phase is phase 4, which is about Presentation and project reflection. This occurred during the last 2 weeks of the course (week 11 and week 12). Week 11 was where I practiced with the team and finalized the presentation flow, and we did our presentation that week also.

In conclusion, I have done my part flawlessly and participated in the team's overall work. After 11 weeks, I would say that based on my point of view, my design idea and Myra Isabelle Rajah are the 2 best design ideas. It's cost-effective, easy to do maintenance, and especially culturally and naturally appropriate. In the future, I would like to improve my communication skills so that explaining to others about my design idea would be easier in this team, I did not fully explain my idea clearly which caused some confusion about my design among my teammates.

Communication Plan (in detail)

- *Discord - Weekly meetings and chatting about progress*
- *School Email - For evidence if there is a team conflict.*
- *Google Drive - For uploading work-related materials for easier collaboration.*

Pic.4: Communication Plans.

On-track behaviors (in detail)

- *Attending every scheduled group meeting (Wednesday noon team meeting).*
- *Attending weekly classes (Tuesday 2:30-4:30 pm).*
- *Informing other team members if you are unable to attend any workshops, lectures, or meetings.*
- *Completing assigned work on time.*
- *Assigning tasks to each team member equally.*

Pic.5: On-track behaviours rules.

Off-track behaviors (in detail)

- *Not responding to other team members' messages or emails.*
- *Not completing assigned work on time.*
- *Not attending weekly lectures, workshops, or group meetings.*
- *Using harsh or mean words against other team members.*

Pic.6: Off-track possibility behaviours.

Name	Q1: Why do you need to understand the terminology and language?	Q2: Why is terminology important for Indigenous Australian people/s?	Q3: List out at least ten different communities and their language spoken in different parts of Australia.
Dave Nguyen	To respect and appreciate the land's founders.	Because we need to show respect for the Indigenous people, because if not, we end up using the wrong terms. Many Indigenous Australians find the less appropriate terminology incredibly upsetting since they classify individuals and suggest that there are significant disparities between Indigenous Australian peoples from various places.	1: Amata (Pitjantjatjara). 2: Angurugu (Yankunytjatjara and Pitjantjatjara). 3: Aurukun (Wik Mungkan). 4: Bamaga (Kalaw Kawaw Ya, Brokan). 5: Binjari (Kriol). 6: Borroloola (Yanyuwa, Garrwa, Eastside Kriol). 7: Brewarrina (Ngemba, Ualarai, Murrawarri, Kimilaroi, Baranbinja). 8: Coen (Ayapathu, Kaanju, Lama Lama, Umpila and Wik-Mungkan). 9: Dhuruputipi (Dhuwal language). 10: Doomadgee

Pic.7: Week 2 task questions.

Name	What is meant by technology/technologies?	Technology	What is the technology for?	How useful is it for an application or multipurpose?	What is the costing per user?	Any maintenance challenges?	Can anyone operate it, or does it need knowledge?
Dave Nguyen	Technology represents human evolving progress. A society is measured by how developed they are.	Radar	To make people's lives easier, more convenient and safer. For example, a Indigenous community discovers an underground sinkhole near their living area but is unable to determine how dangerous it's. That's where underground scanning radar comes in handy. It can help the community see if the sinkhole is big enough to be a threat or not.	It provides safety and security in terms of the military. So it's very useful.	It really depends. It may range from a few million to tens of millions of dollars.	Maintenance is not going to be an issue if its civilian uses radar type. However, planes or industrial/military uses on the other hand, it would cost millions of dollars. Even a small scratch on the radar panel of a Boeing 777 for example, it would need to be replaced immediately. Also plane radar can kill people, if an airplane is on stationary mode and the pilot decides to turn on the plane radar, even just for 5 seconds, would cause ground crews in front of the plane to be having radiation sickness which then cause them death if not being treated right away.	Radar types like ship navigation radar needed a specialist to do maintenance or operate it. Same with military radar, you would need a highly trained team or one member that has mastered Combat Engineers class.

Pic.8: Week 3 task questions.

2. Meanjin/Magandjin (Brisbane)	Brisbane River on the southern slopes of the Taylor Range, 12 miles (19 km) above the river's mouth at Moreton Bay.	Meanjin/Magandjin population is 100,929 people as of 2021. Since Meanjin/Magandjin is now known as Brisbane, its land size is 15.83K km².	The Meanjin/Magandjin community speak Yuggera language and English was also added as their second language when Meanjin was changed to Brisbane. Meanjin/Magandjin has the history of 23,000 years old.	The challenge the Meanjin/Magandjin community faces is racism and lack of basic necessity as of 2019. However, in 2023 the racism issue is now no longer but some of the Magandjin people still lack basic needs, especially long internet fiber optic cables which make some Magandjin still using the older model thus resulting in slower connection and withban of the Wifi, affecting them in daily life works. This is not because Magandjin people can't afford it, but it's because the land formation or the place they live at is not really a suitable environment for the cable for long uses.	Meanjin/Magandjin has basic digital infrastructure,however internet access still remains an issue for those who live in places where fiber optic cables are not suitable.

Pic.9: Week 3 townships research.

Name	3. What does a design idea mean to you and your team?	4. What are those guiding principles while proposing a design idea?
Dave Nguyen	For me and my team, the use of design brainstorming can help reveal previously unidentified problem spots. Taking a method of iteration to solve those difficulties frequently results in not immediately apparent, creative approaches. It symbolizes how our team approaches challenges, understands the demands of the user or customer, and provides practical and efficient alternatives.	Communication is an unifying principle; the phrases we choose to express our job are just as significant as the task at hand themselves. If your words can't describe it, you haven't finished developing it. Communicate effectively, always explore new methods for engaging and enlighten the customer, and discuss daily with the rest of the team. This may occasionally necessitate a draft, graphic, or phone conversation. Understand and internalize the medium, sketch down ideas to see how well they hold, and get a grasp of how things function and what is feasible.

Pic.10: Week 4 task questions.

- **Utilizing the town dam (Atifa)**
- **Rainwater (Aaryan)**
- **Underground water (U Shwee)**
- **Dehumidifier (Jeren)**
- **Water from trees (Dave)**
- **Sewage water (Myra)**

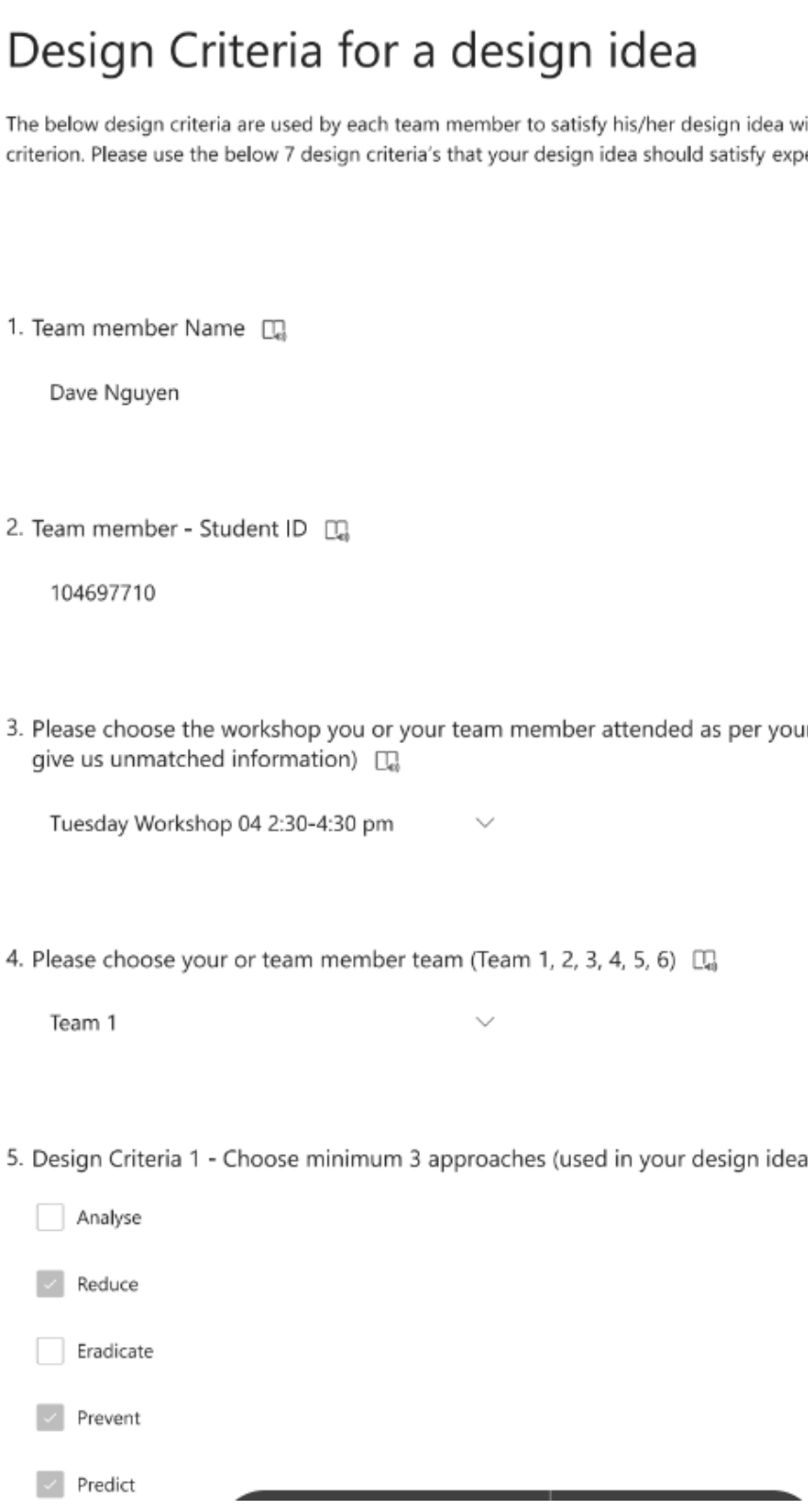
1. Develop your team's **design ideas based on the identified problem**. **(EACH TEAM MEMBER)**

Myra - Bicycle-powered
Jeren - Ultraviolet & dehumidifier/Air Well (condensation)
Atifa - Filtered
Aaryan - Boiling
Dave - Spile/Bamboo charcoal filter.
U Shwee - Solar-powered

Pic.11: First design idea draft.

Design ideas	Combination of technologies and devices	Different approaches in different stages	Each device's properties and how it functions
Design Idea 4 (Dave): Rain Radar/Bamboo charcoal/3L water container.	Rain radar, Automatic Water Pump, Bamboo charcoal, Natural Filtration, 3-liter water container for storage.	1. **Prevent** **Device/Technology:** Bamboo charcoal. **Function:** After getting the water out of the tree with the spile, bamboo charcoal will serve as the first process of filtering in which it will make the dirty part in the water float-up. 2. **Eradicate** **Device/Technology:** Natural Filtration. **Function:** After the first stage of filtering is completed, this then will serve as the last step of filtering the water. Natural Filtration will consist of stones, sand and gravel. When the dirty part of the water is being floated-up, the clean water will travel down the filter and into the last stage of filtering. This will make sure that the leftover micro bacteria from the first stage of filtering will not end up in the user body. 3. **Predict** **Device/Technology:** Rain Radar.	**Rain radar** employs velocity data that is generated via the stage, or doppler shift, of the returned radiation. The radar's algorithms will calculate the change in direction and identify whether the downpour is going either towards or away from the radar, as well as how rapidly, and then assign a matching colour to indicate the directions and speeds. **Automatic Water Pump** works when the rain catcher is full, transistors T1 and T2 are non-conductive, and output N3 is high. This high power output activates the RL2 relay, which starts the engine and pumps water into the tank. **Bamboo charcoal** is made from the fast-growing moso bamboo. Bamboo charcoal has a tenfold larger surface area and a fourfold higher absorption rate. Bamboo charcoal's porous structure has innumerable microscopic pores that effectively absorb smells, moisture, and toxic air particles including formaldehyde, ammonia, and benzene. Moso bamboo's development features cause millions of small holes to form when the plant densifies and matures, which takes around five years.

Pic.12: Week 5 tasks.



Design Criteria for a design idea

The below design criteria are used by each team member to satisfy his/her design idea with a standard design criterion. Please use the below 7 design criteria's that your design idea should satisfy expected design criteria

1. Team member Name

Dave Nguyen

2. Team member - Student ID

104697710

3. Please choose the workshop you or your team member attended as per your timetable (don't give us unmatched information)

Tuesday Workshop 04 2:30-4:30 pm

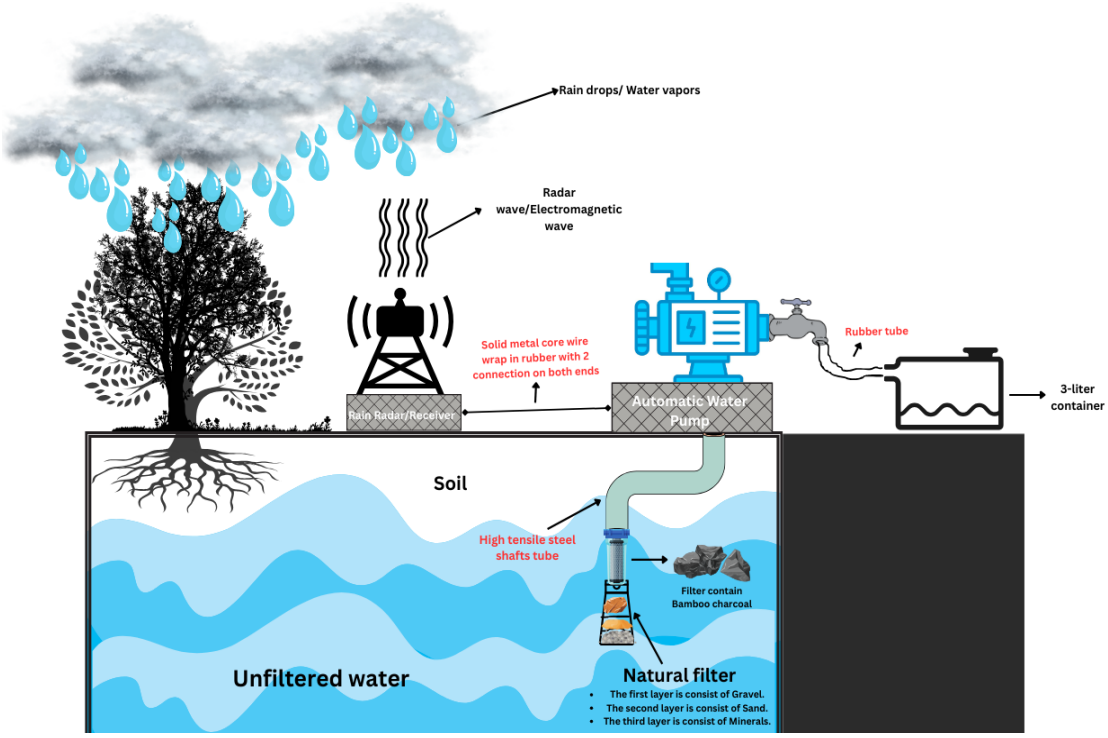
4. Please choose your or team member team (Team 1, 2, 3, 4, 5, 6)

Team 1

5. Design Criteria 1 - Choose minimum 3 approaches (used in your design idea) *

- [ ] Analyse
- [x] Reduce
- [ ] Eradicate
- [x] Prevent
- [x] Predict

Pic.16: An overview of the design form.



Pic.17: Final design of the project.

Meeting 7 (18/04/2024)

Meeting Start: 4:30 PM

Meeting Ended: 5:30 PM

Meeting Platform: Face to Face.

Location: Swinburne library.

Team Members who joined:

1. Dave Nguyen
2. Jeren Tang
3. Myra Isabelle Rajah
4. Atifa Sahira Binti Mohamad Romi

Meeting Agenda:

1. Discuss about Workshop 7 activity before submitting the form and compiling it.
2. Update each other about the progress on Assignment 1 - Innovation Report (Part A & Part B)
3. Finalise our submission for Workshop 7

Pic.18: Weekly meeting note information.

3. **Problem statement (Dave) ~**

Yuendumu's community which is located in the Northern Territory of Australia are experiencing problems with its treated water source due to the land formations and weather of the place (Beavan, 2019). Yuendumu is experiencing a scarcity of clean and adequate water, stressing the critical need to increase access to clean water for everyday needs (Chaseling & Rangiah, 2023). Residents require assistance in getting clean and dependable supplies of water for consumption, food preparation, sanitary conditions, and hygiene. Leakage faucets and an extended drought have contributed to a lack of dependable availability of water and clean water source for the community to use (Beavan, 2019). Accessing to safe drinking water is critical for a person's well-being and health in the Yuendumu communal. Inadequate water supply creates substantial health hazards and impedes overall communal growth and advancement (Chlanda, 2018). In order to tackle the issue of water supply and clean water in Yuendumu, our team (Team-1/The Fantastic 6) intends to undertake an evaluation of the existing water infrastructure that is available, ascertain significant obstacles, examine possible remedies, and formulate a practical strategy to enhance water accessibility, quality, and sustainability within the Yuendumu's community. All of this will be achieved by implementing six distinct technologies and tools for water storage and purification.

References:

1. Beavan, K. (2019). "it's a matter of urgency": Dwindling water supply in remote indigenous communities. https://www.abc.net.au/news/2019-08-13/remote-community-yuendumu-running-out-of-drinking-water/11405024

Pic.19: Problem statement for the final report.

PRESENTATION NOTES

- **Each person will speak for 3 minutes**
- **Total time: 18 minutes**

3 BEST

1. Design Idea 2 (Bicycle-powered Water Purifier) [Myra]
2. Design Idea 3 (Rain radar and Automatic Water Pump System) [Dave]
3. Design Idea 6 (Rainwater Harvesting System) [Aaryan]

2 LEAST

1. Design Idea 1 (Evaporator Container) [Jeren]
2. Design Idea 4 (Reverse Osmosis Filtration System) [Atifa]

PRESENTATION STRUCTURE & SLIDES CONTENT

Team introduction and background expectation:

Demonstrates the ability to construct a clear and insightful project background with evidence of all relevant contextual factors. Presenters are introduced and the purpose of the presentation is clear. Location is described with adequate details for those unfamiliar with it and problems are described.

1. **Introduction [Myra, Jeren] (1.5 minutes)**
   - **SLIDE 1**: Title (Introduce groupmates)
   - **SLIDE 2**: Acknowledgement of Country
   - **SLIDE 3:** Table of Contents
   - **SLIDE 4**: Township, People, Population, Problem within Yuendumu community (**ADD REFERENCES!**)

Pic.20: Week 9 presentation first drafts and notes.

Part C: Unit Learning Outcomes (ULOs)

In this unit, I have archived 4 ULOs. These are "Apply relevant knowledge of emerging technologies to a project within an Indigenous context taking into consideration and acknowledging Indigenous histories, worldviews, standpoints, and cultures", "Function as an effective team member using project management tools and demonstrating professionalism and ethical behavior", "Communicate within teams, stakeholders using appropriate verbal, written, and technological approaches" and "Appreciate emerging technologies in a local, global and sustainable context".

Week 3 task which is about conducting research about a remote township and to understand what the challenges, needs, and services for those communities are, I have broken it down into steps and questions to find the information. For example, the questions I put for Yuendumu township are "What is the geography of the region?", "Current challenges for the community?". By answering these types of questions, I can then get a grasp of what the community needs. Overall, the task has taught me how to analyze the challenges, needs, and services for the remote Indigenous community, in this case, Yuendumu and Meanjin/Magandjin townships. Not only that,

but the task also taught me about the history and the culture of the community. Week 5 task is about finding appropriate approaches and technology for my design, and the task helps me to decide if my design is suitable for the community or not it also helps me with exploring user access, affordability, and appropriateness of the design ideas. The group agreement document is where I see myself to be functioning as an effective team member by using project management tools and demonstrating professionalism and ethical behavior. I have come up with a Communication plan and on-track, and Off-track behavior rules/scenarios (you can see it in pictures 4-6). I also attended every meeting and workshop; however, I was absent in week 4 and could not come to the facilitator meeting (week 4 class) but I still managed to participate in working with the team through online meetings that week and delivered the task required on time.

From week 5 to then on, my contribution to team meetings, and engaging with facilitator meetings have been well proven since my work has been shown to others as an example by my tutor (Sivachandran Chandrasekaran). Not only that but due to my teams' feedback on my work during the meeting, I got a chance to understand the flaws of my design and fix it in time before the Innovation Concept Report and the Final Presentation. However, I was not proficient in verbal communication, both presentations and conversation as I failed to fully explain my design idea clearly which caused some confusion about my design among my teammates. Week 7 facilitator meeting activity helped me understand if my design is considered a culturally appropriate design idea or not. The score given by the members of the team shows me that my design is somewhat culturally appropriate. Although the design is culturally appropriate, it hasn't fallen into the sustainable livelihoods category yet.

In conclusion, I have achieved the following 4 ULOs. These are "Apply relevant knowledge of emerging technologies to a project within an Indigenous context taking into consideration and acknowledging Indigenous histories, worldviews, standpoints, and cultures", "Function as an effective team member using project management tools and demonstrating professionalism and ethical behavior", "Communicate within teams, stakeholders using appropriate verbal, written, and technological approaches", "Appreciate emerging technologies in a local, global and sustainable context", thanks to the weekly tasks and along with feedbacks on the design from my tutor and members of the Fantastic 5 team.

Township	What is the geography of the region?	How spread out is the community (population, land size)?	What information can you find out about the people who live in the township (tribes, languages, lifestyle)?	Any current challenges for the community (e.g. needs water supply, electricity, health etc..)	Can you find out any information on current digital infrastructure?
1. Yuendumu	Yuendumu is a town located at the Northwest of Alice Springs in the Northern Territory. Specifically, in the Tanami Desert Region of the Northern Territory.	The population of Yuendumu is around 740 people, with approximately 50.1% males and 49.9% females. Meanwhile, the land area is approximately 6.2km².	The community primarily consists of Warlpiri people who speak the Warlpiri language. Traditional cultural practices, such as art and ceremonies, play significant roles in the lifestyle of the residents.	Challenges faced by the Yuendumu community include inadequate water supply whereby concerns include limited supply of drinking water.	Yuendumu has basic digital infrastructure, including mobile phone coverage and internet access.
2. Meanjin/Magandjin (Brisbane)	Brisbane River on the southern slopes of the Taylor Range, 12 miles (19 km) above the river's mouth at Moreton Bay.	Meanjin/Magandjin population is 100,929 people as of 2021. Since Meanjin/Magandjin is now known as Brisbane, its land size is 15.83K km².	The Meanjin/Magandjin community speak Yuggera language and English was also added as their second language when Meanjin was changed to Brisbane. Meanjin/Magandjin has the history of	The challenge the Meanjin/Magandjin community faces is racism and lack of basic necessity as of 2019. However, in 2023 the racism issue is now no longer but some of the Magandjin people still lack basic needs,	Meanjin/Magandjin has basic digital infrastructure,however internet access still remains an issue for those who live in places where fiber optic cables are not suitable.

Pic.21: Questions to find the township needs.

Combination of technologies and devices	Different approaches in different stages	Each device's properties and how it functions	Technology/devices need any digital literacy for an end user?
Rain radar, Automatic Water Pump, Bamboo charcoal, Natural Filtration, 3-liter water container for storage.	1. **Prevent** **Device/Technology:** Bamboo charcoal. **Function:** After getting the water out of the tree with the spile, bamboo charcoal will serve as the first process of filtering in which it will make the dirty part in the water float-up. 2. **Eradicate** **Device/Technology:** Natural Filtration. **Function:** After the first stage of filtering is completed, this then will serve as the last step of filtering the water. Natural Filtration will consist of stones, sand and gravel. When the dirty part of the water is being floated-up, the clean water will travel down the filter and into the last stage of filtering. This will make sure that the leftover micro bacteria from the first stage of filtering will not end up in the user body. 3. **Predict** **Device/Technology:** Rain Radar. **Function:** The Rain Radar uses wind and radar signals to determine whether it's	**Rain radar** employs velocity data that is generated via the stage, or doppler shift, of the returned radiation. The radar's algorithms will calculate the change in direction and identify whether the downpour is going either towards or away from the radar, as well as how rapidly, and then assign a matching colour to indicate the directions and speeds. **Automatic Water Pump** works when the rain catcher is full, transistors T1 and T2 are non-conductive, and output N3 is high. This high power output activates the RL2 relay, which starts the engine and pumps water into the tank. **Bamboo charcoal** is made from the fast-growing moso bamboo. Bamboo charcoal has a tenfold larger surface area and a fourfold higher absorption rate. Bamboo charcoal's porous structure has innumerable microscopic pores that effectively absorb smells, moisture, and toxic air particles including formaldehyde, ammonia, and benzene. Moso bamboo's development features cause millions of small holes to form when the plant densifies and matures, which takes around five years. These small pores are what give the resultant bamboo charcoal its	This will require users to have a minimal understanding of technology in general or know a bit about basic physics. Since the whole process is automatic, human involvement is almost non required.

Pic.22: Week 5 task research.

Word count: 2672 words (this include pictures/proof caption).

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