

I roto i te Ao

He aha kei roto i te Ao?

He whakapuakinga kōrero

Kōrerorerohia, tohungia rānei ngā tauria kia tāngia ō rātau whakaaro mō roto i te Ao, me ngā taunakitanga e tautoko nei i ō rātau whakaaro

Hei tauria – Ka whakatūturuhia e ngā ahi tipua, me whai wera e rewa ai te toka, ā, me whai wai hoki nā te mea ka puta i te whenua ko te korohū me te wai wera i ngā wāhi rerekē i Aotearoa. Mā te kerī i te papa, mā te whakahua i ngā puketai (mahī rori) rānei e whakahua ngā apa rerekē.

Pēhea te hōhonu o te kōwiri a ngā kaipūtaiao?

Ko te rua o Kola i Rūhia te kōwiringa hōhonu rawa atu. Neke atu i te rua tekau mā whā tau e kōwirihia ana kia tekau mā rua kiromita te hōhonutanga. E toru kiromita te hōhonu o ngā rua ngāwhā i Aotearoa.

Ka taea e tātou te haere ki te pokapū o te ao?

Kāore, ka rewa te tangata i mua noa atu i tana taenga ki te kirinuku.

Mahi

• Whakamātauhia tētehi hēki kōhua, whakamāramahia atu he tohu tērā o te Ao. Whakapaipaihia te hēki ki ngā tae rerekē hei tohu i ngā moana me ngā whenua.

Kōrerorero

He wera ake i roto, i waho rānei? Ko tēhea wāhanga ka tere mātao haere? He wera ake i roto, ā, ko te wāhanga o waho kē tērā ka tere mātao.

• Tapahia te hēki kia haurua ki tētehi naihi koi. Me pēhea e kore ai ka pakaru te anga, engari kaua e tīhorea te anga mō te tūpono kāore ngā ākongā e kite i te angiangi o te anga e hāngai ana ki te ngā apa o roto i te Ao.

E hia ōna apa?

E toru ngā apa matua, heoi, ka kīia e ētehi o ngā ākongā e whā kē mehemea ka kōrero rātau mō te kiriuhi i raro i te anga.

Ko te anga o te hēki hei kirinuku - He tino angiangi, he kopī hoki, nō reira, he ngawari noa ki te wāwahi. E waru kiromita te mātotoru o te kirinuku o te ao i raro iho i ngā moana, ā, toru tekau mā rima te mātotoru i raro iho i ngā whenua rahi.

I te rohe puia o Taupō, he tino angiangi te kirinuku o te ao (25 ki te 30 kiromita), ā, koirā tētehi o ngā take kua hua ngā puia i reira. Ko te kahu o te hēki te nukuratarata, ko tēnei te wāhanga nui rawa atu o roto i te ao. He toka tino wera, ka rere, engari he tino pōturi, pērā i te tupunga haeretanga o ngā maikuku o te tangata. Ka wera ake te nukuratarata i a ia e whakatata ana ki te pokapū, ā, ka makariri ake i a ia e whakatata ana ki te kirinuku pērā i te hēki kua wera i roto, ā, kua mātao i waho.

Ko te toua o te hēki ko te pokapū o te ao. Hei tā te kaipūtaiao, e rua ōna wāhanga. Ko te wāhanga o roto te wāhanga tino wera rawa atu o te ao engari he nui te pēhanga, he mārō. He pērā te wera o te wāhanga i ō waho engari he ngāwari ake.

Ngā Whāinga Ako

- Kia mōhiohia ai ki ō te kaipūtaiao whakaaro mō tāna e mōhio nei mō te āhua o roto i te Ao.
- Whakamahia he hēki hei Ao

Ngā Paerau Angitu

Mā te ākongā e:

- Whakamārama te apa me te wera o roto i te Ao mā tāna whakamahi i tētehi mea pēnei i te hēki.
- Whakaingoahia ngā apa o te Ao.
- Me āta whakamārama i te kirinuku, i te nukuratarata me te tokarewa.

Ngā Rauemi

- He hēki kua tino kōhuatia hei whakamahi mā te tangata kotahi, mā te rōpū, mā te kaiako hoki.
- Pena Mahi

Huinga Kupu

kirinuku, nukuratarata, uho, toka, rewa, pāmahana, kōwiri, whenua rahi, moana, motuhanga, mārō, rere, pēhanga, ā-roto, ā-waho, apa

Tohutohu Mahi

- Tapangatia ngā apa o te hēki me te ao i runga i tētahi whārangi mahi.
 - Tāngia ngā whenua rahi ki te tae kākārīki me ngā moana ki te tae kikorangi i runga i te kirinuku e kitea ai te pāpāku o ērā i runga i te tānga. Mehemea he rite te nui o te Ao ki tō te rahi o te pōro pōitūkohu, ka māene ake te Ao tēnā i te pōro nā te iti o ngā mea o runga i te Ao.
 - Me tohu atu ki ngā ākongā kia kaurukuhia te whenua i raro i te moana ki te tae kākārīki. He nui te pōhēhētia o ētehi kāore he toka i raro i te moana, ko te kirikiri anake.

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Ko te hanga o te Ao te māramatanga matua ki ngā ahi tipua.

Ka noho te tangata i runga i te wāhanga makariri anake o te ao, ko ngā mea katoa kei roto i te ao he wera. Ko ngā ahi tipua ngā wāhi kua rewa ake te tokarewa ki te mata o te whenua, kua puta, ā, ka tere makariri. He maha ngā taura o te āhua o te Ao, ko te hēki pea te mea pai rawa atu nā te mea ka whakaatuhia atu te wera me ngā apa o roto i te ao. Mā te āporo, te rahopūru, te kiri tangata, me tētahi tiakarete Mars anō hoki e whakaatu te kirinuku kōrahirahi kei runga i ngā apa taumaha, i ngā apa āhua ngāwari ake.

Ko te tikanga, he hēki tā ia ākongā hei āta titiro, hei whakapaipai hoki māna e pērā ai te āhua i tō te Ao i mua i te tapahitanga, engari ehara i te mea me mahi.

He maha ngā tamariki e mōhio ana mehemea ka wera ake tētehi mea, ka waiwai hoki. E tika ana te kōrero nei i te mata o te whenua engari nā te nui o te pēhanga o roto i te Ao e uaua ake ai te nekehanga o ngā toka. Ehara te nukuratarata i te tokarewa anake, nā te nui o te pēhanga i roto i te ao kua mārō ngā toka ahakoa te wera. Kei ngā wāhi taratahi e rewa ai te kirinuku me te nukuatarata kia hua ko te tokarewa. Ko te pokapū te wāhanga wera rawa atu o te ao, engari, nā te nui o te pēhanga e kīia nei ana, kua mārō katoa. Ki te haere te tangata ki te pokapū, nā te nui o te pēhanga, ka raungaiti pērā i te māpere.

6300 kiromita te tawhiti atu ki pokapū o te ao, ā, kua tae noa te kōwiritanga ki te 12 kiromita. I rongohia te pikinga o te pāmahana i ngā rua kōwiri pāpaku, ka piki ake te pāmahana ki te 25 tākiri i ia kiromita ka heke, heoi, kāore i taea te heke tonu inā rā he wera ake te pokapū o te Ao i te Rā.

Kāore e pahawa i ngā mahi a ngā ākongā te whakamāramatanga o roto i te Ao ki tōna kirinuku, ki tōna nukuratarata me tōna uho. He maha hoki ngā whakamāramatanga hōhonu ake.

Mā te kirinuku me te kaupane o te nukuratarata e whakaahuahia ai ko tētehi momo toka e kīia nei ko te lithosphere, he mārō, he mōwhaki hoki te āhua. Ko te wāhanga o raro i tērā lithosphere ko te asthenosphere, ka mutu, he māngohe ake tēnā i te lithosphere. He wāhanga te asthenosphere o te nukuratarata e rere pōturi ana ka nukuhia ai ngā papaneke paparahi o te Ao. I te mahere akoranga 3, ka pōhēhē pea ētehi he kirinuku angiangi noa nei kua wāwāhia hei papaneke engari auare ake, ko te kirinuku me te kaupane o te nukuratarata kē, (arā, ko te lithosphere). Kei te takiwā o te 100 kirimita te mātotoru o te lithosphere, e 6 kiromita pea i ngā parahua moana ki te 200 kiromita i raro i ngā paparahi.

Mā tēnei whakaakoranga me tērā e whai ake nei mō ngā papaneke paparahi e taea ai e ngā ākongā te whakaatu atu ō rātau māramatanga ki te tirohanga pūtaiao mō te Taiao o te wāhanga Pūtaiao. Tē taea e ngā kaipūtaiao te puku o te ao te āta titiro, nō reira, mā te mātāi rū whenua rātau e puta ai ngā matapae.

Me mārama ngā ākongā ki te āhua o ēnei whakamāramatanga ka panonihia i ngā wā katoa.

Hononga ā-rorohiko Paerau

Te Ao, ki tua atu hoki.

Te Whakaaro Pūtaiao	NOS
Mā ngā Pūnaha Ao L3/4 e mārama ai ki te katoa te āhua o te Ao.	Kia mārāma ai ngā ki ngā āhuatanga o te Pūtaiao, he huarahi hei whakamārama i te āhua o te Ao. Me āta ruku ki te hōhunutanga o ngā taura ngāwari.

Tēnā, tirohia te pae tukutuku nei e kitea ai ngā kōrero hōhonu mō roto i te Ao.
http://www.sciencelearn.org.nz/contexts/earthquakes/science_ideas_and_concepts/inside_the_earth

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I ahu mai a ao i hea?

E ai ki ngā kaipūtaiao, tōna 4600 miriona tau ki muri, he pōro kapuni wera noa iho te ao. Ka mātao haere ana, ka waiwai haere te kapuni, ā, ka iti haere te ao. Ka heke te kapuni taumaha ki te pokapū o te ao. I tērā e mātao haere tonu ana, ka kirinuku te āhua.

Ka puta te wairehu i ngā tawhā ka whakaahuahia ai ngā kapua me te hekenga tuatahitanga o te ua.

Nō te ao e mātao haere tonu ana, kāore noa iho te ua i tōmiti i te pae wera, inā rā ko ngā roto me ngā moana kē te otinga atu. He māori te wai i te tuatahi, heoi, nā ngā matū o te Ao i tote ai ngā moana. I ngā rā o tuawhakarere, i waipukehia katoatia te ao.

I muri mai, nā te pēhanga o te wera i te pokapū i rewa ai ngā wāhanga o te ao e puta ai te whenua i te moana, ā, ka rewa ngā wāhanga rā i ngā nukuratarata taumaha i raro iho rā. Haere nei te wā ka rerekē te āhua o te whenua, ka mutu, e pērā tonu ana i ēnei rangi tonu nei. I rewa ngā wāhanga taumaha o te kirinuku i te tāmōreoretanga o te nukuratarata, ā, ka rere te wai ki ngā wāhi rā kia whakaahuahia ai ngā moana.

Haere nei ngā tau mano miriona, nā te pāhekohekotanga o te kāhauhau, te whenua me te moana i ora mai ai ngā mea i tēnei ao e noho nei tātau.

Ka rerekē haere te ao i ngā wā katoa, heoi, nā te pōturi o te tukanga, i ngā wā e pahū ai ngā ahi tipua, e rū hoki ai te whenua, ka mahara ake tātau karekau noa iho he mea e toitū ana, tae noa ki te ao.

E kitea ai te tauira, tirohia te pae tukutuku nei:
<http://www.youtube.com/watch?v=QDqskltCixA>

Mā te aha e wera ai te ao?

He wera e toe tonu ana i te orokohanga o te ao, ā, ko te toenga i te hanehane o ngā pūmotu horo iraruke pērā i te konuruke i roto i a Papa.

He mahi toi e whakaatu nei te āhua o te Ao:

<http://web.ics.purdue.edu/~braile/edumod/earthint/earthint.htm>

Pēhea te kaipūtaiao e mōhio ai he aha kei roto i te ao?

Mā te rū whakawhiti e mōhio ai te kaipūtaiao he aha kei roto i te ao. Mā te rū whenua, mā te pakū hoki o ngā pahūtanga i roto i te papa e puta ai te rū whakawhiti. I ngā toka rerekē e wakuwaku ana i ētehi atu ka rerekē te hihiko o te rū whakawhiti. Mā korā e kitea ai he whakaahua pāorooro o te ao. He rerekē te tangi o te pāorooro o te reo o te tangata i te whakaata o ngā pae. Ka pērā hoki te rerekētanga o te rū whakawhiti, waihoki, ka puta i te kaipūtaiao ngā matapae mō te āhua o ngā rū whakawhiti i ngā wā rerekē e tae ai tētehi.

E hia kē nei ngā ine-rū huri noa i te motu e whakamahia ana ki te ine i te nui me te wāhi o te rū whakawhiti pēnei i te rū whenua me te pakū o ngā pahūtanga.

Ka kitea he mōhiohio i te pahūtanga o ngā ahi tipua i te tokarewa e ara ake ana i te hōhonutanga o te ao ki te pae.

He nui noa atu hoki ngā mōhiohio i ngā toka parehua me ngā maunga. Nā te mea kua pākarakaru te kirinuku i ngā nekehanga o raro i te whenua ka kitea hoki he toka i ahu mai ai i te hōhonutanga o te kirinuku.

Tirohia te pae tukutuku nei mō ngā pitopito kōrero o te rū whakawhiti:
http://www.sciencelearn.org.nz/contexts/earthquakes/science_ideas_and_concepts/seismic_waves

Pēhea te tawhiti o tā te kaipūtaiao kōwiri i te ao?

12.3 kiromita

Tirohia te pae tukutuku nei:
http://en.wikipedia.org/wiki/Kola_Superdeep_Borehole

Me pēhea te wera o te pāmahana e rewa ai tētehi toka?

Ka ahu mai te nuinga o ngā toka i ngā ranunga kohuke, ā, he rerekē hoki te wā e rewa ai ia toka i te wera. Ko ngā mea e rerekē ai te rewanga o ngā toka ko te wai i roto me te pēhanga o te toka. Mā te toka ratarata, ngā mirumiru kapuni me ngā tioata kāore anō kia rewa e tāiri ana e puta ai te tokarewa. Rewa ai te nuinga o ngā tokarewa i te takiwā o te 700 ki te 1300 te pāmahana, ka mutu, he tino wera ake tērā pāmahana i te pāmahana kia tunua te keke.

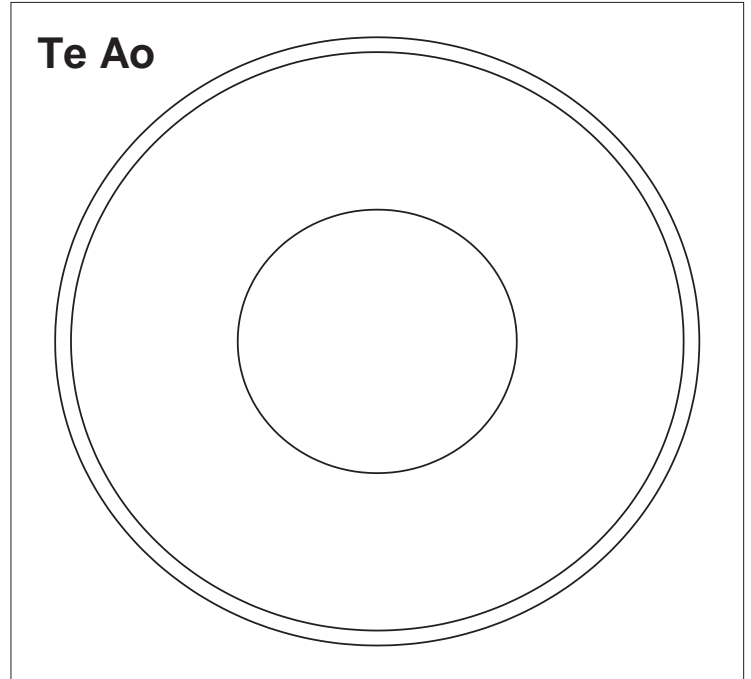
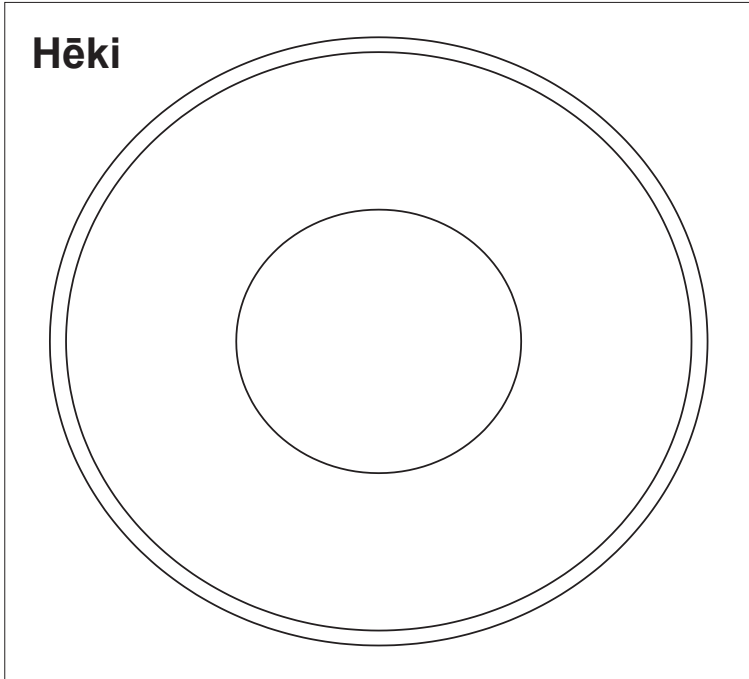
Ko ngā mokamoka me ngā hoahoa o ngā apa o roto i te Ao:

http://volcano.oregonstate.edu/vwdocs/vwlessons/lessons/Earths_layers/Earths_layers4.html

He mahi toi e whakaatu nei i te āhua o te Ao:

<http://web.ics.purdue.edu/~braile/edumod/earthint/earthint.htm>

1. Tāpirihia ngā tapanga e whai iho nei ki te hoahoa tika: te uho, te kahu o te hēki, te nukuratarata, te anga me te tōhua o te hēki
2. Kaurukuhia te wāhanga wera rawa atu o te Ao ki te tae whero ka kaurukuhia ai te nukuratarata ki te tae karaka.
3. Kaurukuhia te mata o te Ao, otirā, te kirinuku ki te tae kikorangi me te tae kākārīki e kitea ai ngā moana me ngā whenua rahi. Kia mahara ake, 6300 kiromita te tawhiti atu ki te pokapū o te Ao, heoi, he iti ake te maunga teitei rawa atu o te Ao i te 9 kiromita te teitei, nō reira, tē āta kitea hoki te maunga rā i tō hoahoa.



Mahi 2

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