RUPE RERE NUI: PLACE-BASED STORYTELLING IN ROBOTICS WITH MĀORI-MEDIUM STUDENTS

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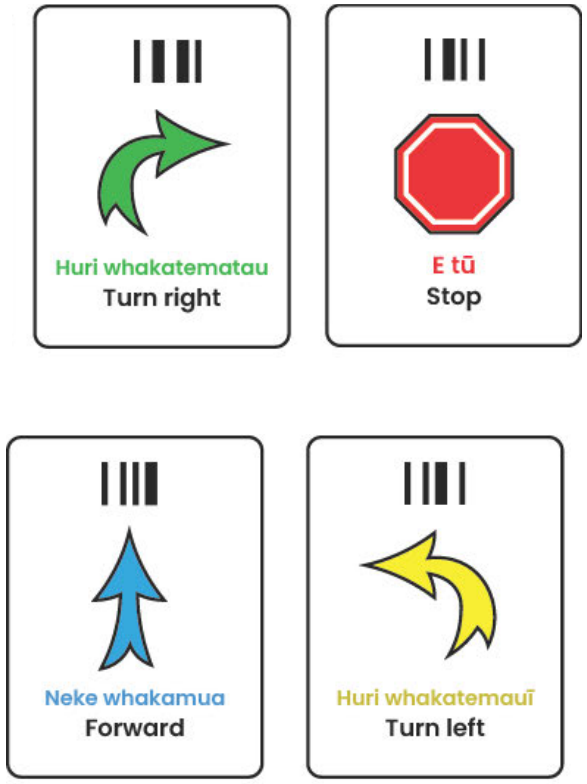
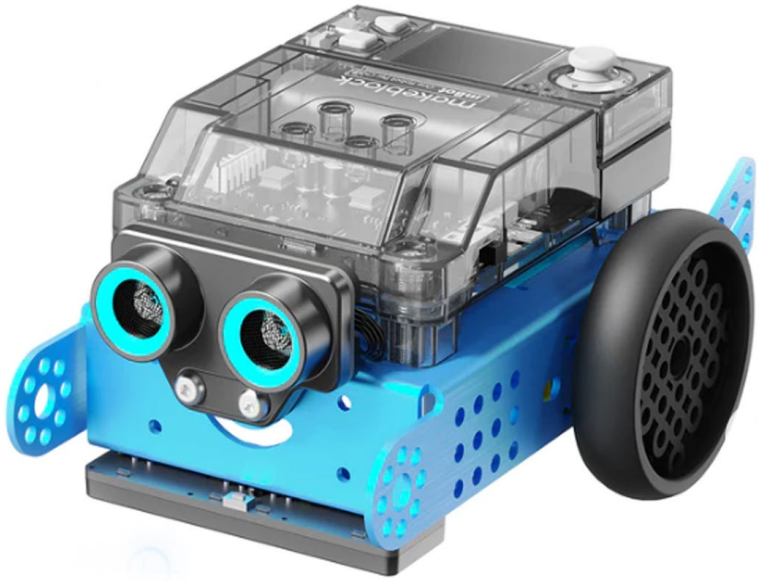
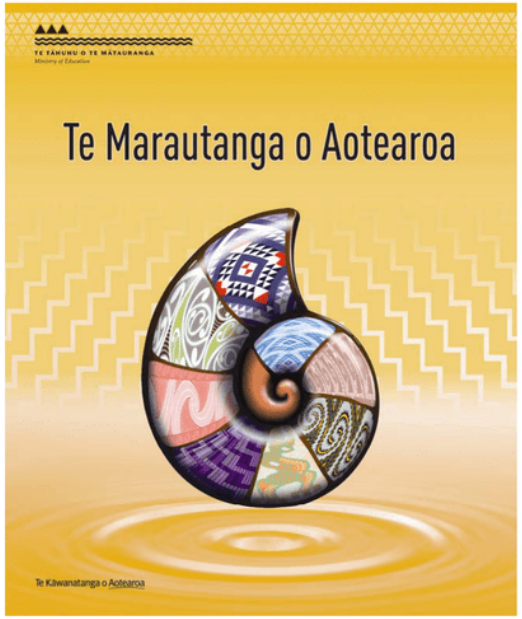
ABSTRACT





- Part of a larger study involving the design of a low-cost programming environment or tangible user interface where students use robots to navigate a geographical map in telling and re-telling stories associated with that place
- The geographical map that was initially developed depicted the Wellington region , as the lead researcher for this project had connections to Wellington
- The study contributes to the field of localised curriculum with a focus on the place of storytelling and the incorporation of non-technical subjects, such as place-based narratives, into a robotics system



TWO NATIONAL CURRICULUM FRAMEWORKS

- There are two national curriculum frameworks guiding teaching and learning for children between 5 and 18 years-old in Aotearoa: Te Marautanga o Aotearoa and The New Zealand Curriculum
- The former supports Māori-medium educators, and is informed by mātauranga Māori and te reo Māori
- Currently, both curriculum documents are undergoing a refresh, which is two years into a six-year cycle

DEFINITIONS

Professor Wally Penetito shares his thoughts on where to start with curriculum design.
He says:
•start where your feet are
•connect to the people who belong.

LEARNING IN PLACE

STUDY OF THE PLACE

LEARNING FROM THE PLACE

LEARNING FOR THE SAKE OF THE PLACE

https://tewhariki.tki.org.nz/en/webinars-and-workshops/videos/starting-where-your-feet-are/

TE HAERENGA A KUPE; THE JOURNEYS OF KUPE

1. To initialise a transdisciplinary research project bringing together engineering, design, and education to explore how young children can use physical components to program robots
2. To evaluate and improve an existing robotic programming environment

- The improvements included modifying the system so that it was age appropriate for 5-9-year-old children and incorporating New Zealand-based content in the teaching and learning experiences that are planned and delivered with young children

A BRIEF OVERVIEW OF RELATED LITERATURE

How have TUIs been used with 5–9-year-old children and were any considerations made regarding the inclusion or exclusion of GUIs or Audio and VUI?

What pedagogical approaches are most effective in the teaching of programming concepts with young children?

2.2 WHAT PEDAGOGICAL APPROACHES ARE MOST EFFECTIVE WHEN TEACHING COMPUTER SCIENCE?

- The diverse range of studies = form the foundation of the argument for the import of pedagogical pluralism
- The design of the learning should be aimed at the specific needs of the children in each of the contexts being researched
- Link this concept with the pedagogical principle of designing rich tasks for children to explore computer programming concepts, that would have low floors, high ceilings and wide walls – meaning they would be adaptable and accessible to a wide range of students

2.3. KEY LESSONS LEARNT

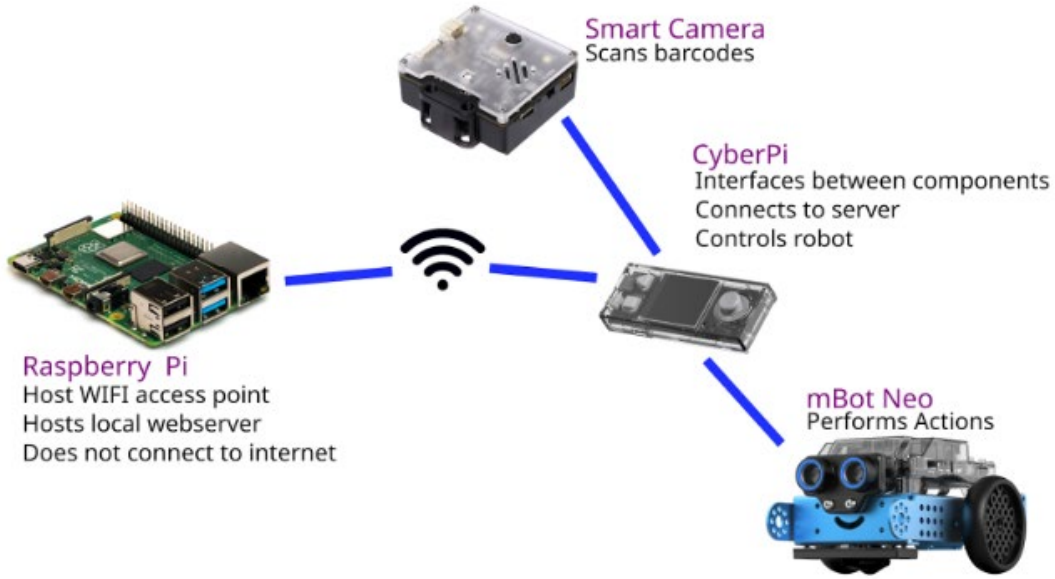
Complexity arises from the number of extraneous factors that directly impact the results of these studies

Whether the study was a small pilot study or a big data project over multiple years, involving hundreds of children, researchers focused on the pedagogical design of the delivery of concepts and how to refine the design of concepts when challenges in the communication of those ideas were identified

This study identifies the teaching of computer science as aligning with the third model discussed in the previous section; that is, programming as a discipline; and computer science as a vehicle to develop digital literacy

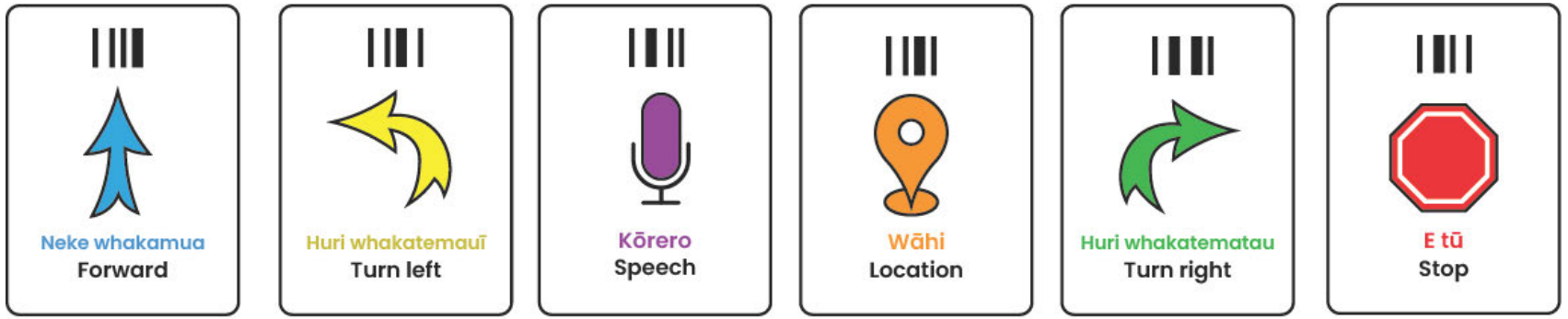
3. METHOD

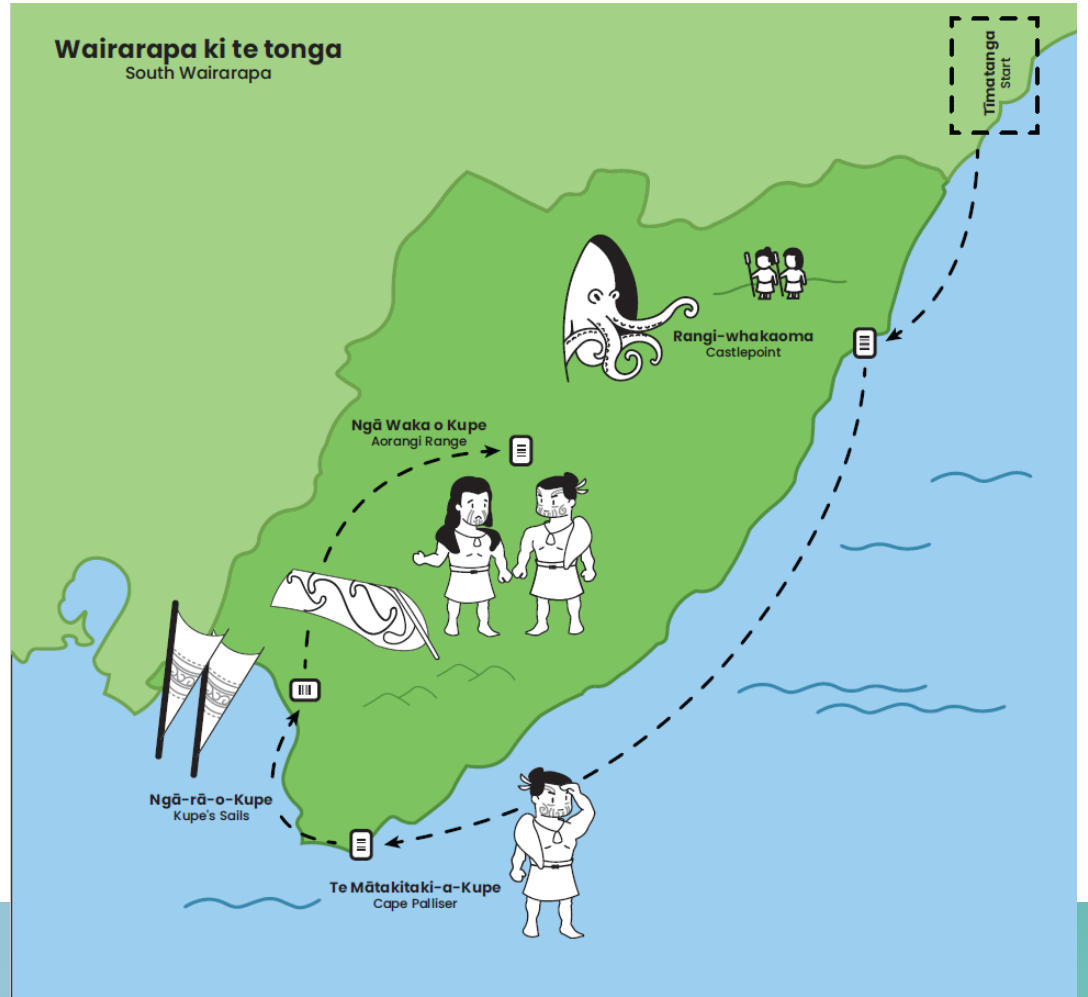
- System Design
  - The robot and the components should be cheap and available internationally ($481 NZ)
  - Materials to use for the TUIs should be widely available
  - That a geographic map would provide the context for the students' learning experiences
  - That people without technical backgrounds would be able to easily modify the end system



3. METHOD

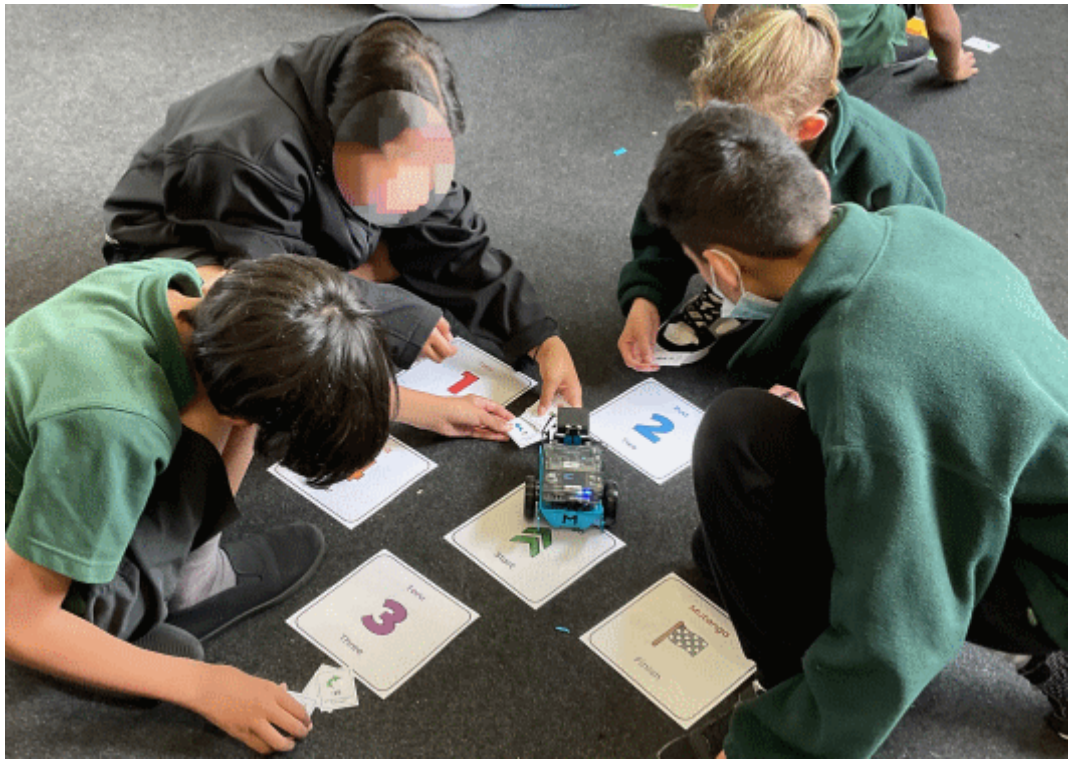
- Forward: move the robot in the direction of the camera
- Stop: turn the robot's motors off
- Turn left: turn the robot to the left, relative to the camera at the front of the robot
- Turn right: turn the robot to the right
- Speech: record five seconds of speech from the user
- Location: replay the recorded speech from the user

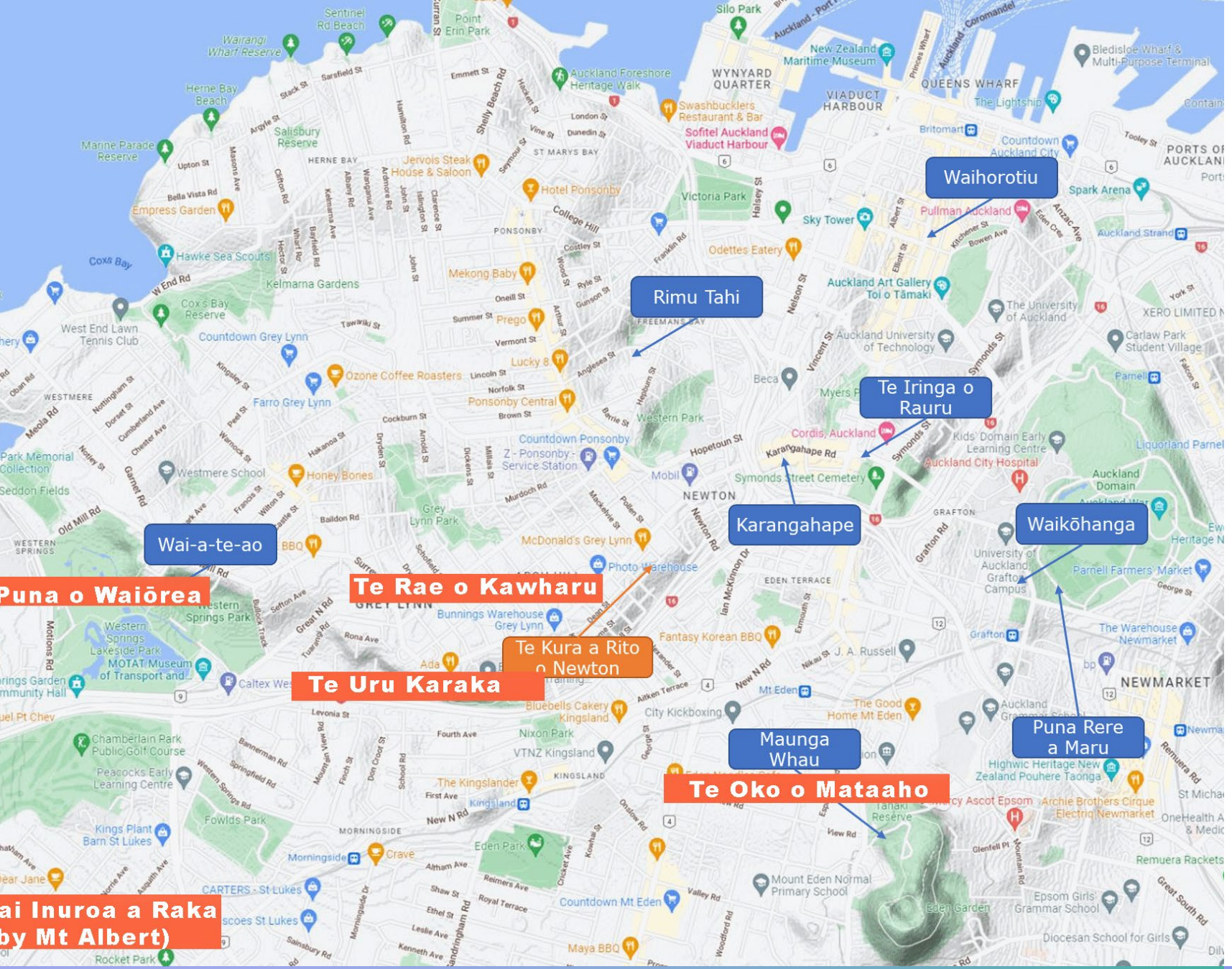




PEDAGOGICAL DECISIONS: HOW EACH SESSION RAN

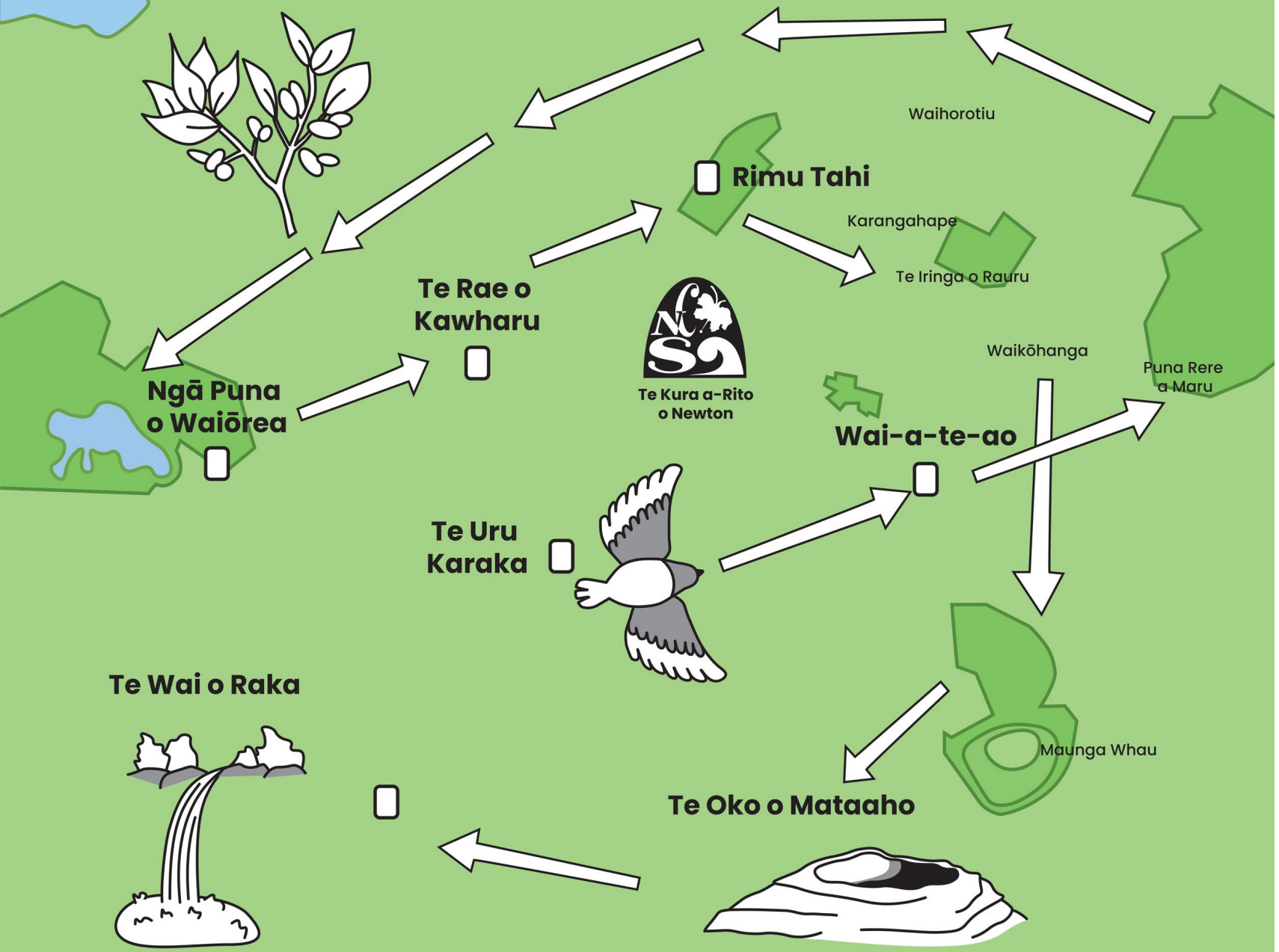
- Each session, we would sit the students in a circle, introduce the robots and explain how they worked
- Because the students were young children, we ensured that, as part of the introduction of the robots, there was an explanation of tikanga The children were then split into groups
- Each child received a full set of command cards; each group was given a robot, a set of number cards, and once the initial activity was complete, we moved the children onto the maps of the Wellington region so they could engage with the narratives that, at this stage, had been prepared on cards
- They were able to figure out how the robots and commands worked and quickly adapt to changes





FINDINGS: AN UNEXPECTED RESEARCH OUTPUT

- This paper focuses on a school that was visited three times and the way in which the principles of place-based education were applied in response to feedback from the children and the teachers, so that the children were able to engage with narratives of the area in which they go to school
- When this school was sharing their feedback, the children decided that it would be more significant to them and their learning, if the narratives they focused on belonged to central Auckland – the area their school was in, that they chose to connect to as students and teachers
- This mōteatea is called Rupe Rere Nui, Rupe being a New Zealand pigeon, referred to in personified form as Rupe



INITIAL CONCLUSIONS AND FURTHER RESEARCH

- It is interesting that, of the eight schools we visited , there was only one class in one school that asked about their place: Could we make our own map of the places to which we connect?
- The group decided that they wanted something they would be able to engage with in the long-term, related to the place where their school connected
- We highly recommend further research and the development of modules, so that the schools we work with, are able to easily adapt the materials and develop local maps where teachers and young children can work together and engage in storytelling about the places they choose to connect to on a daily basis

QUESTIONS?

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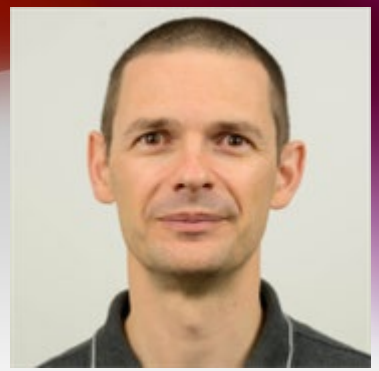

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