



## TEAM 13

# Project Proposal

Te Tuhi Disability Training Cafe Platform for Trainees

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# Executive Summary

*“Disability is something that happens when people with impairments face barriers in society; it is a society that disables us, not our impairments, this is the thing all disabled people have in common. It is something that happens when the world we live in has been designed by people who assume that everyone is the same.” - NZ Disability Strategy*

In a world where technology becomes ubiquitous by the day, propels globalisation and awards people with newfound opportunities and success, there still lies a significant disparity in New Zealand employment. According to Statistics NZ, people with disabilities are twice as likely to be unemployed than their non-disabled counterparts, and statistics are even worse for people with intellectual disabilities, being four times as likely to be unemployed. While New Zealand likes to pride itself on inclusivity, we are unfortunately miles behind when it comes to facilitating the employment needs of people with intellectual disabilities. Countries such as France and the United Kingdom hold a plethora of missions regarding this issue and have seen major success in helping people with intellectual disabilities find meaningful employment prospects. Only in 2020, during the height of COVID-19, did Te Tuhi, in partnership with Rescare Homes Trust and the School of Psychology at the University of Auckland, establish New Zealand's first training cafe for people with intellectual disabilities.

Our aim is to create a mobile application that consolidates Te Tuhi Cafe's initiatives, as there currently needs to be a centralised platform in use. **Inkā** will serve as a one-stop shop for the training programmes developed by the School of Psychology. It will also function as a platform for monitoring cafe trainee progress and fostering personalised learning experiences for trainees within the cafe environment.

Our team comprises students majoring in Computer Science with a range of experience, having completed courses such as COMPSCI 230 (Object-Oriented Software Development), COMPSCI 345 (Human Computer Interaction), and COMPSCI 335 (Functional Programming and Distributed Services). From these courses, we have gained essential knowledge of the many facets of software development. Furthermore, we have experience working in teams and have divided up our tasks such that we leverage each member's skills and strengths to see the completion of this project. Should we run into any challenges or setbacks along the way, we are committed to problem-solving and continual learning. We hope to deliver an application that streamlines the Te Tuhi Cafe project while positively impacting the wider community and fostering inclusion and diversity in employment.

# Background & Rationale

One of the key barriers faced by people with impairments include disparity in employment opportunities. In the June 2023 quarter, the employment rate for disabled 15 to 64-year-olds was 39.4%, compared with 81.7% of non-disabled people<sup>1</sup>. This is one of the key problems the Te Tuhi Cafe hopes to address by ensuring that people with disabilities can learn in a supportive environment, be better prepared to enter the working environment and showcase their value to society.

Currently, the cafe is partnered with the School of Psychology at the University of Auckland, which helps formulate personalised learning plans for trainees. However, there is a problem with aligning these plans with each individuals' learning pace and preferred learning modality e.g. visual or audio. Moreover, the data needed for these plans is stored in drop-boxes and manually shared via email, making the learning plan development process tedious and difficult. This is where **Inkā** comes into play. While there are existing apps to facilitate learning various skills, our app will stand out from the rest by ensuring a personalised learning experience specifically suited for use in the cafe by people with various intellectual disabilities.

Furthermore, **Inkā** will aim to address the storage issue by having a repository that is easily accessible by the various clients to ensure the data is in one place. **Inkā** will then use this data to enable real-time tracking to allow the trainees and support workers to receive constant feedback and guarantee an efficient and continuously evolving learning platform.

By implementing **Inkā**, the concept of action learning will be put into use. Firstly, the trainees will be able to receive instructions through the app (through audio, visual cues, interactive text) to learn various tasks in the cafe. The support workers can then guide the trainees along this journey by checking if the trainees are performing most of the tasks correctly - in which case the skill associated with that task will be checked off. **Inkā** will be designed to be used seamlessly in conjunction with the prompt fading and the gestures/vocal support from the support workers to aid the trainees' learning further. Moreover, it will include the element discrimination cards already used by the cafe as well as progress bars for the main skill the trainee wants to focus on. The user-friendly UI will support this multi-faceted approach and guide not only the trainees but also the admin and support staff.

Finally, **Inkā's** real-time feedback will allow users to gain more confidence in their skills and support them in hopes of building more employment opportunities for adults with intellectual disabilities. **Inkā** will include a mastery indicator (e.g. badges) for the skills

learnt, which can then be used to showcase their skills to future employers and aid the trainees in their future job search.

By developing **Inkā**, we hope to create a platform that is accessible, easy to use and personalised to help fulfil Te Tuhi Cafe's goal of integrating people with disabilities in the community, providing the trainees with better access to job opportunities and helping them enjoy their learning journey. We hope to make the training process easier for the trainees, the support workers and the clientele and give the trainees the platform they need to grow.

## Specific Aims

\*ETC - estimated time of completion

### Facilitate multi-user access and administration [ETC: Beginning of April]

- Develop role-based access control, allowing trainees, support personnel, and admin to log in and access relevant features and data.
- Provide trainees the ability to view their progress, complete tasks, and interact with training materials while allowing supporting personnel to monitor progress.
- Administrators can manage the training program by updating content and removing trainee data once the training is completed.

### Real-time progress tracking and action learning [ETC: End of April]

- Implement a real-time tracking system using iPads to monitor trainee progress during training sessions, allowing for immediate feedback and adjustment of learning strategies.
- Utilise task analysis to break down training processes into manageable steps and implementing action learning (allowing trainees to learn through hands-on experience, with progress tracking across multiple sessions)
- Integrate a data collection mechanism to assess trainee confidence levels and readiness to progress to new tasks or responsibilities.

### Ensure technical viability and client satisfaction [ETC: End of April]

- Build the minimum viable product with core features, including repository functionality, progress tracking, and user authentication.
- Implement a visually appealing design aligned with the client's preferences, incorporating the red and black colour scheme and considering accessibility considerations.
- Conduct regular communication and feed sessions with the client.

### Personalising platform to tailor to trainee needs [ETC: Beginning of May]

- Incorporate multiple modalities, including auditory cues, visual aids, and text-based instructions, to accommodate diverse learning styles and abilities.
- Enable trainees to select their preferred modality upon login, ensuring a tailored learning experience.

### Develop a comprehensive training platform [ETC: Beginning of May]

- Design and implement a platform to track progress for trainees with intellectual disabilities and store training materials including manuals, protocols, and presentation slides.
- Create a user-friendly interface accessible via iPads within the cafe.
- Incorporate features for personalised learning experiences, considering various learning styles and accessibility needs.
- Ensure scalability and modularity to accommodate future updates to the training program.

### Testing, refining and documentation [ETC: Middle of May]

- Finalising the project by fixing any bugs, modifying the appearance of the app and documenting.

# Project Approach

## Tools and Technologies Used

For creating **Inkā**, we have chosen the following tools and technologies. We firmly believe that learning to use these skills will benefit us in the future.

- Node.js – Node.js is our chosen source server environment.
- Express.js – Express.js is our chosen framework that goes hand-in-hand with Node.js.
- Flutter – Flutter is our chosen user-interface toolkit.
- AWS – AWS is our chosen cloud platform. Additionally, we will use other AWS services, such as AWS Amplify, AWS Cognito, AWS Lambda, AWS API Gateway, and IAM.
- Amazon DynamoDB – Amazon DynamoDB is our chosen tool for handling our database.
- GraphQL – GraphQL is our chosen query and manipulation language tool for APIs.
- Docker – Docker is our chosen tool to make it easier for non-tech-savvy users to use our application.
- Postman – Postman is our chosen tool to test and debug our API.
- AmazonS3 – Amazon S3 is our chosen storage service.
- GitHub – GitHub will be utilised for storing any code and for team collaboration/peer review on code.

## Project Management Methodology

We have listed the following methodology we will use in this project.

- Agile Methodology – We have decided to use Agile for this project as it allows for a flexible approach, allowing us to roll out our deliverables gradually. It also allows us to work on multiple things simultaneously, which is suitable for efficiency.
- Scrumban – Scrum and Kanban are both Agile frameworks that would further optimise the efficiency of our progress with this project. We decided to use a hybrid of Scrum and Kanban as there are options that we like in both of these frameworks.
- Google Calendar and Jira – Google Calendar and Jira are both online tools that we use to keep track of events in this project. We will track important dates with Google Calendar and essential issues with Jira, specifically around tracking.

- Communication - Discord is our chosen communication platform throughout the project. We have a main server with different channels for corresponding parts of the project and a group chat for all other aspects. Additionally, we will use Google Meet if Discord does not work for meetings. We have bi-weekly on campus meetings to ensure that we have a solid time to meet and discuss with each other - all other times will be online through our chat/servers.

### Roles and Responsibilities in the Team

The team is assigned roles and responsibilities based on each member's strengths and areas where they are keen to develop their skills. While there is an assigned member to a specific role, everyone within the team will help each other if needed. The roles of each team member are as follows:

- Saacha Moyo – Team Leader
- Eisen Belleza – Backend Developer
- Istefat Sawda – Fullstack Developer
- Natania Thomas – Project Manager
- Zainab Shehzad – Fullstack Developer

### Challenges in this Project

These are the following challenges we expect to face during this project:

- End-user experience – As Te Tuhi Cafe's disabled trainees will use **Inkā**, our expected outcome with each task may differ regarding their use. Our team is committed to providing personalised support and accommodations to ensure that the trainees can enjoy using the application.
- Loss of communication as the project progresses – Our communication between team members and clients may be lost as the project progresses. To ensure ongoing communication and collaboration, our team has scheduled fortnightly Zoom meetings with clients and maintains a Discord server and group chat for internal discussions.
- Inability to utilise the programs/technology to the best of our ability – Utilising all project technologies within the timeframe may present challenges. However, our team is committed to maximising the use of each program and technology throughout the project duration.



## Risks in this Project

These are the following risks we expect to face during this project:

- High expectations for the team from the client – Our client may have high expectations for the development of the app and may not understand our team's limitations.
  - *Mitigation*: Set boundaries with the client to show where our limit as a team lies.
- Clashing – As multiple team members contribute to the project, compatibility issues may arise with the different approaches each member takes.
  - *Mitigation*: There must be constant communication with each team member working on a section. Additionally, there should be copies/backups of work done in case of a failed execution for recovery purposes.
- Student availability – Each team member has other commitments and may be unable to meet set deadlines.
  - *Mitigation*: Informing the team about upcoming events or deadlines each team member must attend/work to.
- Interface incompatibilities – Communication between developed prototypes to cloud services may not work as expected due to interface incompatibilities.
  - *Mitigation*: There should be a backup of all our developed prototypes that we can use on a different interface should there be any incompatibility issues.

## Project Deliverables

We have listed the following project deliverables that we will deliver to the client throughout the duration of this project.

- Reports and Documentation – Our team will give weekly reports to the client about the progress of **Inkā**. Additionally, each team member keeps a development journal to keep track of the progress of whichever section they are working on.
- Designs and Prototypes – Our team will come up and create designs which will be evident in the low-fidelity prototype that we will present to the client to view. This prototype will allow the client to have an idea of what the final product will look like.
- Software Application – Our team is developing a mobile application for the Te Tuhi Cafe. **Inkā** tracks and stores data but is also user-friendly for those with disabilities.
- Training Materials – Our team will release training materials for the Te Tuhi Cafe employees to refer back to when they use **Inkā**.

## Product

Our product is a mobile application, **Inkā**, which will be available to download on the Te Tuhi Cafe's devices. **Inkā** will be compatible with any type of handheld mobile device regardless of its operating system.

# Project Plan

Our project will be split into weekly sprints, where we will have goals to complete parts of our projects. The week will begin on Monday and end on Sunday to allow for other classes and work commitments. We plan to assign specific tasks closer to the task start date (as shown on the Gantt Chart), and we will assign them based on member strength/eagerness to upskill in that area.

As aforementioned, we have specific tasks that we want to keep in mind as we develop our product:

- Facilitate multi-user access and administration (*Mid-semester break*)
- Real-time progress tracking and action learning (*Week 6 - 7*)
- Ensure technical viability and client satisfaction (*Week 6 - 7*)
- Personalising platform to tailor to trainee needs (*Week 8 - 9*)
- Develop a comprehensive training platform (*Week 8 - 9*)
- Testing, refining and documentation (*Week 8, 9 and 10, respectively*)

## Week 1- 3

These weeks focused on planning the project, meeting with the client, and completing the project's first tasks: assigning roles within the team to members and delegating out functions for the project proposal/pitch to team members. Additionally, we had our first meeting with the client to understand what we needed to do—planning to start creating a low-fidelity prototype for **Inkā**.

**Tasks to complete:** Project Proposal and Project Pitch

## Week 4 - 5

We will be focussing on starting up the creation of the first prototype as well as learning/utilising the platforms that we plan to use to assist us in the creation. We expect the low-fidelity prototype to be completed by week 4.

**Tasks to complete:** Lo-fidelity prototype, first stage of product development.

## Week 6 - 7

Our focus will be to have the first working application up and running (creation will take place within the mid-semester break). Additionally, we aim to get our application to work cohesively with AWS and other services we plan to utilise.

**Tasks to complete:** The first run of the working application prototype is created and can demonstrate the aspects the client requested (completion date by Week 6).

## Week 8 - 10

Application testing will occur in Week 8 at the latest. During weeks 9 and 10, we aim to have the project's technical specifications down, and product delivery should occur within these two weeks. We have given a period rather than a specific day in case of unexpected risks or challenges.

**Tasks to complete:** Application testing, product delivery with all the technical specifications, as well as final touch ups on this product.

## Week 11 - 12

If our product delivery date is extended due to any external circumstances, Week 11 will be our latest potential delivery date for the product so that we can get feedback from the client. Documentation and final report preparation will have to happen within the next couple of weeks, as well as the poster for the presentation.

**Tasks to complete:** Final project, presentation (including poster) and report (including documentation).

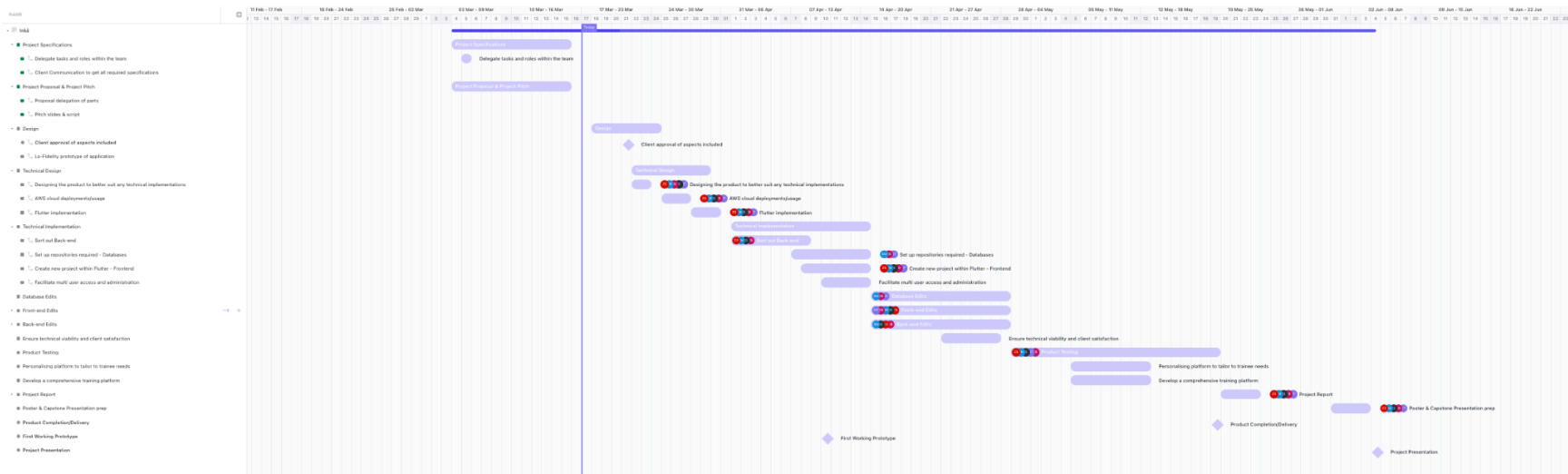
## Week 13

Since everything should be finished in Week 12, this week will primarily be the presentation, so our focus will be on preparing how we present and how we plan to present to our client.

**Tasks to complete:** Poster and set up for the capstone presentation.

# Gantt Chart

We have arranged the tasks in the left side column with sub-tasks and have sorted the tasks by Start Date, so that it can be arranged that way in the Gantt Chart. Additionally, we have assigned each task to members in the team. Refer to the appendix for the zoomed-in version of the Gantt Chart. See Figure 1 for the task list, Figure 2 for the first half of the Gantt Chart and Figure 3 for the second half of the Gantt Chart.



# Table of Authorship

Section	Author(s)
Title Page	Saacha Moyo
Executive Summary	Saacha Moyo
Background & Rationale	Zainab Shehzad
Specific Aims	Istefat Sawda
Project Approach	Eisen Belleza & Natania Thomas
Project Plan	Natania Thomas

# Appendix

## Inkã

- ▼ ■ Project Specifications
  - Delegate tasks and roles within the team
  - Client Communication to g...
- ▼ ■ Project Proposal & Project Pitch
  - Proposal delegation of parts
  - Pitch slides & script
- ▼ ■ Design
  - ◆ Client approval of aspects...
  - Lo-Fidelity prototype of ap...
- ▼ ■ Technical Design
  - Designing the product to b...
  - AWS cloud deployments/u...
  - Flutter implementation
- ▼ ■ Technical Implementation
  - Sort out Back-end
  - Set up repositories require...
  - Create new project within ...
  - Facilitate multi user access...
  - Database Edits
  - Front-end Edits
  - Back-end Edits
  - Ensure technical viability and cli...
  - Product Testing
  - Personalising platform to tailor t...
  - Develop a comprehensive traini...
- ▼ ■ Project Report
  - Poster & Capstone Presentation...
  - ◆ Product Completion/Delivery
  - ◆ First Working Prototype
  - ◆ Project Presentation

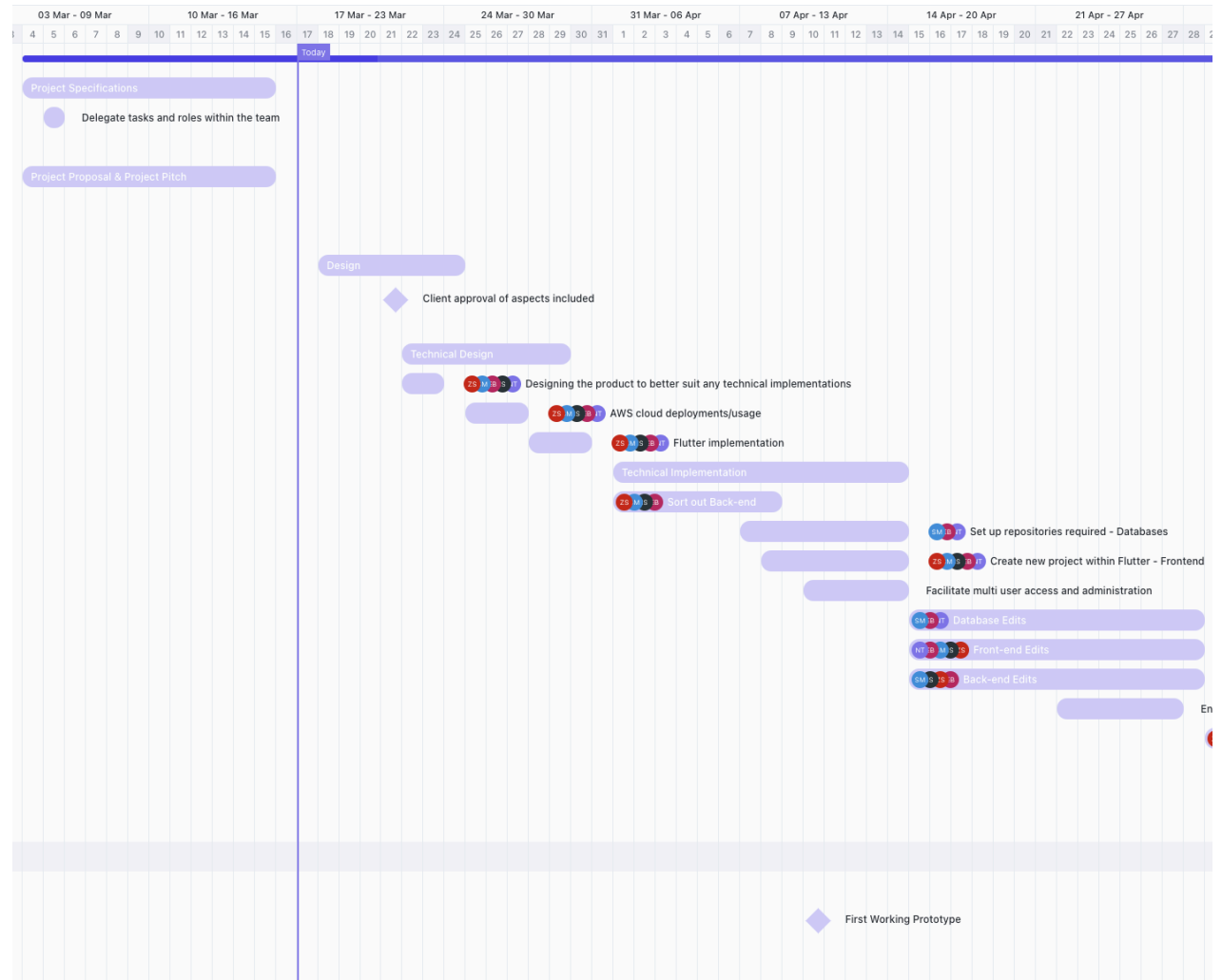
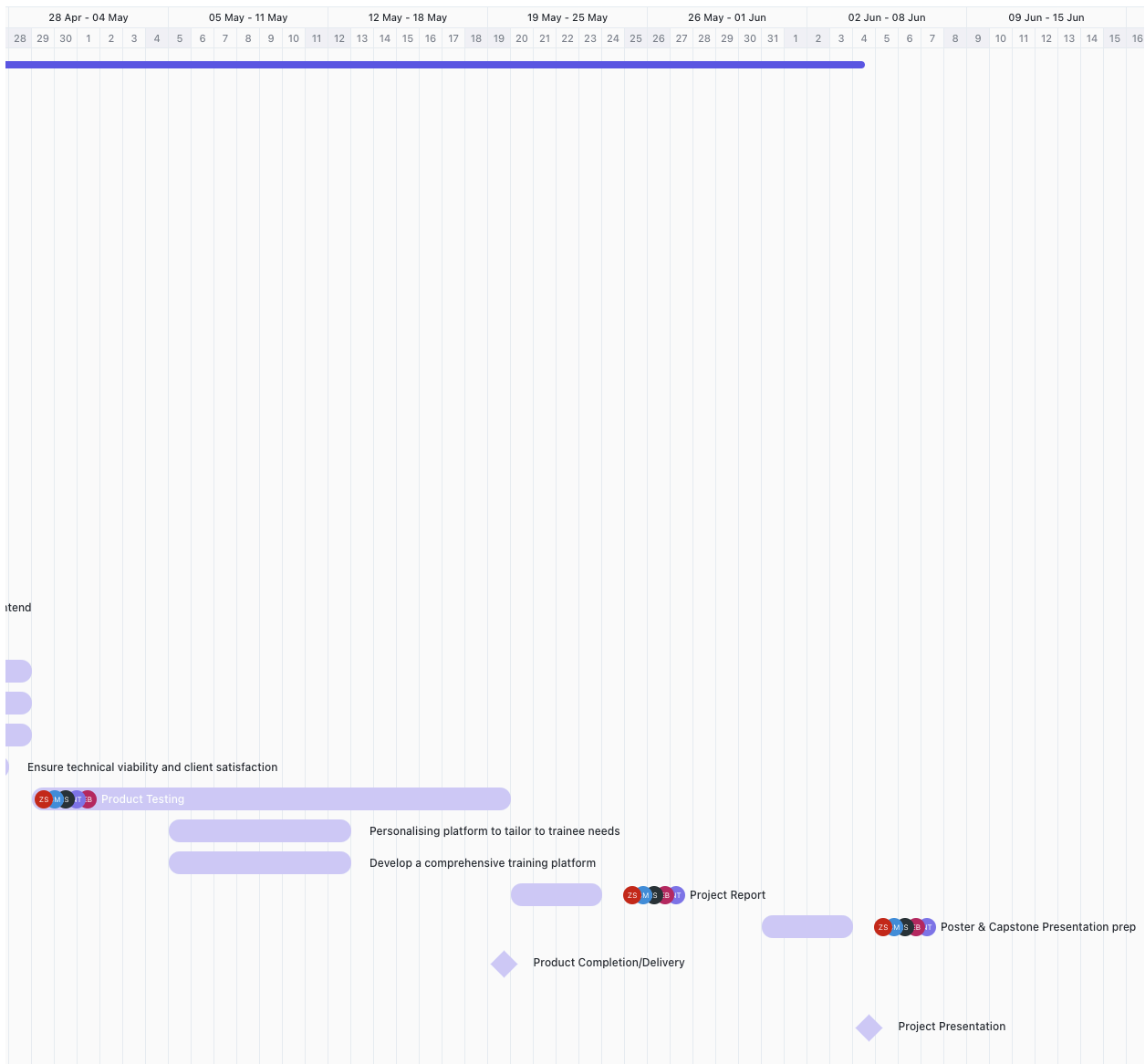


Figure 1 (LHS). The tasks we have arranged and assigned to the team members.  
Figure 2 (RHS). The first half of the Gantt Chart.

Figure 3. The second half of the Gantt Chart.



## References

- (1) *Labour market statistics (disability): June 2023 quarter* | Stats NZ. (n.d.).  
<https://www.stats.govt.nz/information-releases/labour-market-statistics-disability-june-2023-quarter/#:~:text=labour%20force%20 participation%20rate%20for,a%2042.3%20percentage%20point%20gap>
- (2) Cafe Illustration on the Table of Contents page. Illustrator :[LanaSham](#)  
[https://www.google.com/url?sa=i&url=https%3A%2F%2Fstock.adobe.com%2Fimages%2Fstreet-coffee-shop-concept-vector-banner-takeaway-kiosk-in-flat-style-friends-are-sitting-at-a-table-in-a-summer-cafe-cafe-visitors-at-tables-vector-flat-cartoon-illustration-on-white-background%2F239857915&psig=AOvVaw08wg\\_Qpa6eHwlhsd0KoID6&ust=1710567125041000&source=images&cd=vfe&opi=89978449&ved=0CBUQjhxqFwoTCMia3aHF9YQDFQAAAAAdAAAAABAQ](https://www.google.com/url?sa=i&url=https%3A%2F%2Fstock.adobe.com%2Fimages%2Fstreet-coffee-shop-concept-vector-banner-takeaway-kiosk-in-flat-style-friends-are-sitting-at-a-table-in-a-summer-cafe-cafe-visitors-at-tables-vector-flat-cartoon-illustration-on-white-background%2F239857915&psig=AOvVaw08wg_Qpa6eHwlhsd0KoID6&ust=1710567125041000&source=images&cd=vfe&opi=89978449&ved=0CBUQjhxqFwoTCMia3aHF9YQDFQAAAAAdAAAAABAQ)