



Volcano Activities Teacher Professional Learning & Development Workshop,

For Bay of Plenty teachers

Version 2.0

Sponsored by:

Te Whakaahuatanga Tere o ngā Rū Whenua me ngā Parawhenue

R-CET Rapid Characterisation of
Earthquakes and Tsunamis

A GNS Science Led Research Programme



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ECLIPSE

Beneath the Waves | Raranga
Whāriki Papa Moana

Nau mai, harere mai!

We are so excited to have you along to Volcanofest's Bay of Plenty Volcanoes Workshop for School Teachers. Today's professional learning and development workshop capitalises on the International Association of Volcanology & Chemistry of the Earth's Interior's Scientific Assembly, which has brought scientists, emergency managers, and practitioners from around the world to Rotorua.

This workshop aims to showcase how local mātauranga Māori (Māori knowledge) could be incorporated into lessons about Aotearoa New Zealand's volcanoes. Throughout the workshop, we will demonstrate how mātauranga, and specifically pūrākau (stories), can be introduced and framed in a culturally sensitive way in a classroom. We will introduce three pūrākau as told by local iwi (tribes). After, we will discuss and role model how students could interact with these pūrākau.

We welcome questions throughout the workshop today. We also recognise that everyone is at a different place in the journey of learning and using mātauranga Māori in their practice. While we aim to create a safe space in today's workshop, we realise that some people may not be comfortable asking questions in a group setting. Please feel free to pull any of us aside for a quiet conversation. Additionally, we have set up a Meeting Pulse event to enable anonymous questions if that makes you more comfortable. We will do our best to answer your questions! Additionally, we have included a variety of recommended resources that hopefully will help supplement today's material.

We look forward to spending the morning with you!

Tiipene Marr, Ben Kennedy, Mike Stone, & Sophia Tsang

Overview

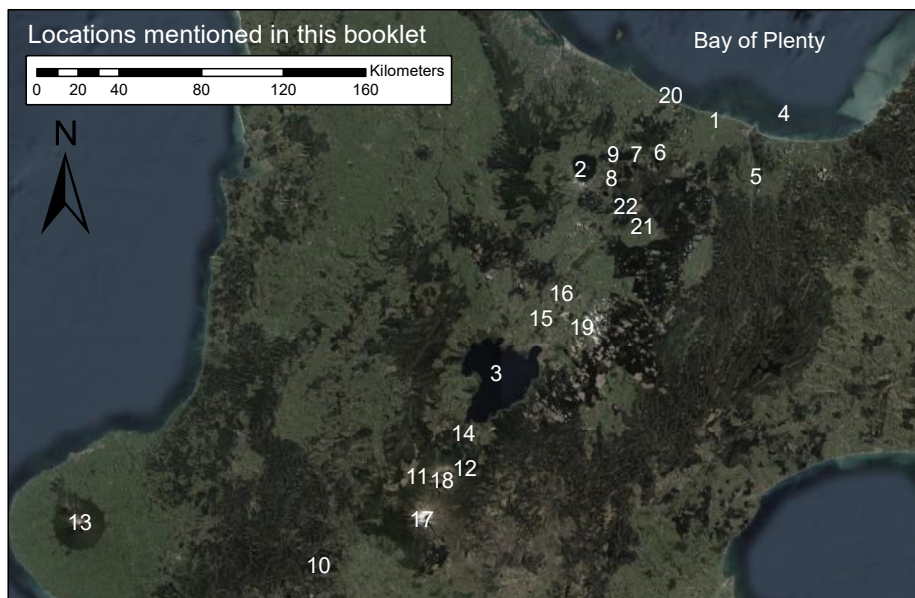
9:30	Registration opens
10:00	Karakia & mihi whakatau
10:10	Introductions
10:30	Using pūrākau in the classroom
10:50	Morning tea break
11:20	Group activity
11:45	Wrap up
12:00	End

Glossary

<i>Kupu</i>	<i>Translation or meaning</i>
ākonga	student
ao Māori	Māori world; Māori worldview
ariki	paramount chief; high chief; chieftain; lord; leader; aristocrat
atua	god
hahunga	frost
hautonga	cold south winds
hukapapa	ice
hukarere	snow
kaiako	teacher
kaitiaki	guardian
karakia (timatanga/whakmutunga)	(opening/closing) ritual chant
kaupapa	topic; plan; programme; theme; initiative

<i>Kupu</i>	<i>Translation or meaning</i>
kōrero	conversation; speech
kōrero tautohetohe	debate
kupu	word
mana	prestige; authority; power; influence; status
mātauranga Māori	Māori knowledge
maunga	mountain; peak; mount
mihi whakatau	speech of greeting; official welcome
pikiarero	clematis (a climbing plant with white flowers and hand-shaped leaves)
pōtiki	youngest child
pūrākau	story
rangatira	chief; boss; supervisor; high-ranking; noble; esteemed
ruwhenua	earthquake
taiaha	Māori long club
taiao	environment

<i>Kupu</i>	<i>Translation or meaning</i>
tamariki	children
tohu	sign; mark; symbol
tohunga	skilled person; chosen expert; priest; healer
tūakana	older sibling
ūpoko	head of the taiaha
wairewa	hot water
waka	canoe
wānanga	long, formal meeting
whaiaipo	sweetheart
whaikōrero	public speaking
whakapapa	genealogy
whānau	family
whare tangata	womb



- 1: Te Kopu a Kuku (Tarawera River)
 - 2: Rotorua
Kuirau
Mokoia
Ngapuna
Ohinemutu
Waikāwa
 - 3: Taupō
 - 4: Moutohora (Whale Island)
 - 5: Pūtauaki (Mt Edgecomb)
 - 6: Rotoma
 - 7: Rotoehu
 - 8: Tikitere (Hell's Gate)
 - 9: Rotoiti
 - 10: Whanganui River
 - 11: Ngauruhoe Maunga
 - 12: Pihanga Maunga
 - 13: Taranaki Maunga
 - 14: Tokānu
 - 15: Wairākei
 - 16: Orakei Kōrako
 - 17: Ruapehu Maunga
 - 18: Tongariro Maunga
Ketetahi
Okakaru
 - 19: Tauhara Maunga
 - 20: Te Awa o te Atua
 - 21: Rotomahana
 - 22: Tarawera
- Whakaari (White Island) is north of the map's boundary.

Map of locations mentioned in this booklet.

Pūrakau & related discussion prompts

Kōrero Rūaumoko
Tiipene Marr (Ngāti Rangitihi, Tūhoe)

Reo Māori

I te tīmatanga o te orokohanga, nā te aroha nui o Ranginui rāua ko Papatūānuku, i piritahi rāua i te tauawhinga mutunga kore. Heoi e noho ana ā raua tamariki i roto i te pōuri, ā, ka puta, e ai ki ētahi, te whaikōrero tuatahi i waenganui i a Tāne Mahuta, i a Whiro, i a Tāwhirimātea me ētahi atu, mō tō rātau āhua noho. Ko tā Tāne, kia wehea ngā mātua. Kāore a Whiro rāua ko Tāwhirimātea i whakaae. I reira ka tautohetohetia te take rā, engari i te mutunga iho ka whāia ko tā Tāne. Ka whakamahia e ia ōna waewae hei pana i a Rangi ki runga, I wehe ai ōna mātua. I a koe e whakatau ana i tētahi rākau hei mahi Taiaha, me anga te ūpoko ki te papa. Ko te ūpoko hoki o Tāne Mahuta i piri ki te papa, ko ōna waewae ngā peka, otirā koinei te āhua i māwehea ai ōna mātua.

Nō muri i te wehetanga a Tāne i ōna mātua, he wā kōuaua anō i a rātau e tiroiro hare ana. Waipuketia ana ngā tama i ngā roimata a Ranginui mō tōna whaiāipo a Papatūānuku. Ka whakaaro iho a Tāne Mahuta me ōna kaitautoko kia hurihia a Papatūānuku kia kore a a e kitea mai e Ranginui, ā, kia mutu ai te tangi. Ka hurihia e ia tōna whāea, ā, ka mutu. Engari I roto tonu a Rūaumoko i te kōpū o tōna whāea, nā, ka mau ia ki roto mō āke tonu. I Te Ao Māori, e noho pukuriri ana ia. Ko ngā rū whenua ērā. E kore hoki a Whiro e hākoakoa, ā, ka ahu mai i a Tāwhirimātea te āwhā, te marangai me te hau, nā tana riri ki te wehenga o rātau mātua.

Kōrero Rūaumoko

Tipene Marr (Tūhoe)

Reo Pākēha



Painting of Rūaumoko by Victor Paa. Used with permission.

In the beginning of creation, Ranginui and Papatūānuku were so in love that they were locked in an eternal embrace, such was their love for each other, but for their children, it was total darkness. They were in complete darkness, so began, some say, the first whaikōrero (public speaking), between Tāne Mahuta, Whiro, Tawhirimatea, and the other tamariki (children) about their situation. Tāne suggested that they part their father and mother. Whiro and Tawhirimatea were against the

separation. There was a kōrero tautohetohe (debate) about doing this, but in the end, Tāne Mahuta won the argument and so used his legs to separate his mother and father. When we make Taiaha (Māori long club), when you select your wood for the taiaha, the ūpoko (head of the taiaha) has to be the end from the ground. Tāne Mahuta's head is in the ground, and his legs are the branches. That's how he separated his parents. Then, there was a time of rain, as they looked at each other. The tears of Ranginui for his Whaiaipo (sweetheart) Papatūānuku generated a flood for his tamariki, so Tāne Mahuta and his supporters decided to turn Papatūānuku over so that Ranginui would not be able to see her, and the crying would stop. So, he turned his mother over, and the crying stopped. Unfortunately for Rūaumoko, he was still in his mother's where tangata (womb), so he is trapped there forever. In te ao Māori (the Māori world), he is not happy, so that's how we get ruwhenua (earthquakes).

Also, Whiro the atua (god) of evil is never happy nor is Tawhirimatea who brings us bad weather, storms, and winds because he is not happy about their parents' separation.

Kōrero Rūaumoko

Sylvia Tapuke (Tūhoe, Hineuru, Ngāti Manawa, Ngāti Tūwharetoa, Raukawa ke te Tonga, Hamoa) & Bubs Smith (Ngāti Tūwharetoa) for LEARNZ*

For a long time Ranginui and Papa-tū-ā-nuku lay in a tight embrace and within their bosoms were their 71 children. The children, also known as atua Māori, are kaitiaki (guardians) of environmental domains. Like a whānau (family), each child has a personality, and some children get on well with their siblings and others not so well. For a long time, they remained in darkness until Tāne and some of the siblings decided to separate their parents so they could have space to grow and develop.

Tāne met with the other siblings and they had a wānanga (long meeting). The decision-making process was not straight forward, and after much turmoil and heated discussion, Tāne decided to go ahead with the plan to separate. This was supported by Tūmataurangi. The elder siblings Tawhirimatea, Tangaroa, and Whiro were very angry at this decision and resulted in a huge feud. Meanwhile, the unborn child Rūaumoko remained in the womb of his mother Papa-tū-ā-nuku, kicking and playing.

Kōrero Rūaumoko

Hana Weka (iwi unknown)

When Ranginui the Sky father and Papatūānuku the Earth mother clung to each other, their children complained bitterly. No light could penetrate between the parents and there was very little space for the children to move. Ranginui and Papatūānuku did not want to part and took no notice of their children's cries of discomfort and unhappiness.

*Additional background for this pūrākau is freely available as part of the LEARNZ virtual field trip. Please read it before using this version of the pūrākau in your classroom. You can find a link to the field trip in the Resources section of this booklet.

When the youngest child was born, life became unbearable. The new baby was very active and had a terrible temper. He was named Rūaumoko. He was the god of volcanoes.

Rūaumoko loved Papatūānuku dearly and often pushed his long fingers of fire through her body to warm her. He was her beloved pōtiki (youngest child), and both Rangi and Papa thoroughly spoiled him.

One day the older brothers held a hui (meeting). Rūaumoko was too young to be included so he was not invited. The brothers decided to separate their parents and they chose Tāne Mahuta god of the forest and birds, to carry out the separation. Tāne Mahuta lay on Pāpā and shoved Rangi up into the heavens. Light rushed into the world. Tangaroa spread his waters around Papa and Tāwhirimātea, god of the wind screamed across the empty space between his parents.

Rūaumoko peeped out from his mother's arms howling with rage at the sight of his father's tears and his mother's agony. As the ground cracked and opened, Rūaumoko threw boiling mud and huge clouds of foul smelling steam into the air. His brother's stared in amazement at their little brother's fury.

"How dare you!" screamed Rūaumoko and the earth shook with his voice. "How dare you!" he shrieked and he took the fires from inside Papatūānuku and made them erupt high above the ground.

So it was that Rūaumoko howled and shook with rage for many days until finally Papatūānuku folded her arms around him and sang him to sleep.

Time passed. Ranginui stopped weeping for Papatuanuku and Papatūānuku began taking an interest in her children's work especially when they dressed her in gowns of many colours.

But Rūaumoko is still the baby and a very bad tempered baby at that. When he wakes from a nap he is inclined to shake rather hard and then hurl mud and hot, foul smelling steam into the air.

And when Papatūānuku cannot sing him to sleep, Rūaumoko hurls red rivers of fire into the forests of Tāne Mahuta. He shoves ugly islands of molten rock upon the waters of Tangaroa. And he speaks to his brothers saying:

"Ko Rūaumoko, e ngunguru nei, Au, au, aue ha!

Hark to the rumble of the Earthquake God. Au, au, aue ha!"

Rūaumoko Curiosity Card

Developed by Mere Manning (Kahungunu ki te Wairoa)

Aim: to encourage students to engage with the content of the Rūaumoko pūrākau

Activity timatanga

1. Whakapapa

One way Māori in the past learned to memorise volumes of complex material using a whakapapa (genealogical) framework. For example, whakapapa is used to explain genealogies and taxonomies to create categories and families to describe their environment. Retaining understanding in this way has enabled Māori knowledge to be passed on from one generation to another. This body of knowledge arises from the experiences of Māori living in the environment of Aotearoa.

The Rūaumoko pūrākau describes the whakapapa of different atua and their offspring. Find the whānau members in this pūrākau and give them their whānau titles.

mātua = father =

whaea = mother =

tamariki = children =

Answers:

Ranginui = Sky father

Papatūānuku = Earth mother

Their tamariki:

Rūaumoko (atua of volcanoes)

Tangaroa (atua of the ocean)

Tāwhirimātea (atua of the wind)

Tāne Mahuta (atua of the forest & birds)

2. Atua: Rūaumoko

Which atua is this pūrākau mostly about? Describe this atua and how he felt about his parents in only a few words. How did he show his love for his mother?

Answer:

Rūaumoko is the pōtiki (the youngest, the baby of the family). Rangi and Papa thoroughly spoiled him. He loves Papatūānuku dearly and often pushed his long fingers of fire through her body to warm her.

What did this atua do when his parents were separated?

Answer:

[He] howl[ed] with rage at the sight of his father's tears and mother's agony. The ground cracked and opened. Rūaumoko threw boiling mud and huge clouds of fowl smelling steam into the air. The earth shook with his voice. He took the fires from inside Papatūānuku and made them erupt high above the ground.

What finally calmed the atua down?

Answer:

Papatūānuku folded her arms around him and sang him to sleep.

But if he wakes from his name or his mother cannot sing him to sleep- what does this atua do?

Answer:

He is inclined to shake rather hard and then hurl mud and hot, foul smelling steam into the air. [He] hurls red rivers of fire into the forests of Tāne Mahuta. He shoves ugly islands of molten rock upon the waters of Tangaroa.

And he speaks to his brothers saying "Ko Rūaumoko, e nguguru nei. Au, au, aue ha! Hark to the rumble of the earthquake god. Au, au, aue ha!" What do you think he means when he is saying this to his brothers? What does he say this to them?

A Pākēha view of earthquakes

This would be a good time introduce what earthquakes are and why they occur. This material can be covered by ākongā in approximately three lessons.

Returning to the pūrākau

Students can now revisit the pūrākau and form a deeper connection can be made to the content in the pūrākau from a Western science perspective and from a te ao Māori perspective.

Suggested wording could be "so we now return to the pūrākau to the pūrākau you read in our first lesson on this kaupapa (subject). Let's listen to it again." You could then invite an appropriate student or guest to read the pūrākau out loud while the ākongā follow the kōrero kupu with their eyes. It would be great to encourage the storyteller to add energy into parts of the kōrero to try and help the ākongā in the narrative more.

Activity whakamutunga

1. From your own new knowledge learned and using information from this pūrākau...

A) What parts of Aotearoa do each of our atua represent in your whakapapa you originally wrote in the first activity?

Answer:

Rangi = the sky

Papatūānuku = all of the whenua in Aotearoa

Tāne = atua of the forests and all within them

Tangaroa = atua of all of the waters and all within them

Tāwhirimātea = atua of the winds and storms

Rūaumoko = atua of earthquakes and plate movement

B) Why do you think it is important to know this whakapapa? What does it show us, and why is it important to know?

While students will write their own answers, a whole class debrief will allow key words to come out. Some key words that will hopefully come out are:

- A good learning strategy
- Shows how all the parts of our world are connected and interconnected

- Is a way of passing information to future generations to explain how parts of our world are connected
- Whakapapa captures the stories of Māori descendants and their connection to atua, whenua and events that have shaped this land
- Papatūānuku is the land, a mother earth figure who gives birth to all things of the world and imparts many blessings to her children. She is seen as the birthplace of all things and the place to which they return and is considered a foundation for human action. Learn more at: <https://teara.govt.nz/en/papatuanuku-the-land/page-1>

2. Rūaumoko is the main atua that this pūrākau is about. If we looked around our country, what signs would we see if Rūaumoko is awake or grumpy?

Answer:

The ground cracks and opens [with] boiling mud and huge clouds of foul-smelling steam into the air. The earth shakes; fires from inside the earth erupt high above the ground. Rivers of red fire through the forests could be lava flows through the forests. The islands of molten rock rising out of the ocean could be volcanoes rising from the water.

3. Using your phrases from the pūrākau you found in the question above, where in the diagrams below do these events happen?

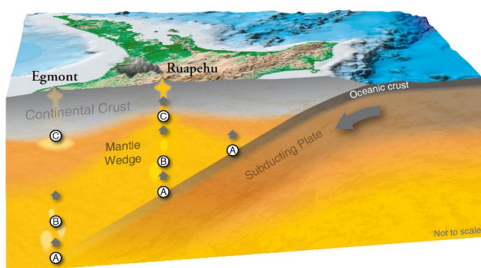


Plate subduction activity beneath New Zealand. A) Zone of intense earthquake activity, B) hot liquid basaltic magmas, C) andesitic, dacitic or rhyolitic magmas. From <http://www.seismicresilience.org.nz/topics/seismic-science-and-site-influences/seismicity-in-new-zealand/>

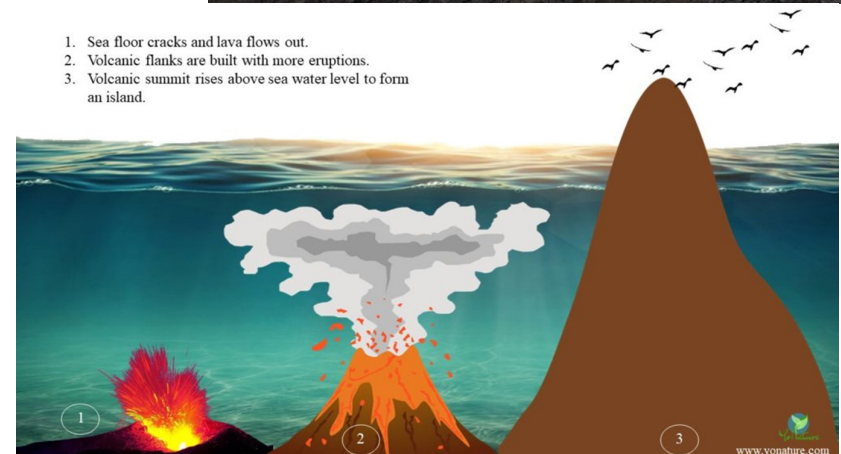


From <https://teara.govt.nz/en/earthquakes>

Image courtesy of HVO/USGS.



1. Sea floor cracks and lava flows out.
2. Volcanic flanks are built with more eruptions.
3. Volcanic summit rises above sea water level to form an island.



From <https://www.yonature.com/formation-volcanic-island-mauritius/>

4. Finally, discuss in your groups how the information in this pūrākau is valuable to know. What do we learn from this pūrākau, and why would it be important to still know this pūrākau today? What has it taught you?

Answer:

Students will write their own answers and will hopefully include the following important ideas:

- The legend of Rūaumoko and other Māori creation stories connect the might geothermal and tectonic forces at work in Aotearoa to te ao Māori.
- The pūrākau is an example of the connection of people to whenua in a spiritual way.
- This pūrākau includes the signs of an earthquake or beginning of a volcanic eruption so that when Rūaumoko awakens, Māori know what is happening and can read the warning signs that will help keep everyone safe.
- The pūrākau helps explain why the Earth behaves in this way.

This card is an attempt to get students to understand and appreciate how this indigenous knowledge system uses oral traditional stories to pass on valuable information about this land. It is also trying to demonstrate how the knowledge in the pūrākau may benefit future generations to survive safely as they navigate their way through this land. The pūrākau does this in such a way that Māori are included in these events through whakapapa of atua and, thus, are invested in knowing and learning from this.

The journey of Ngātoroirangi *Te Arawa (Ngāti Wahiao)**

It was because of the great Ariki (leaders) and Tohunga (healers; preists) of the Arawa canoe, Ngātoroirangi, the volcanic fire arrived here on these shores, forming the many geysers, hot springs and boiling mud pools that are found in this area. When the Arawa canoe made landing at a beach near the outlet of the Tarawera River called Te Kopu a Kuku, Ngatoroirangi had disembarked and started on his journey inland

to Taupō. Gazing upward, Ngātoroirangi longed to ascend the virgin peak and so he spoke to his companions, “You will all remain here while I and Ngauruhoe climb to the top of that mountain. You will know when I have reached the top for you will see my tohu (sign) which will be lightning, thunder and rain, then you will know that the mana (status; prestige) of the mountain has come under my authority”.

Ngātoroirangi knew the great mana of the mountain, and the elements that surrounded him. Those beings were Hahunga (frost), Hukapapa (ice), Hukarere (snow), and Hautonga (cold south winds). His mission was to ensure the survival of his people and their food sources that were bought from a warm climatic homeland. The new land revealed great challenges ahead; one was to decrease the element’s destructive forces. It was then that Ngātoroirangi instructed his followers, “After I leave do not eat until I have climbed to the peak of the first of those mountains for this will give me strength and the Gods will be with me, if I do not climb, the power of the mountains ice will increase and the cold will rule over all mankind, hence all will die but if I succeed man and food will flourish, and when I return, we will eat together and I shall share what I have learnt from that mountain.”

As they climbed, the elements slowly but surely took hold, biting into their hands and feet, freezing their faces and blurring their view, it was here, his companions became restless and spoke amongst themselves, “Why have we not seen the tohu of Ngātoroirangi’s yet?” one asked. Another said, “Maybe he is dead, let’s eat for we have waited a long time”. At this time on the peak of Tongariro, the cold pierced through Ngātoroirangi’s heart as he fell into the snow, looking upwards and facing towards Hawaiiki, he cried to his sisters Kuiwai and Haungaroa to send fire to warm him for death was near and in agony he said “Ka roiro rau i te tonga”.

On Kuiwai and Haungaroa, Te Keepa says “Hearing, feeling and sensing their brother’s (Ngātoroirangi) anguish, they ran from their village in Hawaiiki to the beach of Tataiwhenuakura and called on Te Pupu and Te Hoata, the subterranean goddesses of fire, to help and assist their brother in the land of Aotearoa. Te Pupu and Te Hoata knowing that time was of the essence plunged into the waters of Kiwa, beneath the crust of the seabed, heating the ocean floor, at great speed made

their way to Aotearoa.

Traveling over three thousand miles under the seabed, raising their heads, they burst through the surface at a place called Whakaari White Island, the earth burst into flames as they emerged through the crust, leaving the great flaming fire, the volcano, Te Ahi Tupua. Resting awhile from their journey, they ploughed once more into the earth's crust, into the ocean floor and emerged at a place called Moutohora Whale Island, just off the east coast of Whakatane, leaving waiwera (hot water). They then travelled to Okakaru, near Mount Putauaki, then on to Rotoma, Rotoehu, Rotoiti, and resting for a short while at Tikitere Hells Gate, then on to Rotorua. Here the sisters separated, one going to Mokoia, Ohinemutu and to Kuirau. The other went to Waikāwa, Ngapuna, Tarawera and Rotomahana...

The journey of Ngātoroirangi

*Delani Brown (Ngāti Tūwharetoa)**

The Ngāti Tūwharetoa people of the Lake Taupō area are descendants of early explorers Ngātoro-i-rangi and Tia, who both arrived on the Te Arawa Canoe. From Te Awa o Te Atua (The River of the God) in the eastern Bay of Plenty Ngātoro-i-rangi, the high priest and navigator commenced his journey to Te Puku o Te Ika a Maui (The belly of the great fish of Māui) in the Central North Island.

When arriving in the Taupō District, Ngātoro-i-rangi sought land for his descendants and ascended Mt Tauhara which this gateway now faces. Upon reaching its summit he thrust his staff into the earth and from the furrow flowed a freshwater spring, 'Te Karetu Ngātoro-irangi' which still flows from atop of Tauhara to this day. Ngātoro-i-rangi then seized a Tōtara tree and threw it far into the distance to Wharewaka where it eventually landed with branches piercing the earth and its roots high in the air.

He descended from Tauhara and headed toward the newly formed lake and as he reached the shore, he proclaimed "this will be drinking water for my grandchildren". He then tore a feather from his cloak and cast it into the water. Upon touching the water, the feather transformed into an eel, however it did not survive. He turned to his

cloak and once again tore a feather and cast it to the water. As it touched the water, the koaro, a breed of whitebait appeared and remains as the traditional fishery of this lake.

While on top of Tauhara, Ngātoro-i-rangi had seen a majestic mountain to the south. He thought to himself that he must venture there and climb that mountain as well. He travelled south and arrived at a place called Hāmāria, when the setting sun disappeared. He turned to his followers and said, "The night has settled, let us stop here", hence the name, Taupō (Tau, settle and pō, night). When dawn broke the rested travellers continued on their journey and after many stops arrived at the base of Tongariro.

The group began their ascent to the summit of Tongariro and along the way encountered challenges. The final challenge saw a blizzard of snow and ice carried by Tāwhirimātea the God of winds descend upon the party.

Seized by the bone chilling cold, Ngātoro-i-rangi was in danger of perishing so he called to his sisters Kuiwai and Haungaroa in Hawaiki for assistance.

Kuiwai e!

Haungaroa e!

Ka riro au i te Tonga

Tukuna mai te ahi!

Oh Kui,

Oh Hau,

I have been captured by the
southern winds.

Send me fire!

His sisters heard his urgent plea and quickly filled six baskets with glowing embers, the offspring of Rūaumoko the God of volcanic energy. The sisters then dispatched the demigod siblings Te Hoata and Te Pupu to deliver the heat to Ngātoro-i-rangi. Te Hoata and Te Pupu plunged deep into the earth and travelled swiftly toward Ngātoro-i-rangi in Aotearoa New Zealand.

The journey of Te Hoata and Te Pupu to Tongariro saw them surface at many places including; Whakaari (White Island), Moutohorā (Whale Island), Rotoiti, Tarawera, Rotorua, Orakei Kōrako, Wairakei, Tokānu and finally Ketetahi at Tongariro.

Embers were left behind at these places and only one basket of fire managed to reach Ngātoro-i-rangi. With this he became angry and

thought, “How am I to be warmed by this one basket of fire?” Ketetahi, (Kete, basket and tahi, one). In his rage he stomped his feet twice violently shaking the earth. Ruapehu (Rua, two and pehu, vent).

He then slammed his paddle deep into the earth. Ngauruhoe (Ko te Ngaurutanga, the shaft of his paddle and hoe, paddle). Through the ferocity of his actions the one remaining basket containing embers exploded into life bringing forth the raw power of Rūaumoko, God of volcanic energy. With this Ngātoro-i-rangi began to regain warmth and was revived.

The pathway of Te Hoata and Te Pupu is in a direct line from White Island to Tongariro. This is evident at the many geothermal features that now exist. The embers of Rūaumoko and his energy are still active to this day and continue to provide for people.

Battle of the Mountains

Annie Rae Te Ake Ake (Ngāti Tūwharetoe, Ngāti Ranginui, Ngatai Maru)



Photograph of Pihanga by Cobi and Klaas Photography. Used with permission.

The great mountain Tongariro felt uneasy as he looked across the gap at the scowling faces of Taranaki, Tauhara and Pūtauaki (Mt Edgumbe). He knew they were about to challenge him for the love of Pihanga.

Pihanga stood straight and still, sad at the situation that was brewing, for gentle was the nature of this beautiful lady who wore the fragrant cloak of pikiarero (clematis (a climbing plant with white flowers and hand-shaped leaves)).

Meanwhile, Ruapehu and Ngauruhoe played, happy in the

innocence of childhood, oblivious to the mounting tension around them.

The restless mountains hovered nearby, each preparing to claim Pihanga as his bride. But Tongariro stood in their way.

Tongariro the tūakana (the eldest) watched, his eyes steady as each of the rival mountains stepped up and issued their challenge. Then, with formalities over, the war began!

Loud rumblings rattled from deep inside of Taranaki. The ground shook with his passion, and out of his topknot flew red-hot rocks that careered straight at the waiting Tongariro.

Retaliating immediately, Tongariro let out a deafening roar and sent boulders of fire hurtling back at Taranaki. Pūtauaki and Tauhara, seeing their chance, came from behind while Tongariro's attention was diverted. Great flows of boiling lava came spilling out of their craters and rushed wildly at Tongariro's back.

Pihanga's warning gasp alerted the agile mountain, who quickly side-stepped the boiling rivers of volcanic spew.

The battle raged on. The earth shook and the air was thick with sulphurous fumes. Fierce was the fight for the beautiful Pihanga.

A mighty blow from Taranaki sent the topknot of Tongariro flying through the air and it landed with a tremendous splash in the great lake nearby. And still the defending mountain fought back, for great was the courage and endurance of the noble Tongariro. And at the end of the day, it was these qualities that finally won through.

Sorely beaten the three challengers used the cloak of the night to make their retreat. The two youngest mountains headed away to the east. Tauhara, the romantic, kept looking back to catch one last glimpse of the lovely Pihanga. He knew now that she could never be his wife. He reached no further than the northern end of the great lake, Taupō-nui-a-Tia.

Pūtauaki travelled much more swiftly, for he wished to put much distance between himself and his lost love. He journeyed to the very end of the flatlands of Kaiangaroa, where he still stands, a lonely sentinel of the Bay of Plenty.

Taranaki, much older and having much more pride to deal with, wanted to suffer his defeat in private. He turned and headed westward,

to the place of the setting sun. In his haste to get away, he gouged a deep furrow, down which began to flow the Whanganui river.

On seeing his opponents leaving, Tongariro let out a blood-curdling scream, a mighty cry of victory that echoed through that dark night.

Taranaki, thinking that he was being pursued by his victor, called upon the wisdom of the ancient realms to help him.

Up he rose and through the air he soared to a spot far away in the west. And at this very moment, the first rays of the sun came skipping over the landscape, transfixing the fleeing mountains.

At a safe distance and still bristling with resentment, Taranaki turned and hurled stinging insults at Tongariro. And across the great distance that now lay between them, Tongariro heard the insults of Taranaki and felt sad, for he well remembered the friendship they had all shared in their childhood.

Seeing the grief of her beloved companion, Pihanga sent soft clouds of love to embrace and soothe him, for great was the love of this gentle lady.

And over the years, the bond between them has been steadfast, and so they stand side by side to this very day.

Battle of the Mountains Curiosity Card

Developed by Mere Manning (Kahungunu ki te Wairoa)

Activity timatanga

Students will engage with the content of the pūrākau in this activity. What can they find out from this reading?

1) As you read the pūrākau - highlight where you found the answers to the questions below and write these into the spaces in the table.

- What are the names of the seven maunga in this pūrākau?
- Where did they all end up? Write your answers in a table with the headings “Te ingoa o te maunga (name of the mountain)” and “Kei hea ia inainei? (Where are

they now?)”.

- Imagine you are standing there watching Tongariro and Taranaki fighting. Describe below what you would see, hear, and feel using words from the text.
- Why would it have been important for all iwi and all their tamariki to know this pūrākau?

Answers

1)

Te ingoa o te maunga (name of the mountain)	Kei hea ia inainei? (Where is he now?)
Tongariro, Ngāuruhoe, Ruapehu, & Pihanga	all stayed in the centre of the North Island in the Taupō region
Tauhara	Northern end of the great lake Taupō-nui-a-tia
Pūtauaki	the flat lands of Kaiangaroa where he still stands, a lonely sentinel of the Bay of Plenty
Taranaki	Westward to the place of the setting Sun, or a spot far away in the west

2) See:

out of Taranaki’s topknow red-hot rocks flying at Tongariro
boulders of fire hurtling back at Taranaki
from Pūtauaki and Tauhara great flows of boiling lava
spilling out of their craters

Hear:

loud rumblings rattled deep inside of Taranaki
Tongariro letting out a deafening roar

Feel:

the ground shaking
the heat from the boiling lava

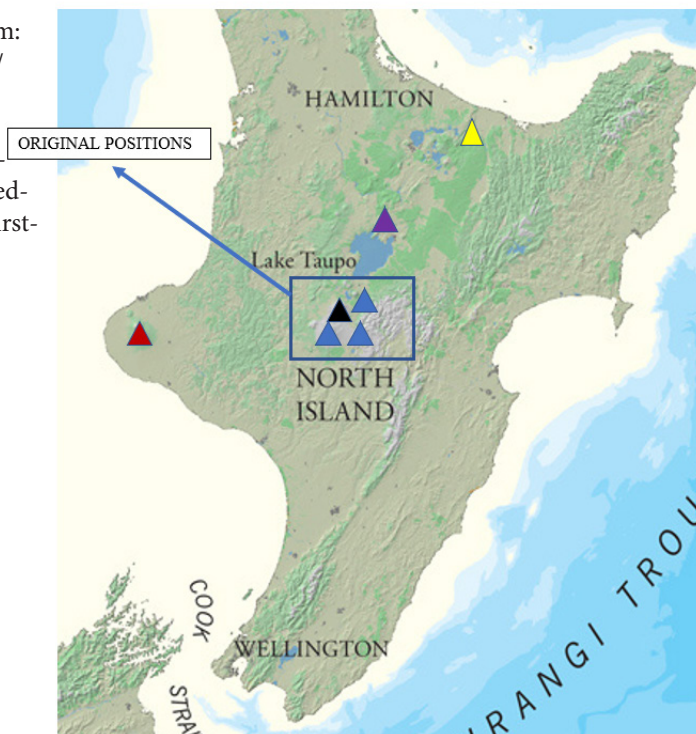
3) An open-ended question- students reflect on what they have read and what answers they gave to questions 1 and 2. For example, they could write:

Māori learn the signs in the pūrākau for when a maunga will start to misbehave in this way. Then, they will know to leave that area to be safe. They also learnt aht they can return once it all stops but to be wary and look for the signs that the land is always moving and reshaping their world, so to be respectful and listen to the whenua.

Activity whakamutunga

Give out the pūrākau again but instead of the map showing where the maunga ended up, replace it with a map of where they all were originally. (See example map below. Keep Ngāuruhoe, Ruapehu, and Pihanga on the map if you would like.)

Map modified from:
<https://niwa.co.nz/news/vital-areas-of-new-zealand-%E2%80%99s-sea-floor-to-be-revealed-in-detail-for-the-first-time>



- 1) Collect four coloured objects (buttons, shaps, etc.) from your kaiako and decide which colour represents each of the four maunga that were involved in the battle: Tongariro, Taranaki, Pūtauaki, and Tauhara. Now, re-read the pūrākau and place the objects where you think they ended up. Once you have done this, collect the map showing where the maunga did actually end up and see how close you were.
- 2) You have learnt about plate tectonics, volcanic process, and mountain-building processes. Thinking carefully about your answer to question 1, do you think Māori were aware of these processes? How does the pūrākau support your answer? The map from question 1 may help you!
- 3) Another title for this pūrākau is “The battle of the mountains: the love story that shaped our lands.” Scientists study how the land has changed over time, but they have to infer the processes that occurred from their observations. If they went to Taupō and listened to the local iwi and hapū tell this pūrākau, how do you think it would help them learn about how the land has changed?
- 4) What can all people living in Aotearoa New Zealand learn from this pūrākau if they listened to it today?

Additional teaching notes

Alternatively, for a deeper engagement, they could watch this video (https://www.youtube.com/watch?v=y2O_kr4TLWA) and complete the exercise as the kōrero unfolds.

An additional map from LEARNZ that may be useful can be found on the next page.



How Māui brought fire to the world

Wiremu Grace (Ngāti Toa, Ngātiawa, ki Waikanae, Ngāti Porou)

One evening, after eating a hearty meal, Māui lay beside his fire staring into the flames. He watched the flames flicker and dance and thought to himself, “I wonder where fire comes from.”

Māui, being the curious person that he was, decided that he needed to find out. In the middle of the night, while everyone was sleeping, Māui went from village to village and extinguished all the fires until not a single fire burned in the world. He then went back to his whare and waited.

The next morning there was an uproar in the village. “How can we cook our breakfast, there’s no fire!” called a worried mother. “How will we keep warm at night?” cried another. “We can’t possibly live

without fire!” the villagers said to one another.

The people of the village were very frightened. They asked Taranga, who was their rangatira, to help solve the problem. “Someone will have to go and see the great goddess, Mahuika, and ask her for fire,” said Taranga. None of the villagers were eager to meet Mahuika, they had all heard of the scorching mountain where she lived.

So Māui offered to set out in search of Mahuika, secretly glad that his plan had worked.

“Be very careful,” said Taranga. “Although you are a descendant of Mahuika she will not take kindly to you if you try and trick her.”

“I’ll find the great ancestress Mahuika and bring fire back to the world,” Māui assured his mother.

Māui walked to the scorching mountain to the end of the earth following the instructions from his mother and found a huge mountain glowing red hot with heat. At the base of the mountain Māui saw a cave entrance. Before he entered, Māui whispered a special karakia to himself as protection from what lay beyond. But nothing could prepare Māui for what he saw when he entered the sacred mountain of Mahuika.

Mahuika, the goddess, rose up before him, fire burning from every pore of her body, her hair a mass of flames, her arms outstretched, and with only black holes where her eyes once were. She sniffed the air.

“Who is this mortal that dares to enter my dwelling?” Māui gathered the courage to speak, “It is I, Māui, son of Taranga.”

“Huh!” Yelled Mahuika. “Māui, the son of Taranga?” “Yes the last born, Māui-tikitiki-a-Taranga.” “Well then, Māui-tikitiki-a-Taranga, welcome, welcome to the essence of the flame, welcome my grandchild.”

Mahuika stepped closer to Māui, taking a deep sniff of his scent. Māui stood completely still, even though the flames from Mahuika’s skin were unbearably hot. “So... why do you come, Māui-tikitiki-a-Taranga?” Mahuika finally asked.

Māui said, “The fires of the world have been extinguished, I have come to ask you for fire.” Mahuika listened carefully to Māui, and then she laughed. She pulled a fingernail from one of her burning fingers and gave it to him. “Take this fire as a gift to your people. Honour this fire as you honour me.”

So Māui left the house of Mahuika taking with him the fingernail

of fire. As Māui walked along the side of the road he thought to himself, “What if Mahuika had no fire left, then where would she get her fire from?”

Māui couldn’t contain his curiosity. He quickly threw the fingernail into a stream and headed back to Mahuika’s cave. “I tripped and fell,” said Māui. “Could I please have another?”

Mahuika was in a good mood. She hadn’t spoken to someone in quite some time and she liked Māui. She gladly gave Māui another of her fingernails.

But Māui soon extinguished this fingernail as well and returned to Mahuika with another excuse. “A fish splashed my flame as I was crossing the river,” Māui said. Mahuika provided another of her fingernails, not suspecting that she was being tricked.

This continued for most of the day until Mahuika had used all her fingernails and had even given up her toenails. When Māui returned to ask for another, Mahuika was furious. She knew Māui had been tricking her and threw the burning toenail to the ground.

Instantly Māui was surrounded by fire and chased from the cave. Māui changed himself into a hawk and escaped to the sky, but the flames burned so high that they singed the underside of his wings, turning them a glowing red. Māui dived towards a river, hoping to avoid the flames in the coolness of the water, but the immense heat made the water boil.

Māui was desperate. He called on his ancestor Tāwhirimātea for help. “Tāwhirimātea atua o ngā hau e whā, āwhinatia mai!” Then, a mass of clouds gathered and a torrent of rain fell to put out the many fires. Mahuika’s mountain of fire no longer burned hot.

Mahuika had lost much of her power, but still she was not giving up. She took her very last toenail and threw it at Māui in anger. The toenail of fire missed Māui and flew into the trees, planting itself in the Mahoe tree, the Tōtara, the Patete, the Pukatea, and the Kaikōmako trees. These trees cherished and held onto the fire of Mahuika, considering it a great gift.

When Māui returned to his village he didn’t bring back fire as the villagers had expected. Instead he brought back dry wood from the Kaikōmako tree and showed them how to rub the dry sticks together

forming friction which would eventually start a fire. The villagers were very happy to be able to cook their food once more and to have the warmth of their fires at night to comfort them.

Māui satisfied his curiosity in finding the origin of fire, although he very nearly paid the ultimate price in doing so. To this day the Kahu, the native hawk of Aotearoa, still retains the red singed feathers on the underside of its wings, a reminder of how close Māui was to death.

How Māui brought fire to the world Curiosity Card

Developed by Mere Manning (Kahungunu ki te Wairoa)

Activity timatanga

After reading this pūrākau, give the students the following questions to discuss:

- 1) Describe the characteristics of Māui shown in this narrative.
- 2) What can we learn about the importance of fire to Māori in this pūrākau?
- 3) What do you think is the purpose of Māori telling this kōrero to their tamariki, generation after generation?

As groups feed-back their answers, kaiako listen and write on the board the Māori ideas revealed by the ākonga.

Activity whakamutunga

After learning about volcanoes, ask student groups to discuss these questions to see if they can look at the new knowledge they have acquired and make connections with indigenous knowledge in the pūrākau.

- 1) Can you think of an example where Māori in the past made use of the knowledge of fire in their everyday lives?
- 2) How is this knowledge useful today?
- 3) How does this pūrākau show the strong connection Māori have to their land and te taiao?

The kaiako then finishes by making students aware that they have explored two ways of gaining knowledge: through te ao Māori and Western science perspectives. They can then end by explaining to ākonga that there are many ways we gain knowledge. Both knowledge systems are important and work together in Aotearoa New Zealand.

You can find more pūrākau by Hana Weka and others to include in your practice on <https://whanaushow.co.nz/maori-legends> among other places.

Suggested Activities

The following activities include potential discussion topics for the included pūrākau, electronic games about volcanoes and magma, and demonstrations that could be used in class. While this list is definitely not exhaustive, we thought some of our favourite activities might help when designing units and lessons.

Intruding Magma

Developed by Mike Stone

Aim: to show how magma can form intrusions or volcanoes

Materials: Each group will need:

- 500 mL beaker
- ~6 cm³ candle or crayon wax*
- 60 mL sand
- cold water
- Bunsen burner with a tripod and grating or a hot plate

*If the candle or crayon is a cylinder approximately the width of your finger, then a length of 6 cm long has an approximate volume of 6 cm³.

Set up:

Before class, shave the wax to make it easier to melt. Place a layer of wax in the bottom of each beaker and melt it. This is generally easier and safer to do with a hot plate than a Bunsen burner. Allow the wax to solidify. The resulting layer should be between 0.5 and 1 cm thick.

Method:

- 1) Pour the sand into the beaker so it forms a layer on top of the wax.
- 2) Carefully, fill the beaker with cold water until the surface is approximately 1 cm below the top of the beaker. Make sure the same still forms an even layer. If it doesn't, gently shake the beaker to even the top of the sand.
- 3) Heat the beaker and make observations of what occurs.

Explanation of the process:

As the wax melts, it rises up through the sand and then cools on contact with the water. The wax may form a column through the water to the surface where it forms a small volcano. The magma can be seen rising through the column and then becoming lava when it comes out on the surface. This process is called extrusion. Alternatively, the wax may rise into the water but not reach the surface. This would result in an igneous intrusion (where igneous refers to the rock class and intrusion is the process of magma solidifying underground).

Gas will form as the wax melts and may rise to the surface. Often, volcanoes release gas before an eruption begins.

Grains or lumps of sand can be seen falling into the wax (like rocks from underground being incorporated in the magma and being pulled to the surface). These pieces of sand are similar to xenoliths (literally strange rock, as in pieces of rock in the magma/lava that are from a different source).

Discussion topic:

What questions would you ask the students?

Example lessons to accompany pūrākau shared

by Sylvia Tapuke & Bubs Smith

Developed by Sriparna Saha

As part of Dr Sriparna Saha's PhD, she worked with five generous teachers who developed and shared these lesson plans related to the pūrākau from the LEARNZ virtual field trip. Each teacher was working within the context and constraints of their classes and teaching styles. Copies of these lesson plans were included in the print version of this booklet. If you would like access to these lesson plans or have any questions about them, reach out to Sriparna on [sriparna\[saha\]@pg.canterbury.ac.nz](mailto:sriparna[saha]@pg.canterbury.ac.nz).

Looking for more activities? Check out this activities booklet!



My notes

