

Reflective Piece

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MAKING CONNECTIONS: REFLECTIONS ON TEACHING THE  
BASIC PRINCIPLES OF COMPUTER NETWORKING WITH A  
RENEWED APPRECIATION OF PŌWHIRI

John Mumford

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# MAKING CONNECTIONS: REFLECTIONS ON TEACHING THE BASIC PRINCIPLES OF COMPUTER NETWORKING WITH A RENEWED APPRECIATION OF PŌWHIRI

John Mumford

## INTRODUCTION

Every academic year at the Southern Institute of Technology (SIT) starts with a pōwhiri to welcome all kaimahi (staff), ākonga (students) and manuhiri (visitors) back on campus with dignity, passion and resolve for the coming year. Relationships and connections (whanaungatanga) are crucial to Māori, unifying people, honouring commitments to each other and fostering a sense of belonging (Houkura / Independent Māori Statutory Board, 2023). Pōwhiri left an indelible impression on me about the significance and the endurance of such connections, and how they can help us through the challenges that each academic year brings. For the purposes of this reflective piece, “a Pōwhiri is a formal Māori welcoming ceremony carried out by tangata whenua (local people or hosts) to welcome manuhiri (visitors) into a space” (Napan et al., 2022, p. 66). Thus, the students, the staff and all visitors are welcomed into the campus space.

Several months later, while writing a lesson plan to help a culturally diverse group of commerce students understand how computers connect with each other, my impression of the pōwhiri came to mind. I could see the similarities between the pōwhiri and its protocols for the interactions, and the way that computers interact with each other. This seemed to be a much more natural way of understanding a somewhat abstract process that operates invisibly to a computer user yet is crucial to the digital communication age. Thus, in the spirit of whanaungatanga, my intention was to welcome the ākonga into the learning space. My goal was to “provide a wide range of teaching strategies that ensure a sense of belonging for Māori students and all students using Māori concepts and pedagogy” (McRae & Averill, 2019, p. 168).

The Internet is founded on underlying software protocols which manage the communications between devices in a structured manner. Thus, with renewed appreciation for the significance of pōwhiri, I set about planning and delivering a lesson about computer communication motivated with a fresh sense of purpose and deeper awareness of human connections, and the power of collaboration. Fostering connections and collaboration is at the heart of current reforms in tertiary education providers as members of Te Pūkenga.

## CONTEXT AND CONTENT

In the context of IT education at tertiary level, computational thinking includes several facets that can be linked to computer networking, and collaboration in a wider sense. Doleck et al. (2017, p. 4) identify five computational thinking competencies: algorithmic thinking, cooperativity, creativity, critical thinking and problem solving. Teaching computer communication and cooperativity may occur in isolation from the more holistic and naturally grounded perspective that pōwhiri provide. Presenting the technical explanation of computer communications from a purely Pākehā perspective would tend to be the default approach. Why not explore the technical content

using a fresh viewpoint and support both present and future benefits for our students? Students who experience teaching and learning contexts from Pākehā and Māori perspectives are likely to gain deeper appreciation of what each culture can contribute to their studies. Hargreaves (2022) emphasises the principles of culturally responsive teaching. In addition, it is acknowledged that “culturally responsive pedagogy is an educational approach that recognizes the diverse backgrounds and experiences of learners and seeks to create inclusive and engaging learning environments” (Caingcoy, 2023, p. 3204). This piece outlines the teaching strategies forming the basis for a lesson on computer communication, students’ responses, teacher reflections and ways of connecting and critiquing the incorporation of pōwhiri elements within the context of a business computing course.

## COMPUTER NETWORKING CONCEPTS AND SKILLS IN THE CLASSROOM

The session occurred on a weekday afternoon in the classroom with 15 Diploma in Commerce (Level 5) students. The class comprised mature students and some younger students with varying prior knowledge of computing and use of information technology (IT) in business contexts. As part of SIT organisational policy’s regular observation of culturally responsive teaching, this was an opportunity to draw on work and life experiences, especially pōwhiri, as we navigated our way through the course. This informed my teaching with a fresh approach to teaching computer networking within the context of information systems studies. Some students would be revisiting semi-familiar material and others would be returning to education after some years in the workforce and perhaps had never dealt with these topics in an academic setting. This seemed to be an ideal opportunity to present the material with a questioning approach at the outset, to enhance student engagement and make theory and practice more connected. It was also a situation to foreground pōwhiri experiences as a vital part of the learning process in the classroom. Those more familiar with computing would have to revisit what assumptions we start with and why, rather than just how computer communication works; those returning to study, having had real world experience of computer communication and collaboration, would bring with them a questioning approach based on life experience (Why do I need to learn this? What for? What does pōwhiri have to do with computing?).

The kanohi ki te kanohi (face to face) lesson commenced with a greeting: Tēnā koutou, tēnā koutou, tēnā koutou, katoa (Welcome everybody). The learning goals and structure for the session were laid out on the whiteboard, the tutor ticking off each stage of this schedule as they were completed. The main parts of this lesson were arranged into three sections.

The first section involved asking the class: what are protocols? In addition, the students were requested to give an example of a protocol from an everyday situation. The students’ verbal responses were shared, and this prepared the class for building on prior knowledge and making connections between technology and cultural customs. The examples shared were drawn from their experiences of introducing themselves to others, respectful listening and attention to a person speaking, and asking questions in a session at an appropriate time.

The second section involved the core learning activity for this lesson: a very simple and short sequence of events in the form of a role-play. Three uniquely coloured cards were introduced to the class. Each card represented one stage of the computer connection process. Each card face had a short English phrase on one side complemented by a Māori translation of the same phrase on the other side. Two students were invited to participate in the learning activity, with one student acting as the initiating computer, and the other as the receiving computer. The tutor then guided the role-playing pair through the short process drawing on experiential learning theory (Kolb & Kolb, 2017). The student read aloud each phrase, in English and in Māori, as it progressed. The role play sequence then played out.

## The role play sequence

Each student in the pair activity chooses whether to act as a sending computer, to initiate the interaction, or act as the receiving computer, waiting for the sender to start the process.

Step 1: The sender then reads aloud from one side of the card, "I would like to converse with you," then turns the card over and reads aloud in Māori, "E hiahia ana ahau ki te kōrero ki a koe."

Step 2: The receiver then replies to the sender by reading aloud, "Received. I would like to converse with you," then turns the card over and reads aloud in Māori, "Kua riro mai. E hiahia ana ahau ki te kōrero ki a koe."

Step 3: The sender then replies to the receiver by reading aloud, "Received. Good, let's talk," then turns the card over and reads aloud in Māori, "Kua riro mai. Kia pai tā tatou kōrero."

The third section involved a guided reflection by the tutor on the learning activity. The key aspects modelled in the simple activity could be likened to two parties engaging in customary communication, being ready to interact to achieve a common goal through collaboration. The back-and-forth nature of the process resonated with the students' examples of protocols. The tutor then drew some comparisons with pōwhiri, which reminded the students of that first key event of every academic year, and of the possible connections with the technical world of computer communications.

First, the students are involved in the teaching activity through practical participation. Second, they have an opportunity to reflect on this experience. Third, they are supported to think about the abstract concept of computer networking protocols. Fourth, the students can experiment further, to see what happens when this technical communication process fails in some way. Thus, the students are guided to navigate Kolb's cycle of learning (Morris, 2020, p. 3).

## SIMILARITIES AND DIFFERENCES BETWEEN PŌWHIRI ELEMENTS AND COMPUTER COMMUNICATION

Pākehā and Māori perspectives of the world are rooted in very different cultural histories. Consequently, looking for similarities between a Western technological viewpoint and Māori knowledge systems, concepts, and values (such as kaitiakitanga) will naturally reveal significant differences in perspectives. A listing and brief description of the key elements of pōwhiri (Massey University, 2023) highlights the similarities and differences between pōwhiri and the computer connection concept.

Key Element	Description	Similarities	Differences
Karanga	A greeting call or incantation.	Sender request to make connection with receiver using agreed language.	Sung by a person drawing on their breath, intellect, and emotions. Intention for enduring relationships.
Whaikōrero	Formal speeches.	Back-and-forth exchange of data in standard format. Internet locations established.	Form of language, breath, intellect, and emotions. Intention for enduring relationships. Connections with ancestors and whakapapa.
Waiata	A song performed at the end of the whaikōrero to support what has been said.	Signals are used to guarantee safe data delivery and remove the connection once there is no more data to share.	Sung by a person or group drawing on their breath, intellect, and emotions. Intention for enduring relationships. Reinforcement of message.
Hongi and harirū	Shake hands and press noses.	Graceful connection release sequence, where both parties have closed their side (or abrupt, where connection is closed quickly).	Close personal space and breath of life shared.
Kai	Sharing food, which lifts the tāpu (sacredness) of the pōwhiri.	Users at each end of the connection experience some change in their information.	All computer communication is viewed as data with no innate ethical sense of what is or is not sacred.

Figure 1. Key pōwhiri elements with descriptions followed by similarities and differences between each element and computer communication.

## CONCLUDING THOUGHTS

Our journey started with the pōwhiri at SIT and its lasting impression on me and my teaching practice. This experience raised my awareness of the potential similarities and differences between pōwhiri and computer connection concepts, which form the underlying basis for foundational software processes of the Internet. The lesson planning which resulted from my subsequent reflections led to the navigation of a teaching sequence on basic computer connection principles with a class of commerce students. The lesson had very positive feedback from the students. The group of commerce students appreciated the effort that I had put into making an abstract concept more understandable through a simple role-play exercise which embedded te reo Māori into its planning. The Māori teacher who observed the lesson provided very heartfelt feedback on the suitability of the lesson plan, although no consultation with mana whenua was sought. The similarities between pōwhiri and the lesson topic could be viewed as somewhat naïve. Linking pōwhiri to Western technology may detract from the sacredness of Māori customs. Shedlock and Hudson's research on Māori concept modelling of IT artefacts associates the meaning of pōwhiri with the night, darkness or relating to departed spirits. They also include the idea of binding together in their review of literature (Shedlock & Hudson, 2022, p. S26). More profound aspects of pōwhiri include recognition of the mana of the participants, the weaving together of different peoples and acknowledgment of those who have passed (Smith, 2016). Thus, the clear distinction between a sacred process that welcomes people into a collaborative space, and computer software protocols as artificial objects, must be maintained, honoured, but not appropriated.

My learning journey with pōwhiri has only just begun. The themes of connection, collaboration, and shared goals can inspire us to develop our bicultural pedagogy as we navigate our way through education reforms aspiring to reflect the values of Te Pūkenga.

**John Mumford** is an IT Teacher at the Southern Institute of Technology, whose research interests include Teaching Innovation, Mathematics Education, Adult Literacy and Numeracy and Postgraduate Education. John has a Master of Adult Literacy and Numeracy and is dedicated to empowering learners to develop their critical thinking skills and dispositions.

🌐 <https://orcid.org/0000-0003-3000-7820>

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