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91584MR



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KĪA NOHO TAKATŪ KI TŌ ĀMUA AO!

Te Pāngarau me te Tauanga (Tauanga), Kaupae 3, 2021

91584M Te aromātai i ngā pūrongo tauanga

Whiwhinga: Whā

PUKAPUKA RAUEMI

Tirohia tēnei pukapuka hei whakatutuki i ngā tūmahi mō te whakamātautau Te Pāngarau me te Tauanga (Tauanga) 91584M.

Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–7 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

KA TAEA TĒNEI PUKAPUKA TE PUPURI HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.

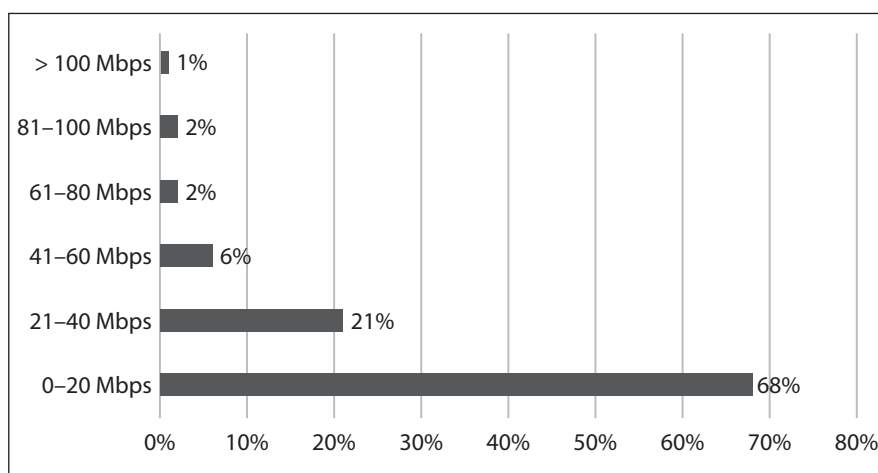
PŪRONGO 1

He maha ngā kaipāmu kei runga tonu i te ara tūhonotanga pōturi, te kitenga a te rangahau a Federated Farmers

Ko te tino maha o ngā tāngata o Aotearoa o ngā tāone ka whiwhi i te ipurangi tere, engari e whakaatu ana te rangahau tūhonotanga hou rawa a Federated Farmers he maha rawa ngā whānau me ngā pakihi kei taiwhenua kei te "raru tonu ki te kia tuarua i tētahi rori pokorua i tuawhenua."

"Tata ki te 900 ngā whakautu i tae mai i ā mātau mema mai i ngā momo pāmu katoa, wāhi katoa, engari ko tētahi raruraru he maha kē atu rātau kāore i taea te whakaoti ngā pātai tuihono i te mea kāore ā rātau ipurangi, he motumotu, he pōturi rawa rānei te tūhonotanga," te kī a te kaikōrero mō Federated Farmers. He kaitaunaki a Federated Farmers of New Zealand Incorporated i Aotearoa mō ana mema kaipāmu. He tūao te uru hei mema ki te whakahaere, ā, neke atu i te 13 000 ana mema i tēnei wā.

Tata ki te 70% ngā kaiwhakautu he 20 Mbps, iti iho rānei ā rātau tere tikiake.



Hoahoa 1: Ngā tere tikiake a Federated Farmers

Mō te āhuatanga ki ngā tere tikiake i runga pāmu, i kitea e te rangahau 2020 i piki te ōwehenga o ngā kaiwhakautu mā te 7% he pōturi ā rātau tere i te awhe 0–20 Mbps, ā, ka heke ki te takiwā o te 1–4% o te ōwehenga o ngā kaiwhakautu he pai ake ā rātau awhe tere tikiake. Ko te hiranga o te nekehanga nei o ngā ōwehenga he uaua te mōhio ki ngā ōwehenga o te rangahau 2019, ina ko te auau whakautu kua iti iho e ai ki te rangahau 2020 ina whakatauritea ki te maha o ngā whakautu i tae mai mō te rangahau 2019.

He mea whakahaere te Rangahau Tūhonotanga Tuawhenua 2020 a Federated Farmers i waenga i te 9 o Hōngongoi 2020 me te 21 o Hōngongoi 2020. He mea whakatairanga mā te īmēra, ngā pānui tāhiko, ā, mā ngā tohutohu a Federated Farmers ki ngā mema e whakamārama te hira o te whakautu ki te rangahau. I whakahaeretia te rangahau i runga ipurangi, ā, i whakauru tūao mai ngā kaiwhakauru ki te rangahau. 98.07% o ngā kaiwhakautu 883 he mema nō Federated Farmers.

He mea urutau mai: <https://www.scoop.co.nz/stories/BU2009/S00417/many-farmers-still-stuck-on-connectivity-slow-lane-feds-survey-finds.htm> me https://www.fedfarm.org.nz/FFPublic/Policy2/National/2020/Rural_Connectivity_Survey_2020.aspx?WebsiteKey=00ff782d-8ff5-4a81-ae69-785972132c32

REPORT 1

Many farmers still stuck on connectivity slow lane, Feds survey finds

The vast majority of urban New Zealanders can get on the internet at speed, but the latest connectivity survey by Federated Farmers shows that too many rural families and businesses are still “stuck in second gear on a potholed back road.”

“We had nearly 900 responses from our members from every farm type and geographical spread, but a problem was that several more couldn’t complete the online questions because they didn’t have internet access or connectivity was too patchy or slow,” a Federated Farmers spokesperson said. Federated Farmers of New Zealand Incorporated is an organisation in New Zealand that lobbies on behalf of its member farmers. Membership of the organisation is voluntary, and it currently has over 13 000 members.

Around 70% of respondents have download speeds of 20 Mbps or less.

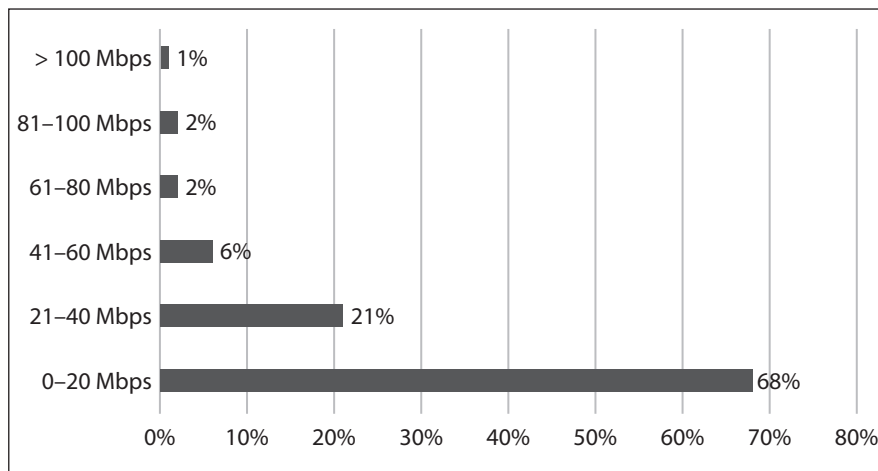


Figure 1: Download speeds for Federated Farmers

With regards to download speeds on farms, the 2020 survey saw an increase of around 7% in the proportion of respondents experiencing slow speeds in the 0–20 Mbps range, with decreases of around 1–4% in the proportion of respondents experiencing better download speed ranges. The significance of this shift in proportions is difficult to assess against proportions in the 2019 survey, given the reduced response rate to the 2020 survey when compared to the number of responses received to the 2019 survey.

The Federated Farmers Rural Connectivity Survey 2020 was conducted between 9 July 2020 and 21 July 2020. It was promoted via email, electronic newsletters, and through specific Federated Farmers member advisories explaining the importance of responding to the survey. The survey was undertaken online, with survey participants volunteering to participate. 98.07% of the 883 respondents were Federated Farmers members.

Adapted from: <https://www.scoop.co.nz/stories/BU2009/S00417/many-farmers-still-stuck-on-connectivity-slow-lane-feds-survey-finds.htm> and https://www.fedfarm.org.nz/FFPublic/Policy2/National/2020/Rural_Connectivity_Survey_2020.aspx?WebsiteKey=00ff782d-8ff5-4a81-ae69-785972132c32

PŪRONGO 2

Nā te mīhini karetao ahau i whakahau

E whakaatu ana ngā rangahau hou e whakatenatena ana ngā mīhini karetao kia nui ake ngā tūponotanga ka whāia e te tangata i roto i tētahi āhuatanga petipeti whakataruna tēnā mehemea kāore he mea hei whakaaweawe i ōna whanonga. E ai ki te whakamārama a tētahi ahorangi o te University of Southampton i ārahi i te rangahau, "Kei te mōhio tātau ko te mutunga o te pēhanga aropā ko te nui ake o ngā whanonga tūponotanga. Nā te nui haere kē atu o te pāhekoheko i waenga i te tangata me te hangarau, ā-ipurangi, ā-tinana hoki, he mea tonu kia mōhio tātau mēnā ka ōrite anō te pānga o ngā mīhini."

I roto i tēnei rangahau i mahi ngā ākongā whare wānanga 180 i te Tūmahi Tūraru ā-Ringa Poihau (BART), he aromatawai rorohiko e tono ana i ngā kaiwhakauru kia pēhia te paemokowā i runga papapātuhi hei pupuhi i tētahi poiha e whakaaturia ana ki te mata. Mā ia pēhitanga o te paemokowā, ka āhua pupuhi haere te poiha, ā, 1 te uka ka tāpirihia ki te 'pēke moni wā poto' a te kaitākaro. Ka taea e ngā poiha te pahū matapōkere, arā kua kore ngā moni a te kaitākaro i riro mai mō taua poiha. Kei ngā kaiwhakauru te kōwhiringa ki te 'tango mai' i ā rātau moni i mua i te pānga mai o tēnei ka neke atu ki te poiha whai ake. I te 'tangohanga mai' o ā rātau moni, ka pahū rānei tā rātau poiha, ka neke rātau ki te poiha whai ake.

180 te tapeke o ngā ākongā mātai hinengaro i roto i te rangahau (154 ngā wāhine me ngā tāne 26).

I whakawhiwhia matapōkeretia ngā kaiwhakauru ki tētahi o ngā āhuatanga e toru:

- whakatina ($n = 60$, 51 ngā wāhine, 9 ngā tāne)
- whakatina ā-karetao ($n = 60$, 52 ngā wāhine, 8 ngā tāne)
- akiaki ($n = 60$, 51 ngā wāhine, 9 ngā tāne).

Kāore he rerekētanga o te taipakeke o ngā āhuatanga e toru. I oti i ngā kaiwhakauru katoa te whakamātau i roto i te taiwhanga pūtaiao kotahi. Kotahi hautoru o ngā kaiwhakauru i mahi i te whakamātautau i roto i tētahi rūma ko rātau anake (āhuatanga whakatina) me tētahi hautoru i mahi i te whakamātautau i te taha o Pepper te mīhini karetao, nāna i tuku ko ngā tohutohu anake ki a rātau mō te tūmahi, ā, ka noho wahangū mō te roanga atu o te wā (āhuatanga whakatina ā-karetao). Mō te rōpū whakamutunga i mahi i te whakamātautau, nā te mīhini karetao i tuku tohutohu ki a rātau me te whakaputa i ngā kōrero whakamanawa pērā i te "he aha i mutu ai tō karawhiu?" (āhuatanga akiaki). E 30 ngā whakamātauranga i oti i ngā kaiwhakauru me ngā poiha 30. Ko te pae pahūtanga o te poiha i tautuhia matapōkeretia, ā, tērā pea ka pā mai i waenga i te 1 me te 128 papu.

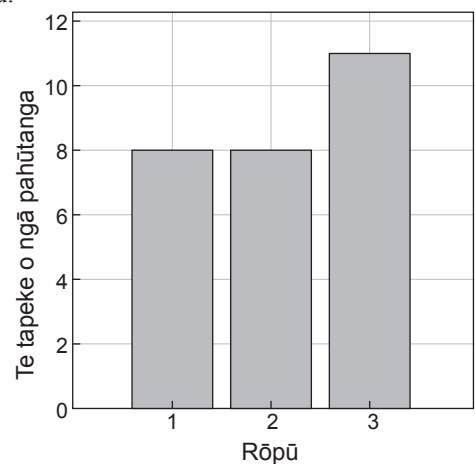
E ai ki te Hoahoa 2b, i whakaatu ngā otinga he nui ake ngā tūponotanga i whāia e te rōpū akiaki (te hunga i whakatītinatia e te mīhini karetao), i tino nui ake tā rātau whakamakoha i ā rātau poiha tēnā i ētahi atu rōpū. Me te aha, he nui ake ngā moni i riro mai i a rātau. Kāore he rerekētanga nui i waenga i ngā whanonga o ngā ākongā i te taha o te mīhini karetao ngū me te hunga kāore he mīhini karetao.

Ko te kōrero whakamutunga a te ahorangi, "Nā te whakamahinga tino whānui o te hangarau AI me ana pāhekoheko me te tangata, me whāwhai te arotahi mai a te hapori rangahau ki tēnei kaupapa."

He mea urutau mai: <https://www.sciencedaily.com/releases/2020/12/201211100646.htm> me <https://www.liebertpub.com/doi/10.1089/cyber.2020.0148>



Hoahoa 2a. Tirohanga o te taputapu whakamātau me te Tūmahi Tūraru ā-Ringa Poihau e whakaaturia ana ki te mata rorohiko me Pepper te mīhini karetao kei te taha matau.



Hoahoa 2b. Te tapeke o ngā pahūtanga. E whakaatu ana te tapeke tau waenga o ngā pahūtanga mō ia rōpū. Rōpū 1: Āhuatanga whakatina; Rōpū 2: Āhuatanga whakatina ā-karetao; Rōpū 3: Āhuatanga akiaki.

REPORT 2

The robot made me do it

New research has shown robots can encourage people to take greater risks in a simulated gambling scenario than they would if there was nothing to influence their behaviours. A professor from the University of Southampton who led the study explained, “We know that peer pressure can lead to higher risk-taking behaviour. With the ever-increasing scale of interaction between humans and technology, both online and physically, it is crucial that we understand more about whether machines can have a similar impact.”

This new research involved 180 university students taking the Balloon Analogue Risk Task (BART), a computer assessment that asks participants to press the spacebar on a keyboard to inflate a balloon displayed on the screen. With each press of the spacebar, the balloon inflates slightly, and 1 coin is added to the player’s ‘temporary money bank’. The balloons can explode randomly, meaning the player loses any money they have won for that balloon. Participants have the option to ‘cash in’ before this happens and move on to the next balloon. Once they have either ‘cashed in’ or exploded their balloon, they move to the next balloon.

A total of 180 psychology students participated in the study (154 women and 26 men). Participants were randomly allocated to one of the three conditions:

- control ($n = 60$, 51 females, 9 males)
- robot control ($n = 60$, 52 females, 8 males)
- treatment ($n = 60$, 51 females, 9 males).

Participants in the three conditions did not differ in age. All participants completed the experiment in the same laboratory room. One-third of the participants took the test in a room on their own (control condition) and one third took the test alongside Pepper the robot, who provided them only with the instructions for the task, and was silent the rest of the time (robot control condition). The final group took the test with the robot providing instruction for the task as well as speaking encouraging statements such as “why did you stop pumping?” (treatment condition). Participants completed 30 trials involving 30 balloons. The explosion point of the balloon was set randomly and could happen anywhere between 1 and 128 pumps.

As seen in Figure 2b, the results showed that the treatment group (those who were encouraged by the robot) took more risks, inflating their balloons significantly more frequently than those in the other groups did. They also earned more money overall. There was no significant difference in the behaviours of the students accompanied by the silent robot and those with no robot.

The professor concluded, “With the widespread use of AI technology and its interactions with humans, this is an area that needs urgent attention from the research community.”

Adapted from: <https://www.sciencedaily.com/releases/2020/12/201211100646.htm> and <https://www.liebertpub.com/doi/10.1089/cyber.2020.0148>



Figure 2a. Overview of the experimental setup with the Balloon Analogue Risk Task shown on the computer screen and Pepper the robot on the right-hand side.

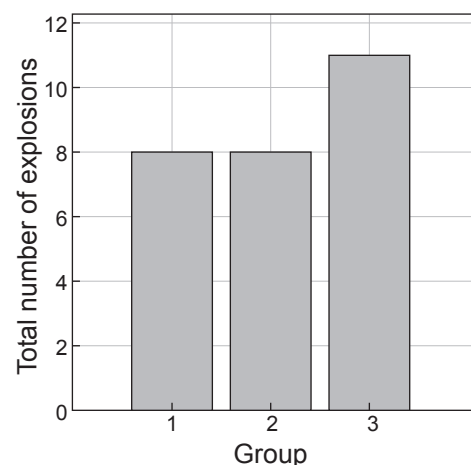


Figure 2b. Total number of explosions. Bars show the median total number of explosions for each group. Group 1: Control condition; Group 2: Robot control condition; Group 3: Treatment condition.

PŪRONGO 3

He tino whānui te whakamahi i te reo Māori a te hunga i raro i te rima tau

Kua kitea e tētahi rangahau hou kei te ora te reo Māori i waenga i ngā tamariki kōhungahunga, ā, tata ki te toru hauwhā o ngā tamariki i raro i te rima tau o Aotearoa kei te whakamahi i ētahi kōrero Māori i te iti rawa. I tātarīhia e te rangahau, nā te Te Whare Wānanga o Awanuiārangi i ārahi, ngā mōhiohio mai i te 'Growing Up in New Zealand', te rangahau nui rawa o te motu mō te whanaketanga tamariki.

I kitea 10% o ngā tamariki he mōhio ki te kōrero, he mārama rānei ki ētahi rerenga kōrero māmā i roto i te reo Māori i te whā tau te pakeke – tata ki te 20% o rātau ehara i te Māori. I kī tētahi whakataka rangahau i te Wānanga he mea whakamanawa ngā kitenga: "tata ki te 70% o ngā tamariki i raro i te rima tau i roto i te rangahau i whakamahi i ētahi kōrero Māori, ā, koinā tētahi mea kāore e kitea i roto i te taupori whānui ake."

I kī ia e tohu ana ngā tataua kei te whai hua ngā mahi o mua ki te whakarauora i te reo. "E whakaatu ana ehara ko te taupori Māori anake kei te hīkaka ki te reo Māori, ā, tērā pea kei te whaikiko ngā rautaki o mua mō te whakamahi i te reo Māori me te whakarauoranga."

"E whakaatu anō ki a tātau ētahi āhuatanga tauwhāiti ake he aha ngā kaikōkiri i te reo Māori, ā, he aha ngā momo āhuatanga tautoko i ngā tamariki ki te kōrero i te reo Māori. I kitea e mātau mēnā e pātata ana tō whare ki ētahi atu whare he kōrero i te reo Māori, he mea tino nui tērā mō te mita, te matatau rānei o te reo Māori o te tamaiti, otirā mēnā he tohu mātauranga matua tō te māmā, ā, he kaha te hononga i waenga i tērā me te kaha o te tamaiti ki te kōrero i te reo Māori." I kī ia he matapae tōraro te wā mata mō te whakamahi i te reo Māori.

I whai te rangahau 'Growing Up in New Zealand' i te whanaketanga o ngā tamariki tata ki te 7000 mai i te wā i mua o tō rātau whānautanga mai i Aotearoa i te tau 2009 me te 2010. Neke atu i te 1500 ngā tamariki o te rangahau i kīia he Māori (e ō rātau mātua). I tū ngā uiui kanohi ki te kanohi i te wā e hapū ana, ā, me te ekenga o ngā tamariki ki te 9 marama, te 2 tau, te 4.5 tau, me te 8 tau.

I te 4.5 tau, i tuku pūrongo ngā māmā i roto i te aropā whānui mō te matatau o ā rātau tamariki ki te reo Māori. E whakaaturia ana ngā whakautu mō ngā kaiwhakauru 6104 ki te papatau i raro.

E hia te auau o te mahi a [INGOA] i tētahi o ēnei?

	Auau	I ētahi wā	Tino iti rawa	Kore rawa
He kōrero i ngā kupu Māori māmā noa	523 (9%)	2109 (34%)	1565 (26%)	1907 (31%)

Papatau 1: Pūrongo a ngā mātua mō te whakamahi a ngā tamariki i te reo Māori i te 4.5 tau ($n = 6104$)

He mea urutau mai: <https://www.rnz.co.nz/news/te-manu-korihi/418260/te-reo-maori-use-by-under-fours-widespread-research> me <https://www.growingup.co.nz/study-finds-significant-growth-use-te-reo-maori-among-pre-schoolers>

REPORT 3

Te reo Māori use by under-fives widespread

A new study has found te reo Māori is flourishing among pre-schoolers, with nearly three quarters of New Zealand under-five year olds using at least some of the language. The research, led by Te Whare Wānanga o Awanuiāraangi, analysed information from ‘Growing Up in New Zealand’, the country’s largest study of child development.

It found 10% of children could speak or understand simple sentences in te reo Māori at age four – and about 20% of those were non-Māori. A research director at the Wānanga said the findings were very encouraging: “about 70% of children under the age of five who were part of the research used some te reo Māori, and that’s something that you wouldn’t find in the more general population.”

He said the figures were an indication that the revitalisation efforts in the past were working. “It tells us that the degree of enthusiasm for te reo Māori is not just among the Māori population, and perhaps the strategies of the past are now beginning to take effect in terms of Māori language use and revitalisation.”

“It also tells us some more specific advice in terms of what the drivers of te reo Māori are and what types of factors support children to speak te reo Māori. We found that if your household is in close proximity to other households that are speaking te reo Māori, that is incredibly important in terms of the child’s fluency or proficiency in te reo Māori, and also if the mother had a tertiary qualification, there was a strong relationship between that and the child’s ability to speak te reo Māori.” He said screen time was a negative predictor of te reo Māori use.

The ‘Growing Up in New Zealand’ study followed the development of approximately 7000 children from before their birth in New Zealand in 2009 and 2010. There were over 1500 children in the study who were identified (by their parents) as Māori. Face-to-face interviews occurred during pregnancy, and then when the children were 9 months, 2 years, 4.5 years, and 8 years of age.

At the age 4.5 years, mothers in the full cohort reported on their children’s te reo Māori proficiency. Responses for the 6104 participants are shown in the table below.

How often does [NAME] do any of the following?

	Often	Sometimes	Rarely	Never
Speak simple words in te reo Māori	523 (9%)	2109 (34%)	1565 (26%)	1907 (31%)

Table 1: Parental report of te reo Māori usage by children at 4.5 years of age ($n = 6104$)

Adapted from: <https://www.rnz.co.nz/news/te-manu-korihi/418260/te-reo-maori-use-by-under-fours-widespread-research> and <https://www.growingup.co.nz/study-finds-significant-growth-use-te-reo-maori-among-pre-schoolers>

English translation of the wording on the front cover

**Level 3 Mathematics and Statistics
(Statistics) 2021**

91584M Evaluate statistically based reports

Credits: Four

RESOURCE BOOKLET

Refer to this booklet to answer the questions for Mathematics and Statistics (Statistics) 91584M.

Check that this booklet has pages 2–7 in the correct order and that none of these pages is blank.

YOU MAY KEEP THIS SHEET AT THE END OF THE EXAMINATION.