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Toi Mai: Barriers to diversity in the Aotearoa tech sector summary

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Barriers to diversity in the Aotearoa tech sector summary

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Introduction

Tech is a fast-growing and high-value sector in Aotearoa. With increasing labour demands and competitive salaries, tech has the potential to provide stable, high-paying jobs to an increasingly significant proportion of New Zealand workers if we can capitalise on strong global demand for tech products and services.

We know that Māori, Pacific peoples and women are active users of tech, but their low representation in the sector suggests they are largely absent from its development. Only 5% of the digital tech workforce is Māori and 4.4% is Pacific, while women make up just 29% of the digital technologies workforce. Workforce participation by tāngata whaikaha is less known, but we know that limited digital accessibility is a major barrier for people living with disabilities.

As a workforce development council, Toi Mai is charged with contributing to an education system that provides opportunities for all people in our specified industries to reach their full potential and capabilities, including those who have been traditionally underserved by the education system. To support this mahi we have started to investigate the barriers currently faced by those not accessing training and work in our sectors.

This report outlines the most significant barriers to entry into tech that occur for some groups in Aotearoa. The groups identified in this report are:

- Māori or tāngata whenua
- Pacific peoples or tagata Pasifika—people with Pacific Islands origins or heritage
- tāngata whaikaha, which includes disabled and neurodivergent people—people living with long term physical, sensory, neurological, psychiatric, learning or

other impairments who, due to social barriers, may not experience full and effective participation in society. **(Footnote 1)**

- Neurodivergence includes people whose ways of thinking may appear different from what is considered neurotypical. Neurological difference could include autism spectrum disorders, dyslexia or attention-related disorders, and others
- women, young women or girls
- LGBTQIA+ or rainbow community—includes lesbian, gay, bisexual, queer, intersex, asexual, non-binary, takatāpui and gender diverse people.

Barriers into the tech sector have been identified through a combination of literature review, preliminary stakeholder engagement and input from Toi Mai staff working on technology and diversity topics (the Toi Whānui team). They are grouped according to the environment in which they occur:

- Domestic—household, wider family and community environment.
- Primary and secondary education—primary, intermediate and high school.

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1 (Office for Disability Issues, 2016)

- Tertiary education—university, vocational and PTE programmes.
- Workforce—employment in tech roles or within the tech sector.

For Toi Mai, this report is the beginning of a conversation on the diversity issues in the tech sector today and how government, industry and community might tackle these issues. With that, it provides context to our upcoming research, policy advice and workforce development plans. It also provides key recommendations aimed at improving diversity outcomes at multiple levels. A final comment on upcoming research on tāngata whaikaha in tech is provided at the conclusion.

Summary of the barriers discussed in this report

The following is a summary of the key barriers faced by groups currently underrepresented in the tech sector according to the environments detailed below.

Key barriers in the domestic environment

At the domestic level, we see a strong correlation between socioeconomic barriers and digital literacy and access. Groups like Māori, Pacific peoples and tāngata whaikaha are more likely to face these socioeconomic barriers, including employment, educational and housing challenges

that make it harder to access digital technologies (devices and internet).

Tāngata whaikaha are twice as likely to lack essential digital skills compared to non-disabled people and have the lowest rates of internet access at only 23.3%. Tāngata whaikaha may require additional accessibility support to bridge the digital divide, including the high-end devices that support different accessibility needs. With lower employment rates and lower median incomes, households with disabled whānau members can face compounding digital access issues. Pathways into technology courses and work then become less likely.

For all these groups, household pressures can mean taking on immediate low-paid work to make ends meet, rather than pursuing specialised education such as in tech. Due to current and historical labour trends, Māori and Pacific peoples are less likely to gain exposure to the tech sector through their whānau and community networks. The result is less awareness of the opportunities available to them in the sector, and low representation means they are less likely to envision a tech career for themselves.

Key barriers in primary and secondary education

The digital curriculum for primary and secondary school in Aotearoa is still maturing. Teachers require further experience and professional development to better teach

digital skills, including applying those skills to non-tech specific subjects. Māori, Pacific peoples and tāngata whaikaha currently benefit least from educational pathways in Aotearoa, including lower achievement of university entrance.

Streaming, unconscious bias and low expectations for some groups have resulted in a wider imbalance in our education system. This is the legacy of a one-size-fits-all model. Young women and girls also require extra encouragement to take tech subjects and to see pathways into tech tertiary courses and work. Young learners of all backgrounds need to be made aware of opportunities and the transferable skills desired in today's tech workforce to pursue tech pathways.

The biggest barrier whaikaha learners face is limited access to the full range of opportunities that come with school life. The 2013 Disability Survey found that 14% of disabled students required additional support in their learning, while this figure rose to 38% for students with higher needs. For staff this could be considered a resource issue, with the learners' extra needs requiring greater attention. However, this attitude can result in learners feeling like school is not for them.

Not all whaikaha learners require significant resources or adjustments to the environment. A better understanding of their needs and an emphasis on inclusion and flexible

learning approaches will help instil the skills and confidence needed to enter work or tertiary education.

Key barriers in tertiary education

Financial and time pressures can present major obstacles for the groups identified in this report, especially high university fees and the general cost of study. Learners entering tertiary education—be it polytechnics, wānanga, private institutions or universities—have to juggle household pressures such as dependents, high living costs and limited income sources. Māori and Pacific peoples in particular (especially women within these groups) are less likely to be able to prioritise full-time study over earning an income or caring for dependents. Further opportunities to "earn while you learn" for technology courses and extended pastoral care systems can also encourage people not in education, employment or training (NEETs) to take up education and to retain them.

Whaikaha students benefit from greater outreach and support. Physical obstacles in the learning environment, a lack of assistive technologies and a lack of understanding of day-to-day challenges or stigma can contribute to whaikaha students being underserved by tertiary education. The challenges faced by neurodivergent learners (who make up 9% of school leavers) are not yet widely understood in education; however, awareness is growing. Finding course information, reading texts, completing assessments in given timeframes and

socialising with peers are assumed to be standard student activities, but all can present barriers for whaikaha learners.

Key barriers in the workforce

The tech sector has tended to hire skilled workers from abroad rather than train local talent, reducing the opportunities for underrepresented groups to enter the sector. This and significant barriers in the prior environments mean that the tech sector workforce is predominantly Pākehā or Asian, middle-class and male. People of diverse ethnicities, genders and abilities then struggle to envision themselves in tech roles—"you can’t be what you can't see". Local and culturally specific approaches are needed to make workplaces more inclusive. Examples include uplifting Māori and Pacific values, knowledges and customs, and making women in tech more visible to shift perceptions of tech being a men's industry.

A disparity exists between what employers expect from applicants and what applicants feel they can bring to roles, including cultural values and skills that are not always understood in the workforce for Māori and Pacific peoples. Those groups, as well as LGBTQIA+, tāngata whaikaha and NEETs, may lack the confidence to apply for roles due to previous experiences of discrimination in work and education.

Tāngata whaikaha have reported feeling that their impairment could disrupt their employment. This makes disclosing disability complicated, despite some employers wishing to understand their employees' needs. On the other hand, some employers may be unwilling to take the risk of a disabled person's employment not working out. In some cases, there may be an expectation that new employees adapt to fast-paced environments, especially in subsectors like Software as a Service (SAAS). Some individuals require flexibility due to the time it takes to prepare for their day and get to and from work. Meanwhile, for neurodivergent people, "invisible" challenges may exist that are not noticed by employers. When combined, these challenges can limit opportunities for tāngata whaikaha to show their strengths and talents in their workplace. While internship programmes exist to facilitate entry into the workforce, an inclusive workplace culture and regular support is required to guide them and the employer at the outset of their employment journey.

Current Initiatives and Recommendations

Initiatives in place in the domestic environment

They are grouped according to the environment in which they occur:

- **Rural Broadband Initiative (RBI2):** Improved access for rural New Zealanders will facilitate use of digital services, remote learning and development of essential digital skills.
- **Marae Digital Capability Programme:** This programme supports marae across Aotearoa to develop their digital infrastructure through grants. This infrastructure could facilitate use of online health, social and education services, supporting households without digital access. **(Footnote 2)**
- **Digital Equity Coalition (DECA):** With a mission to promote "clear, appropriate and affordable pathways to participate in digital life", DECA is a hub for digital inclusion in Aotearoa. **(Footnote 3)**
- **The Digital Strategy for Aotearoa:** A cross-government strategy to create a more digitally inclusive society through three strategic themes: Trust, Inclusion and Growth. **(Footnote 4)**

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2 (Te Puni Kōkiri, 2022)

3 (Digital Equity Coalition Aotearoa, 2023)

4 (New Zealand Government, 2022)

- **Fibre Fale:** This organisation aims to build representation of Pacific peoples "through education, advocacy and facilitation." **(Footnote 5)**

Recommendations to achieve equitable access to digital tech at the domestic and community level

1. Government Chief Digital Officer to coordinate efforts across government to tackle digital exclusion, such as by making internet connections more affordable or even free—as telephone connections once were. Government subsidies, free connections in community housing and digital access in community spaces are potential avenues for making digital access more affordable now.
2. Local government to identify areas of digital exclusion and invest in libraries, community centres and marae to ensure they can provide reliable internet connections, up-to-date devices and basic tech skills training. Funding for dedicated staff at libraries can help meet the demand for digital tech support, especially for tāngata whaikaha.

Initiatives in place in primary and secondary education

- **NGOs supporting digital inclusion:** Organisations such as Manaiakalani and DigiTautua are focused on

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5 (Fibre Fale, 2022)

closing the digital access gap by providing devices for secondary and primary learners in the Auckland region.

- **Corporate partnerships promoting digital skills for Māori and Pacific learners:** Initiatives like IBM's P-Tech and Apple's Racial Equity and Justice Initiative (REJI) aim to promote digital skills in schools with large numbers of Māori and Pacific learners.
- **Digital Natives Academy (DNA):** DNA is a non-profit tech hub in Rotorua supporting rangatahi Māori to explore digital skills and careers.
- **Get into Games:** An initiative in 2022 and 2023 by DNA in partnership with Ministry of Education targeted at Years 7-9.
- **ShadowTech:** This initiative began in 2014 to provide girls and young women with workplace experience in the tech sector. Students accompany a tech sector mentor for a day to gain first-hand experience of life in a tech role.

Recommendations to grow interest and improve pathways from primary and secondary education into tech

1. Ministry of Education to conduct focused research on the reasons Māori, Pacific and female learners are less inclined to take tech subjects, complementing research

Toi Mai is conducting in this area. **(Footnote 6)** Additional research on the benefits of flexible learning environments, particularly for neurodivergent learners, will complement the Ministry's ongoing work to eliminate streaming from schools and encourage participation in STEM subjects.

2. New Zealand Qualifications Authority (NZQA) to publish insights reports that focus on equity of opportunity for senior secondary school learners to achieve in STEM-related NCEA pathways.
3. The Ministry of Education to support kaiako, teachers and career advisors to demonstrate tech pathways to students. Building on work like the new Tahatū career planning website, teachers and career advisors can help shift perceptions of tech for young people and whānau to emphasise the breadth of roles available and the skills in demand by tech employers, including communication, creativity, critical thinking and collaboration skills.

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6 This recommendation has been proposed by NZ Tech in its latest Digital Skills Aotearoa report highlighting a decline in participation rates in NCEA tech subjects. (NZ Tech, 2023)

Initiatives in place in tertiary education

- **Micro-credentials:** Toi Mai is working alongside Te Pūkenga and corporate partners to develop micro-credentials. These short certifications will be stand-alone upskilling/reskilling qualifications and may be stacked into diploma programmes. Micro-credentials can provide specific skills quickly so people can more easily fill skill gaps in the tech workforce. **(Footnote 7)**
- **Bespoke micro-credentials for Māori and Pacific communities:** Toi Mai is working alongside Māori and Pacific community providers in both South and West Auckland to develop a bespoke digital micro-credential and qualifications.
- **Unified Funding System (UFS) Learner Component:** The new UFS's Learner Component is designed to enable providers to better support learners—particularly underserved learners. These include whaikaha, Māori and Pacific learners, as well as learners with low prior achievement.
- **Disability Action Plans (DAPs):** The Tertiary Education Commission requires all tertiary education organisations to demonstrate how they are supporting whaikaha learners. All providers were required to submit their plans from 2022, promoting greater

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7 (Toi Mai, 2022b)

inclusion and consideration of needs for disabled and neurodivergent learners.

- **Digital apprenticeships:** Toi Mai is also supporting Te Pūkenga to establish digital apprenticeships to better meet the current growth of demand for IT skills and capabilities in Aotearoa.

Recommendations to overcome barriers to participation in tertiary-level tech courses

1. Toi Mai to explore earn-as-you-learn opportunities with providers and employers to better enable learners facing financial or accessibility barriers to build tech skills and qualifications.
2. Ministry of Education to fund targeted subsidies to help bridge the gap for Māori, Pacific, tāngata whaikaha and women, who are more likely to struggle with tuition costs.
3. Tech programme providers to continue to develop understanding the physical and social barriers faced by whaikaha learners. Providers should build on their Disability Action Plans to consider the accessibility of their physical environments in tech spaces, labs, classrooms and lecture theatres, as well as the accessibility of digital resources.

Initiatives in place in the workforce

- **Iwi-led tech initiatives:** Ngāi Tahu via Tokona Te Raki are partnering with industry to develop an

apprenticeship model primarily for Māori learners. The pilot is funded by the Ministry of Business, Innovation and Employment (MBIE). **(Footnote 8)**

- **Summer of Tech:** An industry-led initiative that bridges the gap between learning and earning by connecting employers with top local students and graduates for paid work experience and graduate jobs.
- **ReThink Tech Talent:** Canterbury Tech and Dorenda Britten are working with Workbridge and industry partners to deliver an employer programme supporting people with dyslexia in the tech sector. Running in three stages, the programme began with workshops with organisations, recruiters and dyslexic employees, followed by a series of pilots. The partners intend to create a playbook for inclusion of dyslexic employees and expansion of the programme around the country.

Recommendations to lift participation and progression of underrepresented groups in the tech workforce

1. Toi Mai to promote best practice on inclusive hiring processes that appeal to diverse strengths and backgrounds, supporting progressive recruitment programmes like ReThink Tech Talent. Clear expectations in the recruitment process, and a better

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8 (Toi Mai, 2022b)

understanding of culturally specific qualities and diverse needs, will help both employers and employees.

2. Technology employers should partner with providers and Toi Mai to pilot earn-as-you-learn options, facilitating participation of women, Māori, Pacific peoples and tāngata whaikaha in the sector.
3. Peak bodies like NZ Tech and ITPNZ should partner with Toi Mai to develop and share good practice on cultural understanding and inclusivity among tech organisations. Better practices will lessen the burden of representation for minority groups within organisations and encourage individuals from underrepresented groups to enter the sector.

Upcoming research

While there is a good degree of understanding of the challenges faced by whaikaha learners and employees, a clearer understanding of their experiences in tech education and workforce is still needed. At this stage, Toi Mai has limited awareness of initiatives in place for disabled and neurodivergent people in tech, nor what tech employers have in place to support their needs.

For this reason, qualitative research with tāngata whaikaha is considered **high priority** and currently underway. Focused face-to-face research with tāngata whaikaha engaged in tech as students or workers will help to increase understanding of the barriers they encounter and,

importantly, opportunities to overcome those barriers. We also ask what future tāngata whaikaha see for themselves in the sector. Employers, educators and civil society are included in this conversation to ensure a range of perspectives are gathered. These insights will be published as a report that will be available in accessible formats. Insights will also be used in our upcoming Toi Whānui Workforce Development Plan, advice to TEC and potential earn-as-you-learn pilots with providers and industry.

End of Barriers to diversity in the Aotearoa tech sector summary