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February 2024

AI in Education 2023:

Understanding the impact on effective pedagogy, inclusive learning and equitable outcomes

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Introduction

The integration of artificial intelligence (AI) tools in education has emerged as a significant paradigm shift. As we navigate this new landscape, it is essential to understand the adoption and use of these technologies in educational settings. Some valuable insights into AI's global trends and potential in education are available from OECD-Education International (2023), highlighting a need to understand privacy concerns and equitable access. Guidelines and advice have also been made available for New Zealand schools from the Ministry of Education (2024). However, there currently needs to be more comprehensive studies of AI in education that focus on the specific context of Aotearoa, New Zealand.

This report seeks to meet that need. Educators from throughout Aotearoa were invited to participate in a survey conducted between August and November 2023. The survey aimed to assess the landscape of AI implementation in schools, exploring practices, challenges, and potential positive outcomes associated with AI tools in education. This research seeks to inform policymakers, educators, and stakeholders to facilitate informed decision-making to advance educational practices.

Through this research, we hope to contribute to the ongoing dialogue on AI in education and its implications for teaching and learning in Aotearoa.

The Survey

The survey aimed to investigate how AI tools were being integrated into education in Aotearoa to enhance inclusive learning, establish equitable outcomes, and promote effective pedagogy. To achieve this goal, the survey was collaboratively designed with members of an AI community of practice (CoP).

The AI CoP comprised educators from the Primary, Secondary, and Tertiary education sectors in Aotearoa, who met fortnightly. Participation in the group meetings ranged from 4 to 50 educators from April to October 2023. It was important within this community of practice that members were not only engaged in acquiring new knowledge but also in negotiating and re-evaluating its meaning (Wenger-Trayner et al., 2023).

To create new knowledge and meaning within the community of practice, members engaged in in-depth discussions around AI, sharing examples in practice and discussing potential challenges and opportunities. These discussions established that effective pedagogy, inclusive learning, and equitable outcomes were common themes and required deeper investigation.

Additionally, the CoP suggested that the survey included supplementary questions aimed at understanding the general use of AI and educators' perceptions regarding its implementation in schools. This was done to gain a holistic understanding of the adoption and implementation of AI tools in the educational setting.

The Participants

The survey was shared on LinkedIn, Facebook teacher educator groups, and with academyEX alumni and current academyEX students working in schools in Aotearoa. Educators were invited to share the survey with others at their schools and in their networks. A total of 110 responses were received, out of which 102 complete responses were used (51 female and 18 male respondents). All questions were optional, and therefore, some questions had less than 102 responses.

The majority of respondents were European/Pākehā educators (48), while Māori (14), Pacific Peoples (6), Asian (7), and other ethnicities (1) made up the remaining responses.

The age of participants ranged from 25 to 65+, with the largest group being 45-54 (27). While respondents came from across New Zealand, the largest representation came from Auckland with 28 participants.

Classroom teachers were the most common participants (38) with Faculty or Department heads the next biggest group (11). 5 respondents were Principals or Assistant principals. Teaching assistant/aide, Special Educational Needs Coordinator (SENCO), and Librarian each have 1 respondent. Additionally, there are 11 respondents who fall under the category of "Other",

Over 75% of the participants had at least 10 years of teaching experience. Further demographic details are provided in the report.

Survey Findings

AI use in schools

Figure 1 details the findings regarding AI use in schools. Educators reported varying AI use in their roles with most educators using tools either occasionally or often. Only 7% of respondents use AI every day. Participants believed that their colleagues used AI tools occasionally or rarely with a level of uncertainty. A big takeaway from the questions about colleague and student usage is the amount of “unsure” responses, especially with knowledge about how much AI is being used by students both in the classroom (20% unsure) and at home (61% unsure). This could indicate that conversations about AI are not regularly happening between teachers and students.

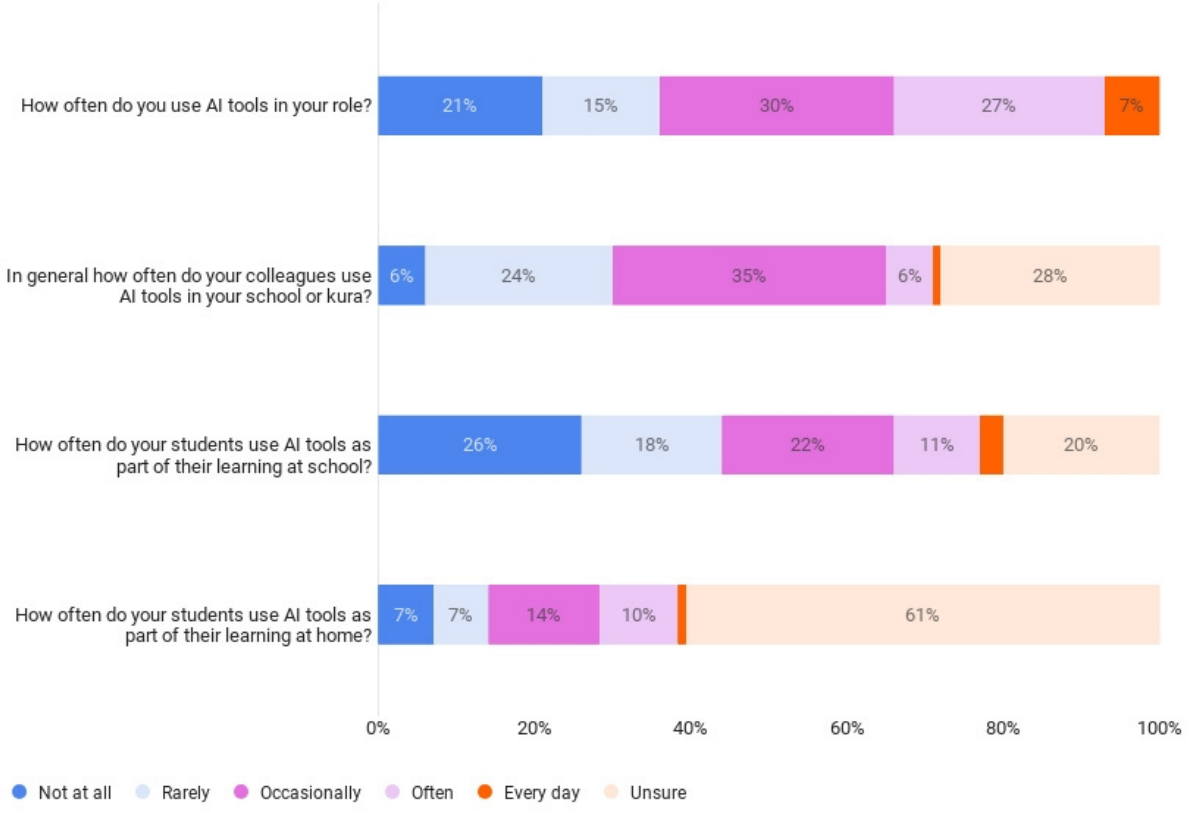

Figure 1. AI use in schools

Concerns about AI use in schools

56% of respondents exhibit moderate to extreme concern about AI being used for plagiarism. When it comes to AI tools causing harm to learners, 51% of participants were moderately to extremely concerned. In contrast, only 28% express moderate to extreme concern about potential harm to themselves or their colleagues due to AI tools.

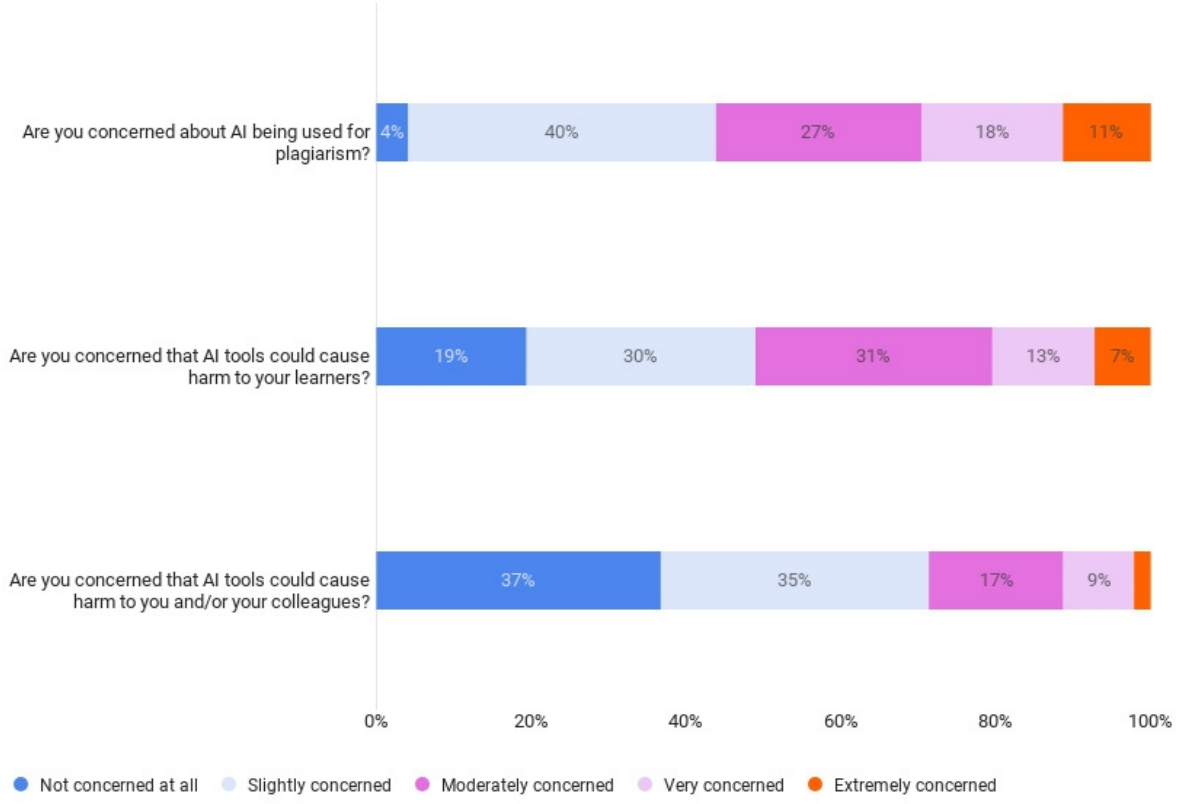

Figure 2. Concerns about AI use in schools

At least

72%

of schools do not have AI policies to support teachers and students in integrating AI tools safely and thoughtfully.

Less than

55%

of school staff have received professional learning on how AI could support teaching and learning.

AI professional learning and policy

The majority, at 55%, have never received PLD on AI and a significant portion, 33%, have only had one session on AI. A smaller group, 5%, have participated in PLD on AI twice, while an even smaller segment, 4%, indicates that AI-focused PLD is an ongoing focus for them. This data suggests that most teachers have had little to no professional development related to AI in their educational practice.

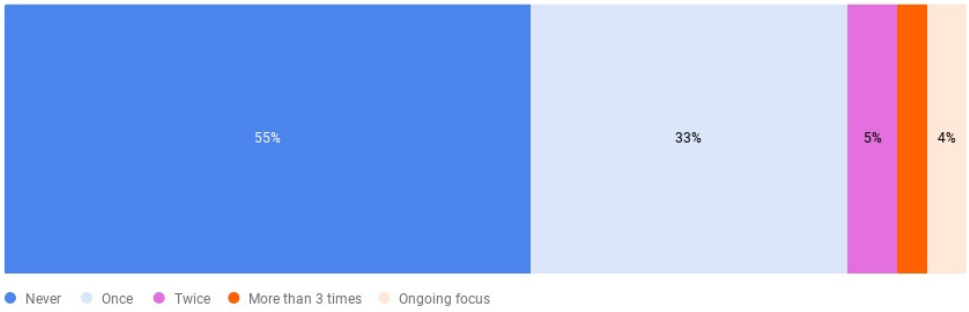

Figure 3. AI professional learning

72% of respondents stated their school had no existing policy on AI usage in the school with a further 19% saying they were unsure, resulting in only 9% of the teachers able to confirm that their school has an AI policy.

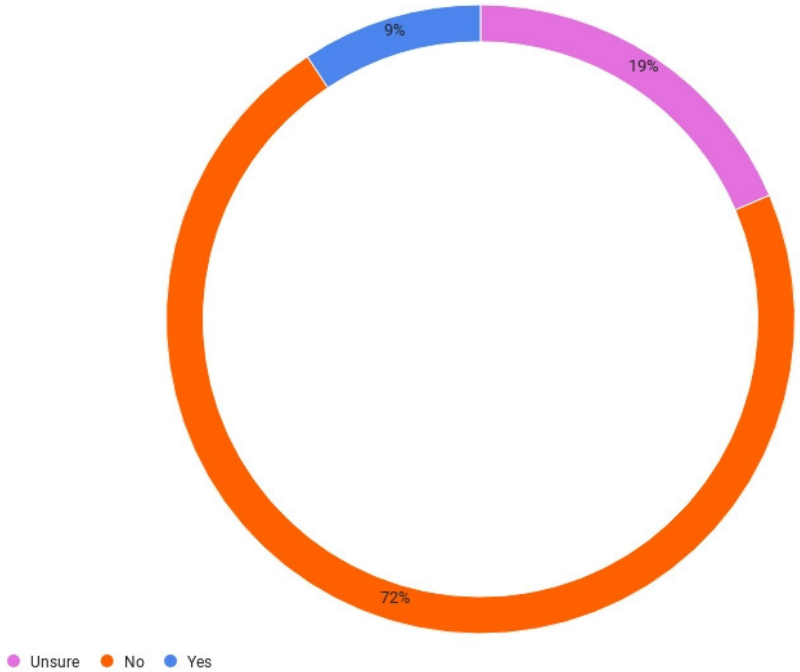

Figure 4. AI policy

chatGPT

is the most commonly used generative AI tool by educators in New Zealand, followed by Google Gemini and Microsoft Co-Pilot.

Educators believe that creating culturally-located content and assessment using AI is the most effective way to enable equitable outcomes for Māori.

Educators believe that using AI tools to reduce teacher admin and increase face-to-face contact time has the greatest impact on effective pedagogy.

Educators believe that individualised learning plans will be the main benefit of using AI to support inclusive learning.

Effective pedagogy, inclusive learning and equitable outcomes

The responses below are based on rank ordering questions. The survey asked participants to evaluate which of the five choices in each section were most important in their respective context. The AI CoP established the five choices for each section by evaluating discussions in the fortnightly online and face-to-face meetings. The overarching themes for each section were effective pedagogy, inclusive learning, and equitable outcomes for Māori.

AI for effective pedagogy

The most significant advantage of AI for effective pedagogy seen by the respondents was “less teacher admin enabling more time for face-to-face contact”, with 32 respondents rating this benefit as the highest priority. Additionally, the “Creation of engaging teaching content” is another area where AI is highly valued, receiving 21 ratings at level 1 and 20 ratings at level 2. “Differentiating educational resources with AI” is seen as moderately beneficial, with the majority of ratings falling between 1 and 3. For “Automated real-time grading and feedback”, expectations are low, with 44 responses ranked at level 4 and 5. Finally, “Intelligent tutoring chatbots” receive the lowest rating.

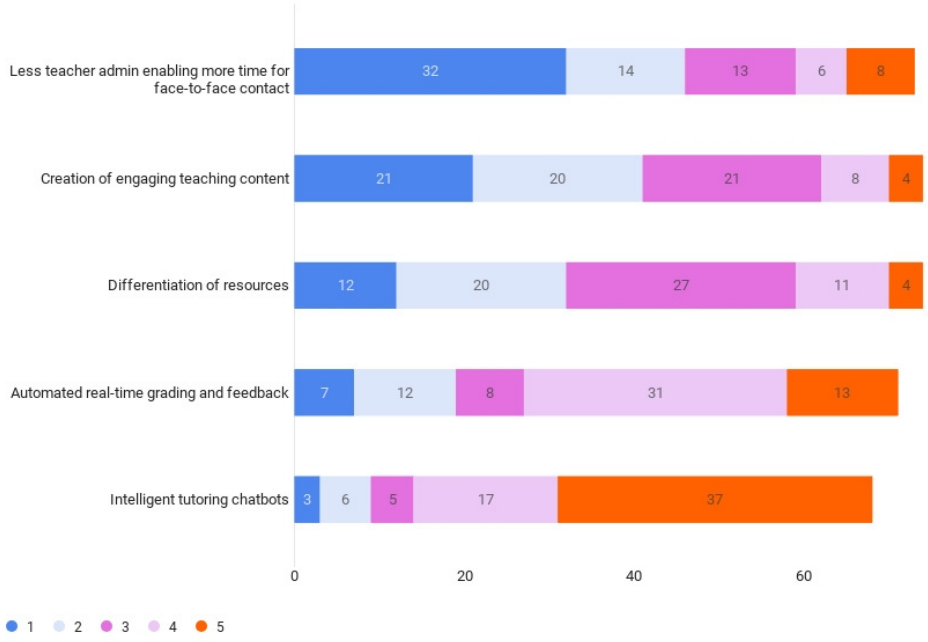

Figure 5. AI for effective pedagogy

AI for inclusive learning

For inclusive learning, "Individualised learning plans" is highest priority, with 23 respondents ranking them as the most important feature. "Early intervention and detection of support needs" also ranks high, with 14 people placing it as the most important. "Real-time translation and captioning" is slightly less prioritised but still important, with 11 marking it as most important. "Adaptive assessment" is seen as moderately important, receiving the highest number of 19 votes for a middle-level importance. Lastly, "Virtual tutoring in diverse settings" is the least valued, with 29 respondents rating it as the least important AI application for inclusive learning.

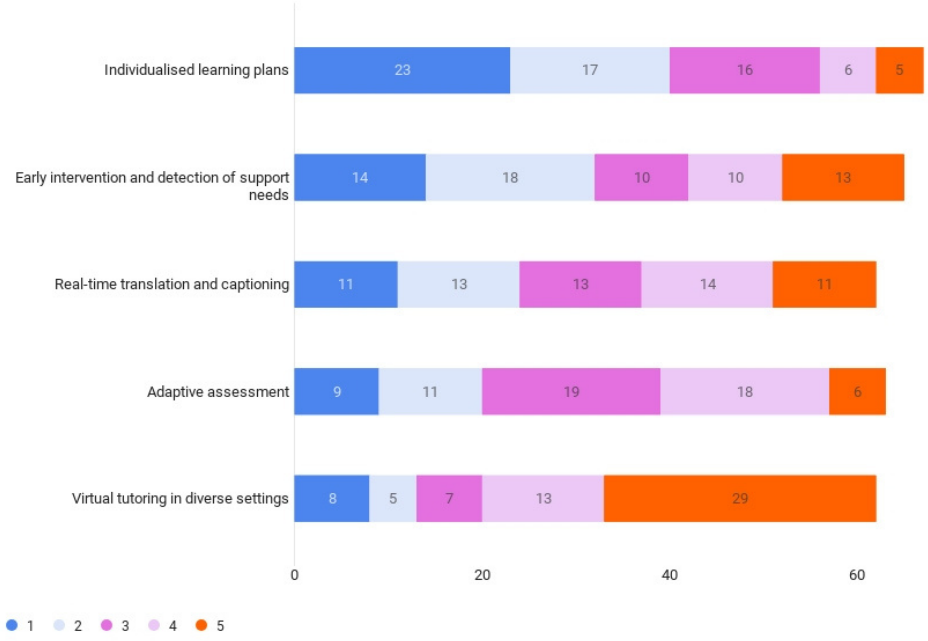

Figure 6. AI for inclusive learning

AI for equitable outcomes for Māori

Acknowledging the challenges of using generative AI to create culturally located content is essential. Generative AI can perpetuate bias and create culturally inaccurate and appropriating content. In addition, the results in this section should also be viewed through the demographic lens of the participants who completed the survey.

For equitable outcomes for Māori, “Culturally located teaching content and assessment” are deemed the most important, with the highest concentration of top ranking at 32. “Providing remote access to high-quality learning”, while still valued, shows a more balanced distribution across importance levels. “The revitalisation of Te Reo Māori” receives a diverse range of responses, suggesting varied opinions on AI's role in this area. “Whānau engagement” and “Creating solutions for upholding tikanga” (Māori cultural values) are seen as less critical areas for AI application, with the majority of responses leaning towards the lower ranking levels of 4 and 5.

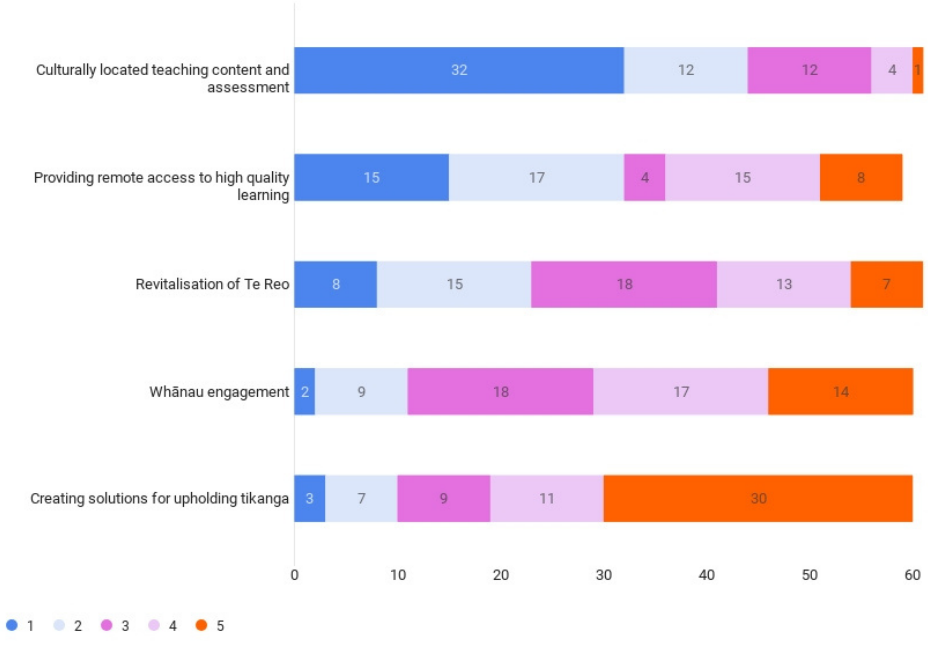

Figure 7. AI for equitable outcomes

Demographic Data

The gender and age distribution chart shows a stronger representation of female respondents.

For male respondents, the most represented age group is 45-54, followed by the 35-44 age group. Female participants show a broader age range distribution, with the highest representation in the 45-54 age group, followed by those in the 35-44 and 9 respondents in the 55-64 age group. Not all participants responded to this question. There were no individuals who reported as gender diverse or non-binary.

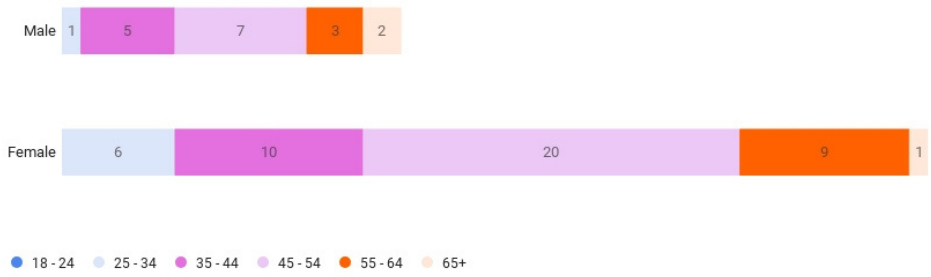

Figure 8. Gender and age

The majority of respondents, 64%, identify as European/Pākehā. Māori participants represent 19% of the survey population. Asian respondents account for 9%, while Pacific Peoples comprise 8% of the participants.

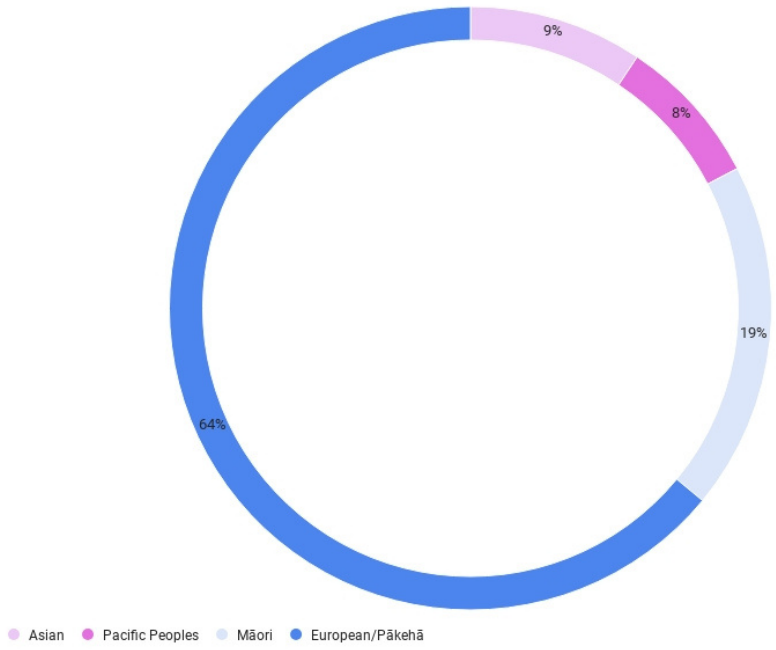

Figure 9. Ethnicity

Auckland has the highest participation with 28 respondents. The Waikato Region follows with 12 respondents. Manawatu-Whanganui Region has 10 participants. Other regions, including Northland, Bay of Plenty, Wellington, and Canterbury, have 3 respondents each. The Gisborne, West Coast, and Nelson Regions have 2 participants each. The Hawke's Bay, Taranaki, and Tasman Regions have the lowest representation with only 1 respondent from each area. Some regions had no responses and are not represented below.

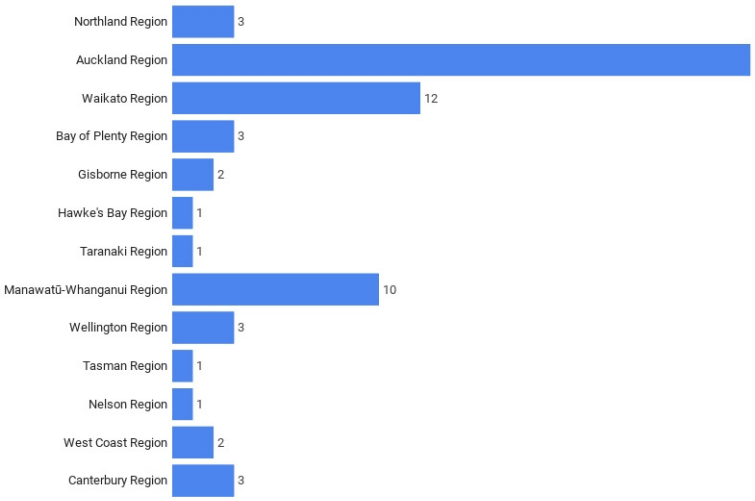

Figure 10. Location

The majority are from "Secondary (Years 9-15)" schools with 31 respondents. The "Primary (Years 1-8)" category has 18 respondents. There are 6 respondents from "Intermediate (Years 7-8)" schools. Both "Special" education and "Kura ā iwi" have 1 respondent each. There are also 7 respondents categorised as "Other".

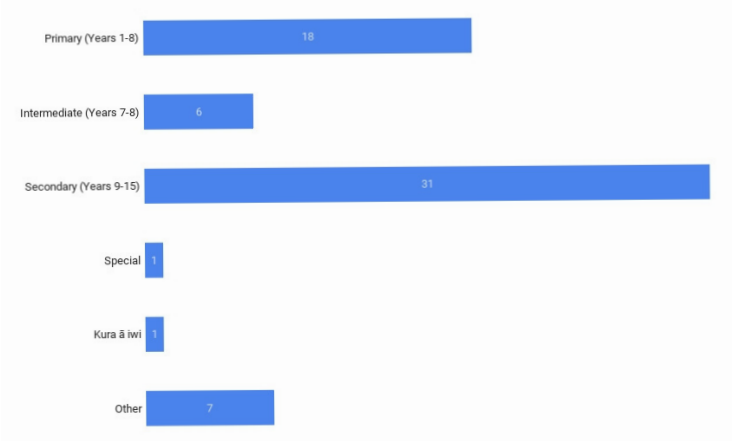

Figure 11. School type

The bar chart displays the different roles of participants in the survey. The largest group is "Classroom teacher" with 38 respondents. "Head of Faculty/Head of Department" (HOF/HOD) is the next largest group, with 11 participants. There are 5 “Assistant Principals/Deputy Principals” (AP/DP). The categories of "Teaching assistant/aide," "Special Educational Needs Coordinator" (SENCO), and "Librarian" each have 1 respondent. Additionally, there are 11 respondents who fall under the category of "Other," indicating a range of roles not specifically listed in the survey.

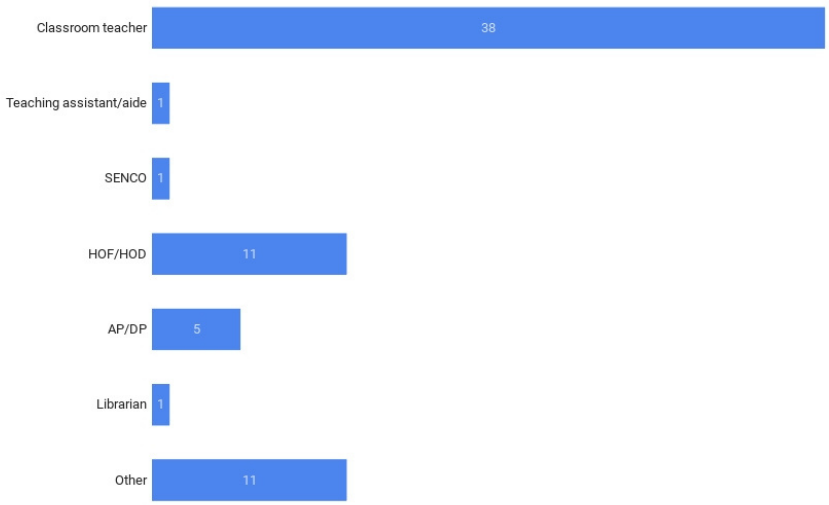

Figure 12. Role

The chart indicates a trend towards significant experience in the field. The majority of respondents fall within the 15-20 and 20-30 years of experience brackets, each with 16 respondents. There's a notable presence of those with a decade or more in teaching, signifying that very experienced educators are well-represented in this survey.

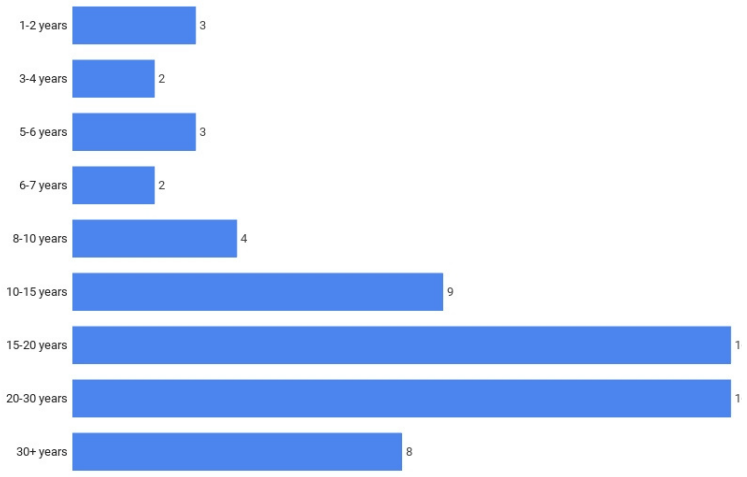

Figure 13. Experience

Limitations and next steps

- Limitations include the sample size. Ideally this would be larger to increase the statistical significance of the results.
- In addition a greater regional response including Kura Kaupapa Māori would provide more accurate representation in the data.
- The rank ordering questions only allowed 5 choices which were determined by the community of practice. There is scope for these to be refined.
- In addition people may have interpreted the rank order questions in different ways - future surveys could have clear definitions of the terms to support accurate answers.
- More research is required on how learners are using AI at school.
- The data highlights that there is a gap regarding professional learning and policy about AI in schools in Aotearoa. We recommend that schools seek expertise in these areas. This is based on the data indicating a majority of staff are using AI either often or occasionally. This is essential and urgent to avoid the use of generative AI in potentially damaging ways, for example perpetuating bias and reinforcing stereotypes.
- The areas ranked highest with regards to effective pedagogy, inclusive learning and equitable outcomes for Māori should be investigated in more depth to develop and share knowledge with educators in Aotearoa
- There was valuable qualitative data collected with this survey and within the communities of practice. This will be analysed and published.
- The authors have started to develop resources to support understanding of AI policy in schools which can be found here.

If you would like further information or to be involved in the next phase of this research please contact either Tim or Brendon via email:

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To quote this report we suggest:
Gander, T., & Shaw, B. (2024). AI in education 2023: Understanding the impact on effective pedagogy, inclusive learning and equitable outcomes. *He Rourou*, 1(1), 15. https://doi.org/10.54474/herourou.v1i1.9137

Thank you to Louise Fox, Michael Puhara and Karaitiana Taiuru for their thoughtful input.

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