

# Manu - A Quiz App About Aotearoa's Native Birds

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## Executive Overview

Māori language is incredibly valuable to Aotearoa, but is not particularly common in our society. It is used frequently in identifying our native birds, however, people know little about them as well. To increase the use of Māori language and the general knowledge about Aotearoa's native birds, we propose a quiz-based app to combine these components in an entertaining and educational format.

We are a team of four experienced 300-Level Computer Science students. Over twelve weeks we plan to develop our app using Kotlin and Android Studio and we wish to publish it to the Google Play Store. We will take advantage of user testing to ensure our app fits its purpose.

Our app will have multiple quizzes to test players on identifying birds by sight and sound, and on translating between Māori and English names. All quizzes will draw ten random questions from a pool, and will present four possible answers for each. Players will be rewarded for progress and can read more about our native birds in an infographics section.

Few quiz apps exist which focus on birds, and information on Aotearoa's birds is spread between multiple sources, mainly on websites. Relative to those sources, this app will be concise and effective.

## Our Team

Daniel has game development experience and has used HTML and CSS in web design. Hence, he will focus on the app's front-end by designing, implementing, and polishing our quiz game. This is because HTML and CSS is similar to the XML used in Android Studio and he will apply game design ideas to the quiz. Daniel has also used similar planning and management tools before and is confident at writing, so he will structure our planning and help write documentation and reports.

Jackson will be our administration lead. This means he will be in charge of setting up and maintaining our Trello board and Git repository. He has the most experience with these

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tools in the team. With respect to Manu, Jackson will mainly work on the back-end by implementing data structures to hold all the information required for the various aspects of our quiz. This is because he has experience with managing files and designing data structures. He will act as a consultant when the front-end team implements his data structures.

Will is going to gather the photo and sound files and will ensure we have the correct licences. He has experience with design, meaning he can edit the files accordingly to suit the app. Will has worked on UI and information panels so he will design and implement the infographics section of the app. Will also has experience with user testing questionnaires.

Maddy is a confident writer meaning she will focus on the planning report and code documentation. She has design experience so she will design and implement the menu screens as well as decide the font and layout theme for the app. Maddy also has good programming experience, and will be tying together the three core components of the app.

## **Existing Products and Our Target Market**

There are many apps similar to ours, but none are designed to be offline, engaging, and educational about Aotearoa's birds. Quizlet<sup>1</sup> allows for online, user-made quizzes, however these vary in quality. The "Te Papa Bird Quiz"<sup>2</sup> has good design, but it is an online website quiz and is limited to images, similar to the "New Zealand Birds Trivia Quiz"<sup>3</sup>. These are all online services, and are not designed for use on a phone - a gap our app will fill. The only app that provides information on New Zealand birds is the "Birds of NZ" app<sup>4</sup>, which is more suited towards bird watchers, providing specific and detailed knowledge on different species.

With regard to our target market, we have informally asked several Ecology students from AAPES (Animal, Aquatic, Plant, Ecological Society) if this app is something they would be interested in - their answer was yes, as it would promote interest in New Zealand fauna, and provide a fun resource to learn New Zealand bird-calls.

## **Project Description**

Manu (the Māori word for bird) is a multi-choice quiz game about identifying New Zealand's native birds by their Māori names through the use of visual or audio cues. There will be four quiz types: visual to text, audio to text, and English to Māori and vice versa. Regarding the visual to text quiz, there will be an image of a bird with four Māori or English names as options for identifying the bird. The audio quiz will have the same setup except the bird

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<sup>1</sup> [quizlet.com/en-gb](http://quizlet.com/en-gb)  
<sup>2</sup>

[www.tepapa.govt.nz/discover-collections/read-watch-play/science-and-nature/birds-new-zealand/quiz-how-well-do-you-know](http://www.tepapa.govt.nz/discover-collections/read-watch-play/science-and-nature/birds-new-zealand/quiz-how-well-do-you-know)

<sup>3</sup> [www.funtrivia.com/trivia-quiz/Animals/New-Zealand-Birds-249876.html](http://www.funtrivia.com/trivia-quiz/Animals/New-Zealand-Birds-249876.html) Bird World - Famous Birds Quiz

<sup>4</sup> [apps.apple.com/nz/app/birds-of-new-zealand-lite/id793112242](https://apps.apple.com/nz/app/birds-of-new-zealand-lite/id793112242)

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image will be swapped for an audio player, using which the user can repeat the noise. There will also be an infographic section where the user can review information/facts about the birds.

With a target theme of diversity, we want Manu to explore Aotearoa's native birds and the Māori language to educate users. This navigates both the nature and cultural diversity fields through native birds and our native language.

*Please see Figure 1 on page 6 for visual drafts.*

## **Defining the Problem**

Some issues we identified within existing products is that current quizzes do not contain both the visual appearance and calls of birds in one coherent system, nor the English and Māori names of birds. For example, the Te Papa quiz only has a translation quiz which is limited as it requires Internet connection. We wish Manu to be an informative education system that exists on the user's local device.

## **Resource Requirements**

Regarding the resources to build Manu, we will be using Kotlin within Android Studio to develop the app. To test our product we will use the Android Emulator (emulating the Google Pixel) and our two Android devices. The majority of testing will be with the emulator as Manu lacks any specific hardware requirements (GPS, gyroscope, or camera). We are also using an iPad Pro for UI mockups.

Additionally, we will need to find photos and audio for the project under licences that allow for commercial use. Currently, we have identified that the Department of Conservation allows for commercial use for all bird-call audio they publish, however we still lack a central database of adequate bird photos with the correct licensing. We will still be able to gather these images from different sources.

## **Risks**

Firstly, we plan to construct four quizzes: the main quiz during Assignment 2, and the other three during Assignment 3. These last three may take some time and could push out important steps, such as CI and Analysis reporting, and user testing. This would harm our Assignment 3 marks and our app would be less satisfactory for our audience. This has a low to moderate chance of occurring. Our solution acknowledges that the main quiz (photos to bird names) will encompass the bird knowledge and Māori language components, and the other quizzes will only add to that. Of course, to maximise Manu's purpose, we will implement as many as we can. We deem this a tolerable fix.

Secondly, we acknowledge COVID-19 and other illnesses may obstruct in-person work. This is moderately likely given the twelve-week period. We are a team of four Computer Science

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majors meaning we can pick up the slack if someone is unable to work. Hence, rectifying such a situation would be tolerable. We can use Zoom to meet and are already using Facebook Messenger for quick communication.

Thirdly, we are inexperienced with mobile app development and the Android Studio IDE. This risks our entire app development process and is nearly guaranteed to have a catastrophic effect. There is no way to overcome this initially so we have set aside time to follow tutorials so we can learn the languages (Kotlin and XML) and become familiar with the environment. We are unlikely to fall victim to bad libraries since we are using Android Studio's base functionality. Hence, it will be thoroughly tested and there will be plenty of help online.

A fourth risk is that our inexperience in app development will lead us to incorrectly gauge the amount of time certain tasks will take. This could lead to certain members having far more difficult tasks than others, but the same amount of time to complete them. Our Gantt Planner shows that these situations would arise when other team members are completing less complex tasks meaning they could help that individual. This would cost us time and would steer teammates away from the plan. The flow-on effects of this would be serious.

With respect to all risks, we have ordered our build process from the most crucial components to the least. This means at any point in time we will have completed as many of the important aspects as possible. This will help maximise the work not done should problems arise.

## **Project Schedule**

Our project has three different milestones:

- 26th August
  - A working photo to names quiz, with a collection of questions to draw from
  - A skeleton for the infographics section
  - A menu to navigate between these screens
  - A user testing questionnaire
- 16th September
  - Polished photo to names, English to Māori names, Māori to English, and birdcall quizzes
  - Finished menu
  - Finished infographics section
  - User-testing started
  - CI and analysis report
- 7th October
  - Polished and debugged quiz app
  - Completed documentation including user-testing

*Please see Figure 2 on page 7 for our Gantt Planner.*

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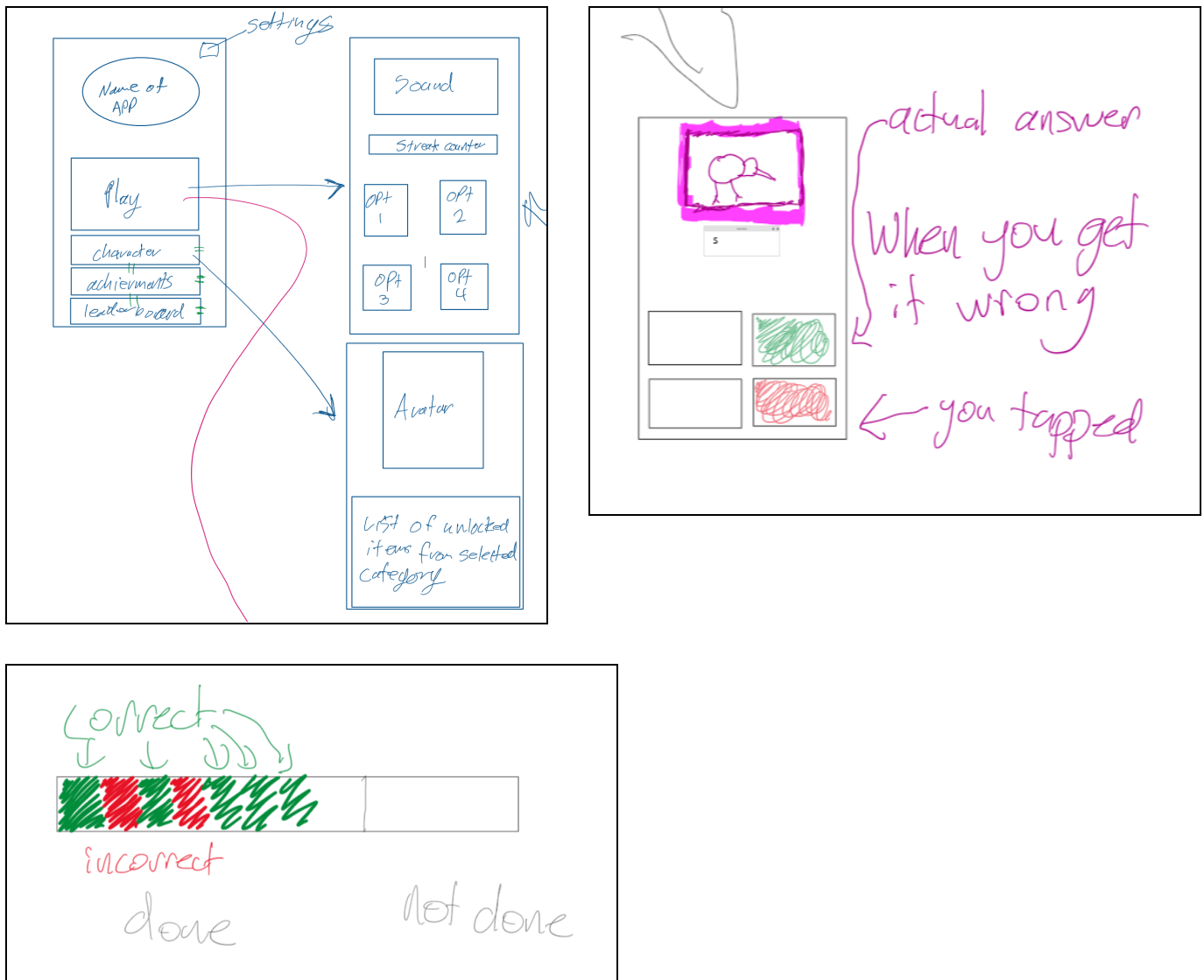
## Monitoring and Reporting

We will use Trello to track everyone's progress and to visualise how much work remains, which will help us track the assignment due dates and make sure our milestones are met. We can also track where everyone is up to by assigning tasks to people and waiting for them to flag that their task is complete. We have agreed to meet on Fridays 10:00am – 4:00pm. We will do a stand-up report every day in class.

## Conclusion

With the plan above, we will complete *Manu* by the 7th of October. Overall, this app is designed to fill a clear gap in the current market and highlight the importance of biodiversity and the Māori language within Aotearoa New Zealand's culture. With a simple yet streamlined design, we hope to promote the beautiful *manu* of New Zealand's ecosystem.

**Figure 1 - App Layout Sketches**



**Notes:**

- In the top-right image, we will put animated ferns in the background. These will dance upon a correct answer, and shake (like someone shaking their head) upon an incorrect answer.
- The bottom image is a custom progress bar which is coloured by answer accuracy.

### Figure 2 - Gantt Planner

