

Tau 5 Ngā Rauemi mā te Kaiako



Māpura Matihiko
Digital Ignition

Pūrerehua

He Whakamārama

Ko te aronga o tēnei ngohe he whakaatu ki ngā ākonga ngā āhuatanga rerekē e taea ai te whakamahi i ngā hangarau matihiko hei taputapu hopu mātauranga, hei hanga hoki i ngā otinga hangarau mā ngā kaiwhakamahi. Ka hangāia e ngā ākonga he tauira ahutoru (he taputapu Māori nō ngā wā o mua), mā te whakamahi pūmanawa ahutoru. Mā ngā ākonga anō e waihanga i ā rātou ake whakairo hei whakarākei i ngā pūrerehua, ā, ka whakamahia ngā tohu tawhito a te Māori hei momo pikitia whakarākei i ngā tauira ahutoru. Kia ea ai tēnei, ka whakaako i a rātou me pēhea te whakamau i ngā hōputu rerekē, me pēhea hoki e horahia ai ngā papatono rerekē. Ka taea te tārua i ngā tauira ahutoru ā ngā ākonga mēnā e pīrangī ana rātou.

Te Tiaroaro Marau

Te Marau Hangarau: Hangarau Matihiko

Te Tupuranga Tangata me te Rorohiko:

Whakatupuranga 1

- Ka mārama ko tā te rorohiko he pupuri kōrero, mā te kaiako tētahi mahi whakahiato e ārahi: ki te waihanga; ki te raweke; ki te pupuri; ki te tiki; ki te tuari hoki.

Te Tupuranga Tangata me te Rorohiko:

Whakatupuranga 2

- Ka whakatau tikanga ki te waihanga; te raweke; te pupuri; te tiki; te tuari me te whakamātau rānei i te kōrero o tētahi pūnaha tūturu.

Te Marau o Ngā Toi o Aotearoa

Toi Ataata:

Taumata 1

Ka tuhura, ka whakauru atu, ka whai mōhiotanga, ka whai māramatanga: i ngā huanga me ngā ariā ;ki ngā tohu o tōna ao.

Ka whakawhanake, ka whakamahi i runga i te haumarū, i te auaha hoki, ka whai whakaaro, ka kite:

- i ōna ariā me ōna pūkenga;
- i ngā taputapu me ngā rawa;
- i ngā tūmomo hua, tohu me ngā tauira huhua

Toi Ataata:

Taumata 2

Ka tuhura whānui, ka whakawhanake, ka whai mōhiotang i ngā ariā;

- i ngā ariā;
- i ōna whēako whaiaro;
- i ngā whakawhiti ariā tikanga
- ahurea me ōna uaratanga;
- i te huhua o ngā tohu.

Toi Ataata:

Taumata 3

Ka tūhura whānui, ka whakawhanake, ka whai mōhiotanga:

- i ngā ariā;
- i ōna whēako whaiaro;
- i ngā whakawhiti ariā tikanga ahurea me ōna uaratanga;
- i te huhua o ngā tohu..

Te Marau Tikanga-ā-Iwi

Te Whakaritenga Papori me te Ahurea:

Taumata 1

1.1 Ka whakamārama i ngā take e uru atu ai te tangata ki te rōpū.

Te Ao Hurihuri:

Taumata 1

1.1 Ka whakaahua i ngā kaupapa me ngā tūāhua whakahirahira o tōna ao.

Te Wāhi me te Taiao:

Taumata 1

1.1 Ka whakamārama i ngā āhuatanga tūturu me ngā āhuatanga ahurea o tētahi wāhi.

Ngā Taipitopito Awheawhe

Ngā Putanga Ako

Ka tāea e ngā akonga te

- Whai māramatanga mō te hiranga o ngā tohu, me ō rātou tikanga ki te ahurea Māori.
- Whai māramatanga mō ngā kōrero tuku iho o te pūrerehua.
- Kowhiria ngā tohu e whai take ana ki ngā kaiwhakamahi.
- Hangaia he tauira hangarau o te pūrerehua, ā, me whai whakaaro mo te kaiwhakamahi.
- Hangaia, rawekehia, hopua, tangohia, tohaina hoki i ngā kiko hangarau.
- Whakamahia i ngā pūmanawa whakaatu ahutoru.
- Whakamahia i ngā pūmanawa kia hurihia ngā kōnae e tāea ai te pānui e ngā pūmanawa whakaatu ahutoru.
- Whai māramatanga mo te whanuitanga o ngā taputapu ahutoru.

Ngā Taputapu:

Me whakareri i ēnei taputapu mā āu ākonga:

- [] Ngā rorohiko kua hono kētia ki te ipurangi
- [] Ngā whakatauirā o ngā tauira Ahu-3 o te pūrerehua (ka kitea ēnei ki te kōpaki tikiake kua urua ki tēnei tuhinga)
- [] He tauira anō:
 - DesignerFred BullRoarer - <https://www.thingiverse.com/thing:154046>
 - Bullroarer - <https://www.thingiverse.com/thing:1176102>
- [] Rauemi kōwhiringa: He ataata Pūrerehua
 - Ataata 1 - <https://www.youtube.com/watch?v=zw2AiR6HXZA>
 - Ataata 2 - <https://www.youtube.com/watch?v=gBRYhAgDq7A>
- [] Kōwhiringa: Pūrerehua Blank Template.stl file (ka kitea ēnei ki te kōpaki tikiake kua urua ki tēnei tuhinga)
- [] Kōwhiringa: Te whaarangi Ipurangi m Māori symbols and their meanings
<http://www.tuarangi.com/meaning-of-maori-symbols-and-designs/>
- [] Kōwhiringa: Mīhini matawai
- [] Kōwhiringa: Mīhini tukuata

Te roanga

- 2 haora.
Pitopito Korero: E tāea ana te tīrarahia i tēnei ngohe ki ngā akoranga maha.

Ngā whakaritenga

- Rēhita mō Tinkercad (He pūmanawa ipurangi utukore mo te whakatauirā ahutoru).
<https://accounts.autodesk.com/register?AuthKey=039f2674-5587-4f07-938d-4d732346eaff&ReturnUrl=%2Fauthorize%3Fviewmode%3Diframe%26lang%3Den-US%26realm%3D%252A.tinkercad.com%26ctx%3Dtinkercad%26auth%3Dsocialoradsk%26socialproviderpref%3DFB%2CGO%2CYH%2CWL%26AuthKey%3D039f2674-5587-4f07-938d-4d732346eaff&auth%3Dsocialoradsk&ctx=tinkercad&lang=en-US&realm=%2A.tinkercad.com&socialproviderpref=FB%2CGO%2CYH%2CWL&viewmode=iframe>
- Tirohia ngā āhutanga rerekē o Tinkercad, me ngā painga hoki o tōna whakamahinga ki roto i te akomanga Whakaritea i tētahi whārangi Tinkercad, ā, ka whakaatungia e Tinkercad i tētahi akoranga-ā-hiko e whakariterite i ā koe kia hāpaitia i ngā ākonga mō tēnei akoranga.
- Tirohia mehemea kua whakarite whārangi Tinkercad e te katoa o ngā ākonga, ā, hoatu rānei he wā ki a rātou ki roto i te akomanga kia whakariterite i ā rātou anō.
- Pitopito Kōrero: Ko ngā ākonga kei raro iho i te 12 tau, me whakamahia e rātou i te īmera o te kaiako. Kua e tohaina he kupu huna, ēngari ka tonoa kē he 'Invite Code' mā te kaiako anō e whakariterite i ēnei (tirohia ngā tohutohu mehemea e pirangi awhina ana koe). Mā tēnei ka taea ai rātou kia uru atu ki a Tinkercad.
- Rēhita ki konei: <https://www.tinkercad.com/teach>
- Kei konei ngā tohutohu mō te 'Invite Code':
<https://tinkercad.zendesk.com/hc/en-us/articles/226566228-I-m-a-teacher-how-do-I-get-my-students-signed-up-and-approved->
- Me āhei ngā ākonga ki te whakamahi rorohiko kua hono kētia ki te ipurangi.
- Me whakamau katoatia ngā rauemi hangarau ki tō rorohiko kia whakaatu ki ngā ākonga (pēnei i ngā ataata tauira o ngā pūrerehua ahutoru. (tirohia te rārangi rauemi))
- Me whakarata koe ki te katoa o ngā kupu me ngā tikanga hoki e arotahi ana ki ngā āhuatanga hangarau (tirohia te papa kupu kua hoatungia)
- Inā e taea ana koe, tirohia ētahi kōrero e hāngai ana ki te pūrerehua i mua i te akoranga kia whai māramatanga ai koe mō tēnei kaupapa. Kua tāpirihia ki raro iho ētahi whārangi ipuranga hei tirohanga māu ki te wāhanga 'Rauemi' mō ngā akoranga.
- Kōwhiringa: Mehemea e whakamahi ana e koe i tā mātou tā tauira pūrerehua '.stl file' (arā, mehemea kaore ngā tauira e hanga ana i ā rātou ake pūrerehua), me purua e te kaiako i tēnei kōpaki ki runga i ngā rorohiko katoa e whakamahia ana e ngā ākonga.
- Kōwhiringa (hei roanga ake) rangahaua ngā kamupene tā ahutoru kei tō takiwā. Tirohia te wāhanga Rauemi kei raro iho, kua tuhia ai ētahi ratonga ki reira.
- Kōwhiringa: rapua ētahi pikitia o ngā pūrerehua nō ngā wā ō mua kia whakaohoho ai i ngā whakaaro auaha o ngā ākonga.

Whakatakinga/Te Ako Matau

1. Atawhaitia ki ngā ākonga ngā kōrero tuku iho mō te Pūrerehua. Whakaatungia pea he ataata o tētahi tangata e whakamahi ana i te pūrerehua ki roto o tētahi waiata, ā, tērā pea e āhei ana koe te haria atu he pūrerehua ki te kura hei tirohanga, hei purei rānei, mā ngā ākonga.
2. Me whakawhitiwhiti kōrero koutou ko ngā ākonga mō te hiranga o ngā waiata ki ngā ahurea rerekē, ā, he aha hoki te hiranga o ngā mahi rangahau kia mārama ai ki ngā hītori mō ngā taonga puoro rerekē
3. Kōrerohia mō ngā painga o ngā mahi whakatauirā ahutoru, tārua ahutoru, ā, kōrero hoki mō te hanga whakatauirā ahutoru o ngā taonga puoro tawhito hei waka kawē mātauranga nō onamata.
4. Whakaatu atu ki ngā ākonga he pikitia o ngā pūrerehua kua tārua whakaahutoru. Whakaatungia hoki ngā momo whakatauirā rerekē kua āta tīnīhia mā te whakamahi i ngā pūmanawa tautono ahutoru.

Te Whakahaere Mahere Ako: Wāhanga 1 – Te Whakarākei i te Pūrerehua

Wāhanga 1 – Te Whakahoahoa i tētahi Whakarākei mō te Pūrerehua

1. Whakamāramahia ki ngā ākonga mō ngā mahi kei mua i a rātou, arā, he waihanga i ō rātou ake Pūrerehua ahutoru ka tāruatia hoki. Tuatahi, ka waihangatia e rātou tētahi whakairo hei whakarākei i te pūrerehua. Me kitea ngā āhuatanga o te Ao Māori me ōna tikanga ki roto i ngā tauira, ā, me whakakotahi ai ngā āhua o ngā waitohu Māori me ngā hoahoa hoki. Me whai whakaaro ngā ākonga ki ngā kaiwhakamahi i ā rātou e tāngia ana i ā rātou hoahoa.
2. Tohua ngā ākonga kia whiriwhiria ko wai te kaiwhakamahi i ā rātou pūrerehua. i ā rātou e waihanga ana i ngā pūrerehua, me whai whakaaro rātou mo te kaiwhakamahi me ngā mea e hiahia ana e rātou. Ka taea hoki e rātou kia urua i ētahi tohu Māori kia hohonu ake te kaupapa o ngā tohu e whakarākei ana i te pūrerehua. Hei tauira, mehemea e hangaia ana te pūrerehua, ka taea e rātou te whakauru i ētahi waitohu pikoria he whakaatu i tō rāua hononga-ā-hoa. Hei tauira anō, ka taea te whakauru i tētahi tohu matau hei āhuatanga waimaria mo te kaiwhakamahi.

Pitopito Korero:

Ka taea e ngā ākonga kia mau tonu ki te pūrerehua mā rātou anō, kia hangaia mā tētahi atu rānei.

3. Tonoa ngā ākonga kia rangahaua ngā momo hoahoa tawhito ā te Māori, ā, me tuhi hoki i ō rātou whakaaro mo te whakamahinga o ēnei tohu hei whakaohoho i ō rātou ake whakaaro toi. Ka taea e te kaiako kia atawhai i ētahi rauemi e hāngai ana ki ngā tohu Māori me ō rātou tikanga.

Hei tauira: <http://www.tuarangi.com/meaning-of-maori-symbols-and-designs/>

4. Tonoa ngā ākonga kia waihanga i ngā whakahoahoatanga hei whakarākei i ā rātou pūrerehua. Ka whakauru atu tēnei ki tā rātou tauira ahutoru. E rua ngā kōwhiringa hei waihanga hoahoa:
 - a) Ka taea e ngā ākonga te tāngia ā rātou hoahoa ki te pepa. Mehemea ka whiriwhiria tēnei kōwhiringa, me whakamahi e rātou i tētahi pepa kia tāngia ai ō rātou whakaaro-toi, me whakamahi hoki i tētahi pene whītau nui. Ka whakamau ēnei hoahoa ki te rorohiko, ā, ka whakamahi ai mō ā rātou whakatauirā ahutoru (tirohia ngā tohutohu kei raro iho).
 - b) Ka taea e ngā ākonga te whakamahi i tētahi pūmanawa e rata ana ki a rātou, ka taea hoki rātou te rapu hoahoa ki runga i te ipurangi. Ka taea te whakamau i ngā pikitia kia tika ai te takoto o taua pikitia (.jpeg, .png etc). Ko te pango me te mā anake ngā tae mo ngā hoahoa katoa.

haere tonu...

Te Whakahāere i te akoranga: Wāhanga 1 – Te Whakarākei i te Pūrerehua

Hei tauira:



- Pitopito Kōrero:**
- Ahakoa he aha ngā rautaki ka whakamahia e ngā ākonga mo tēnei ngohe, me nui ngā hoahoa me tāngia kia kite pai ai ngā pikitia, kia kaua e whakamahi i ngā rārangi tino kōrahi. Me whai whakaaro hoki ngā ākonga ki te rahi o te pūrerehua kia taea ai rātou te whakatau mehemea he nui rawa te hoahoa hei tā ki te pūrerehua.
 - Ka whakauru te katoa o ngā wāhanga pango ki te whakatauirā ahutoru.
 - Ka taea e koe te whakaatu i ētahi tauira tawhito o ngā pūrerehua kia whakakā ai i ngā whakaaro auaha o ngā ākonga. Ka taea hoki e koe te whakaatu i ētahi tauira o ngā pūrerehua kua hoahoa e ētahi atuhei ahutoru.

- Kōwhiringa: Ka taea e ngā ākonga kia atawhaitia ō rātou mahi ki te akomanga, ā, kia whakamārama hoki i ngā whakaaro kei muri i ngā hoahoa me ō rātou hononga ki ngā kaiwhakamahi.

Wāhanga 2 – Hoahoina he whakatauirā ahutoru o tētahi Pūrerehua

1. Whakamārama ki ngā ākonga mo te nekehanga e whai ake nei, arā, ko te waihanga i ā rātou pūrerehua, kia hanga hoki i tētahi pūrerehua ahutoru.

Pitopito Kōrero:

Kaua e whakaurua i ngā mea whakarākei ki tēnei wāhanga, ēngari hei te mutunga. Whakamahia i ngā taupānga whakatauirā ahutoru pēnei i a Tinkercad i te mea he utukore, ā, he māmā hoki ki te whakamahi.

2. Me whakaaro ngā ākonga ka pēhea ngā tauira pūrerehua e whakamahi ki roto i te ao whānui?

Kōrero awhina:

- He e aha te rahi o ā rātou pūrerehua?
- (Pitopito Kōrero: He mahere korahi tā Tinkercad kia kite i te rahi, i te iti rānei o ngā inenga hoahoa hei mm)
- Me whakauru kōhao ki te pūrerehua kia taea ai te whakauru i tētahi aho ki roto.

Mewhakatau ngā ākonga ka pēhea te āhuahanga o ā rātou pūrerehua.

3. Tohutuhia ngā ākonga kia kuhuna i a Tinkercad, ā, kia hanga i tētahi tauira ahutoru e whakaahua ana i ō rātou ake kōwhiringa.

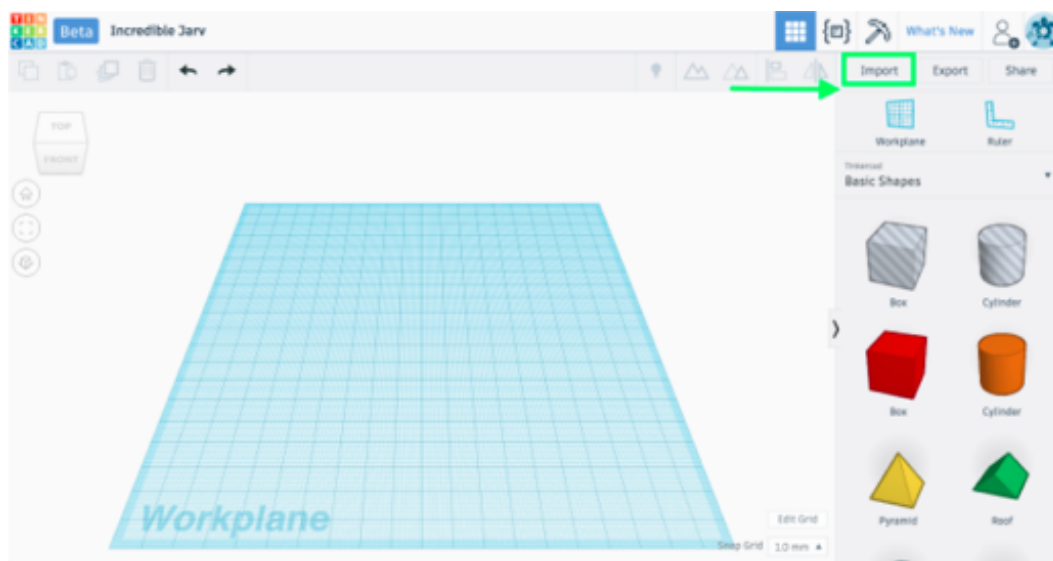
Pitopito Kōrero

Ko te tūmanako kua rata ngā ākonga ki ngā pūmanawa whakatauirā ahutoru, ā, me pēhea hoki te hanga tauira. Inā kāre tonu rātou e māmā ana ki ēnei mea, tirohia ngā akoranga-ā-hiko ā Tinkercad kei raro iho: <https://www.tinkercad.com/learn/>

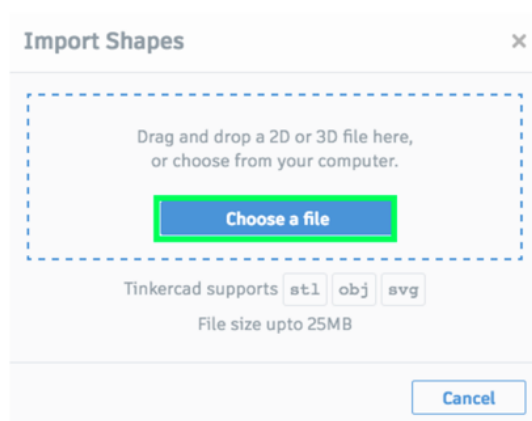
haere tonu...

Wāhanga 2 – Hoahoaina he whakatauirā ahutoru o tētahi Pūrerehua

4. Tirohia mēnā kua puritia ngā mahi o ngā ākonga, ā, tirohia hoki mena kua tapaina ā rātou mahi ki tētahi ingoa e māmā ana te maumahara (hei te tīmatanga, mā Tinkercad e whakaingoaia i āu mahi, ā, nā tēnei ka taumaha te rapu i ngā kōpaki hiko. Hēoi, ka taea tonu te kimi ā tētahi wā anō.).
5. Kōwhiringa: Ka taea ngā ākonga te waihangā i ā rātou ake tauira ahutoru mō te pūrerehua. Ka kitea ngā tauira .stl ki te kōpaki “downloaded zip”,
6. Kia whakaurua te kōpaki .stl ki te Tinkercad, me:
 - a) Puritia te kōpaki .stl ki te rorohiko
 - b) Ā muri ake i tō kuhunga atu ki Tinkercad, me waihangā e koe i tētahi whakairo āhua hou, ā, pēhia te pātene ‘whakauru kei te taha māui o te whārangi.



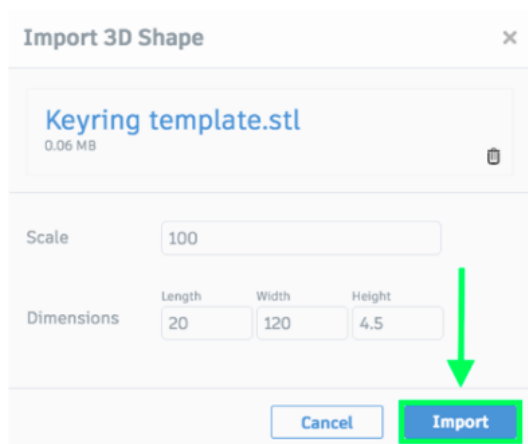
- c) Pēhia te pātene “Kōwhirihia tētahi kōpaki”, ā, hono tika atu ki te kōpaki Template.stl File.



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Wāhanga 2 – Hoahoa ina he whakatauirā ahutoru o tētahi Pūrerehua

- d) Kōwhiria te kōpaki Template .stl.
- e) Pēhia te pātene “Whakauru”.



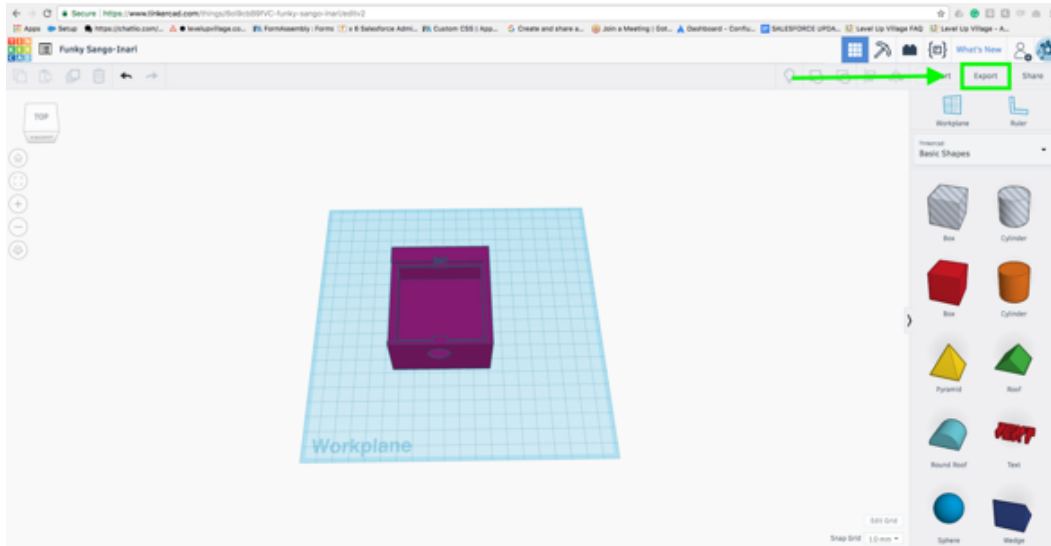
6. Hei te mutunga, i te otinga o ā rātou pūrerehua katoa, tohutohua ngā ākonga kia tirohia ngā mahi ā tētahi atu. Me tirohia ngā taha katoa o ngā pūrerehua, ā, me tirohia mena e taea ana te whakauru i te aho ki te kōhao. Me tirohia hoki mena e tika ana ngā whakaritenga katoa o te pūrerehua.

Wāhanga 3 – Te Whakauru i te Hoahoa Pūrerehua ki te Whakatauirā Ahutoru

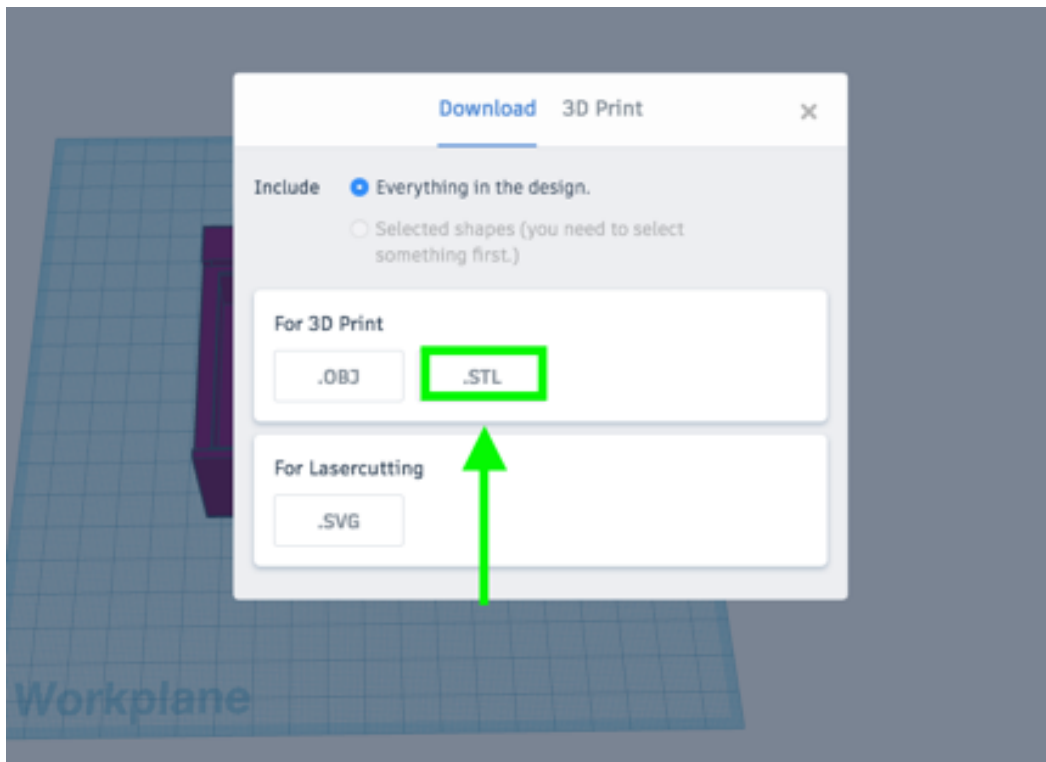
1. Whakamārama ki ngā ākonga mō ngā mahi whakamutunga o te hanga pūrerehua. Me whakakotahi i ō rātou ake pikitia me te pūrerehua hoki mā te whakamahi i te pūmanawa tautono ahutoru.
2. Whakamāramahia ngā rerekētanga o ngā kōpaki, ko ētahi e taea ana e Tinkercad te pānui. Nā reira, kia taea ai te whakauru i ā rātou mahi ki roto, me whakamau ā rātou kōpaki hei .svg.
3. Tohua ngā ākonga kia whakauru ā rātou hoahoa ki roto o Tinkercad. Kei raro iho ngā tohutohu mō tēnei:
 - a) (Mehemea kua tā-ā-pene ngā hoahoa) Whakamahia te mīhini hopu ataata kia whakauru ai ngā pikitia ki te rorohiko. Ka taea te whakamau i ngā pikitia hei png. hei .jpg hoki. Ka taea hoki te whakamau hei PDF rānei.
 - b) (Mehemea kua tā-ā-hiko ngā hoahoa) Me whakamau ngā hoahoa ki ngā rorohoki kia māmā ai te rapu.
 - c) Hurihia te pikitia hei .svg. Ka taea tēnei mā te whakamahi i te Convertio. Ā muri ake i tōna hurihanga,
 - d) whakamau ki te rorohiko.
 - e) Huakina a Tinkercad, ā, huakina te kōpaki i whakamau ai ngā mahi pūrerehua i hangaia ki te wāhanga tuarua. Whakaurua te kōpaki .svg ki roto o tēnei 'kaupapa hou, ā, tirohia ngā tohutohu i meatia ki te wāhanga tuarua.
4. Tonoa ngā ākonga kia tīnīhia te rahi o ngā pikitia kia pai ai te takoto ki roto i te pūrerehua. Me whakaaro hoki ngā ākonga ka pēhea rātou e hikina ai ngā pikitia, ā, tēra pea ka pīrangitia e rātou kia hurihia ā rātou hoahoa hei 'kōhao' kia kutia mai i te pūrerehua. Hei tauira, kia kitea ai ngā hoahoa e rua, tirohia te kōpaki Pūrerehua Tauira Hoahoa (Kua Hikina atu me te tapahi i te mātau o Maui) (kua whakamau ki te kōpaki mo ngā rauemi).

Wāhanga 4 – Tukuna te tauira Ahu-toru Pūrerehua mai i a Tinkercad

1. Ka mutu ngā mahi whakahoahoa ā ngā ākonga, me whakamau ki te rorohiko, ā, tangohia ngā kōpaki kia atawhaitia, kia tāngia ahutoru ai rānei. Kia mahi ai i tēnei, whāia ngā tohutohu kei raro iho:
 - a) Tipakongia te hoahoa e pirangi ana koe kia whakamau, tipakongia te "Tuku ā Waho" kei te taha matau o te whārangi. I a koe e tuku ana i te kōpaki, me tangohia hei .stl.



- b) Ka whakaurua tēnei kōpaki ki tō rorohiko.



2. Whakamāramahia atu ki ngā ākonga, mehemea ka tangohia te kōpaki hei .stl, ka taea te pānui i ngā tauira ahutoru e ngā pūmanawa rorohiko ahutoru, me ētahi atu pūmanawa hōtaka ahutoru hoki.

Te Whakamutunga

1. Kōrerohia mō ngā hōputu rerekē i whakamahia mō tēnei ngohe. Hei tauira, i hurihia ā rātou pikitia .jpg, .png rānei hei .syg. Waihoki rā, ko ētahi o ā rātou pikitia i tāngia ki te pepa. I te wā i whakaurua ēnei pikitia ki Tinkercad, i hurihia ngā kōpaki .svg hei tauira ahutoru, ā, i tangohia ēnei hei kōpaki .stl.
2. Whakamārama ki ngā ākonga, ko ētahi papatono e āhei ana te pānui i ētahi tūmomo kōpaki anake (Hei tauira, e kore e taea e Tinkercad te panui i ngā kōpaki .jpg, ā, koinā te take i hurihia ai). Mehemea e whakamau ana rātou ki ētahi ahuatanga māpura, me whakaaro rātou mō ngā papatono ka whakamahia ai kia huakina i ēnei kōpaki.
3. Tuku pātai ki ngā ākonga mō ngā āhutanga, ngā kaupapa rānei, i ākona e rātou i a rātou e waihanga ana i ngā pūrerehua.
4. Kōrerohia mō ngā āhuatanga pai, āhuatanga kino hoki, o te hanga pūrerehua mā te whakamahi i ngā rauemi tā ahutoru.
5. Kōrerohia mō ngā painga o te whakauru i ngā kaupapa Māori, mātauranga Māori hoki, i roto i ngā mahi hoahoa, hangarau hoki.

He ngohe torohanga : Wāhanga 5 – Tāngia te Pūrerehua

1. Mehemea he mīhini tā pikitia ahutoru tō te kura, pātai atu ki ngā ākonga mehemea e pīrangi ana rātou kia tāngia ā rātou hoahoa!
2. He rerekē ngā tohutohu mō ia mīhini. Hēoi, me pātaihia ki tētahi e mātau ana ki ēnei mīhini mō ngā tohutohu.
 - Pitopito kōrero: Ko te nuinga o ngā Whare Pukapuka e whakamahi ana i a 'MakerSpaces', mā tēnei e āhei ai koe te tāngia ahutoru ai ō whakahoahoatanga, ā, he iti hoki te utu. Hēoi anō, me tirohia e koe ki ngā wharepukapuka e rata ana ki a koe kia whakatau ai mēnā he mīhini tā ahutoru tā rātou.

Ngā Kupu Hou

Tauira Ahutoru	Ko ngā Tauira Ahutoru e whakaatu ai i ngā mata e toru o tētahi āhuahanga katoa o te ao, o ngā rauemi huatau hoki.
Ngā Pūmanawa Whakatauirā Ahutoru	Ka whakamahia ēnei hei waihanga i ngā tauira ahutoru.
Kaiwhakamahi otinga	Kōia nei te tangata e whakamahia ana i ngā taputapu, i ngā hua otinga rānei.
kōpaki.svg	Ko te kōpaki svg he momo kōpaki kauwhata e whakamahia ana e ngā hōtaka pēnei i a Illustrator.
kōpaki.stl	Ko te kōpaki stl he tauira Ahutoru e whakamahia ana i roto i ngā hōtaka pēnei me Tinkercad.

Ngā rauemi ma te kaiako

Ngā hononga tautoko	
Ko ngā mōhiohio whānui mō te hītori me te pūtakenga mai o ngā taonga pūoro o te Māori, ngā pitopito kōrero e hāngai ana ki te pūrerehua me tōna hītori hei taonga pūoro Māori.	<ul style="list-style-type: none"> • https://teara.govt.nz/en/maori-musical-instruments-taonga-puoro • http://www.tahaa.co.nz/taonga-puoro-mainmenu-30/purerehua-mainmenu-46.html
Kōrero whāiti mō ngā pūrerehua.	<ul style="list-style-type: none"> • http://chrisricketts-myjourneytoteaching.blogspot.com.au/2012/09/purerehua.html • https://www.shopnz.com/maori-purerehua-wind-instrument-xidp336560.html?nc=1
He tauira tēnei o tētahi ngā tauira pūrerehua i roto i ngā waiata.	<ul style="list-style-type: none"> • https://www.youtube.com/watch?v=zw2AiR6HXZA • https://www.youtube.com/watch?v=gBRYhAgDq7A
Ko ngā tauira Pūrerehua kua tāruatia hei tauira ahutoru:	<ul style="list-style-type: none"> • Ka tāpirihia ēnei ki tō mātou pae tukutuku.
He Tauira Pūrerehua .stl:	<p>Kei te kōpaki rauemi ngā mea katoa kei raro iho nei:</p> <ul style="list-style-type: none"> • He whakamāramatanga mō ngā ratonga tārua ahutoru, mō Markerspace hoki: • He mahere e mea ana kei hea ngā MakerSpaces https://nz-maker-map.herokuapp.com/ • Digital Inclusion Map – He mahere kōhi rauemi hangarau mō Aotearoa. • Ka taea e koe te rapu i ngā wāhi tārua ahutoru, ā, he rārangi whare pukapuka hoki e whakaatu ana kei hea ngā mihini tārua ahutoru. https://digitalinclusion.nz/ • Wellington National Library http://www.wcl.govt.nz/ • Auckland National Library https://natlib.govt.nz/visiting/auckland • Christchurch National Library https://natlib.govt.nz/visiting/christchurch • Palmerston North National Library https://natlib.govt.nz/visiting/palmerston-north • Whangarei Central Library http://www.whangarei-libraries.com/About-Us/Whangarei-Central-Library/Pages/default.aspx • Seven South Taranaki District Council Libraries https://www.southtaranaki.com/Live/LibraryPlus/News-and-events/News/3D-Printing-Introductory-Workshop/60621

Ngā rauemi ma te kaiako

Ngā hononga tautoko

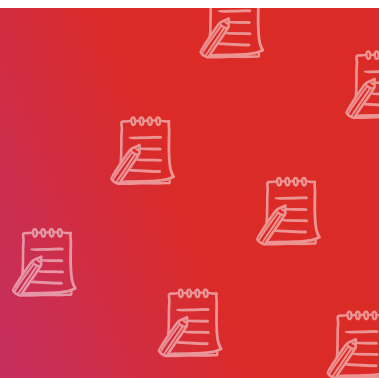
Ngā hononga ipurangi ā Tinkercad:

- Sign up for Tinkercad - Teachers
<https://accounts.autodesk.com/register?AuthKey=039f2674-5587-4f07-938d-4d732346eaff&ReturnUrl=%2Fauthorize%3Fviewmode%3Diframe%26lang%3Den-US%26realm%3D%252A.tinkercad.com%26ctx%3Dtinkercad%26authype%3Dsocialoradsk%26socialproviderpref%3DFB%2CGO%2CYH%2CWL%26AuthKey%3D039f2674-5587-4f07-938d-4d732346eaff&authype=socialoradsk&ctx=tinkercad&lang=en-US&realm=%2A.tinkercad.com&socialproviderpref=FB%2CGO%2CYH%2CWL&viewmode=iframe>
- Sign up for Tinkercad - Students
<https://accounts.autodesk.com/Logon#username>
- Sign up instructions for students who are underage (>13)
<https://tinkercad.zendesk.com/hc/en-us/articles/226566228-I-m-a-teacher-how-do-I-get-my-students-signed-up-and-approved->
- Tinkercad Tutorials
<https://www.tinkercad.com/learn/>

He e whārangi huri kōpaki (whakahuri kōnae):

- Convertio
<https://convertio.co/>

Ētahi atu rauemi mā te kaiako



Rauemi	Whakamārama
Disney: Moana Tuhuratanga mā te Tohu Waehere https://partners.disney.com/hour-of-code/wayfinding-with-code	<p>I hangāia e Disney i tētahi akoranga-hiko e whakaatanga ana te kiriata 'Moana'. He momo kēmu akoranga tēnei e whakaako ana i ngā āhuatanga o ngā mahi waehere me ngā mahi pūmanawa rorohiko. He hononga tō te kēmu nei ki te kēmu 'Hour of Code', ā, kua tuhia katoatia ki ngā reo e 180, ki roto hoki i ngā reo nō te moana-nui-ā-kiwa pēra i a Hāmoa.</p>
Moana: He Haora Waehere http://partners.disney.com/hour-of-code	<p>Kua hangaia e Disney ētahi rauemi mō Hour of Code e rite ana ki te kiriata 'Moana', ā, ka taea te whakamahi i tēnei rauemi i runga i ngā rorohiko katoa, i ngā paparorohiko, rorohiko pōnahoko. Ka timatahia tēnei kēmu ki ētahi ngohe e 60 mīniti te roa, ā, mā tēnei e tirohia ngā mahi whakapaukaha ā ngā tangata nō ngā hāpori rerekē.</p>
Tauaro mahi mō te Whakaaro Rorohiko http://technology.tki.org.nz/Technology-in-the-NZC/CT-Progress-outcomes-exemplars-and-snapshots	<p>Kua whakatinanahia e Te Tāhuhu o te Mātauranga i ētahi tauira o ngā mahi hangarau, ngā whakaaro hangarau, me te waihanga/whakapakari hoki i ngā hua hangarau. Ka taea te kite i ngā rangahautanga, i ngā tauira rānei, ki runga i te whārangi ipurangi kei runga.</p>
Tauaro mahi mō te Whakaaro Rorohiko http://technology.tki.org.nz/Technologyin-the-NZC/DDDO-Progress-outcomesexemplars-and-snapshots	
Scavenger Hunt http://elearning.tki.org.nz/Teaching/Future-focused-learning/Makerspaces	<p>Mā ēnei tauira marautanga e kitea ai ngā huarahi rerekē e taea ai te whakamau ki ngā mātauranga hangarau. Ka whakamāramahia ngā ture o tēnei ngohe ki ngā ākonga, ā, ka mahi takirua rātou kia waihanga i tētahi whakangangahu hamu (Scavenger Hunt).</p> <p>Me kōwhiri e rātou kia toru ngā wāhi kia hunāia ai tētahi waehere QR, me timata ki tā rātou akomanga. Me mātaihia te waehere QR kia kitea e te kaikimi i ētahi tiwhiri kia rapu i te waehere QR tuarua. Mā te waehere whakamutunga e hono ki tētahi pikitia ipurangi, utu kore, ā, mā konei e mōhio ai te kaikimi kua mutu ngā mahi whakangangahu. Hei te mutunga, ka whai ngā ākonga i ngā whakangangahu hamu a tētahi atu.</p>

Rauemi	Whakamāramatanga
Makerspaces http://elearning.tki.org.nz/Teaching/Future-focused-learning/Makerspaces	<p>Mā Markerspaces e whakaako i ngā rangatahi me pēhea te hanga hangarau hou, kia ako hoki me pēhea te hanga kūrae hou. He maha ngā huarahi rerekē ā Markerspaces hei whakaako i ēnei momo mahi, ko tētahi tino painga ka taea e rātou te whakatinana i ngā ngohe mā te whai whakaaro ki ngā kaupapa pūtaiao, hangarau, pangarau, mahi toi hoki kia rapu whakahoki ki ngā raruraru, kia hanga hoki i ētahi taputapu. Mā te taurahere ipurangi kei raro iho e whakahono i a koe ki ngā tohutohu hei hanga whārangi Markerspace ki te kura.</p>
Enabling e-Learning http://elearning.tki.org.nz/	<p>He whārangi ipurangi a 'Enabling E-learning' nā Te Tāhuhu o te Mātauranga hei whakaāhei i ngā akoranga-ā-ipurangi. Ki konei e taea ai ngā kaiako te whakamahi i ngā rauemi mō ngā waehe QR, mō ngā taputapu (pūkenga) hāngarau hoki.</p>
He Waehe QR http://elearning.tki.org.nz/Teaching/Future-focused-learning/QR-codes#jstabcontainer-1-tab-2	
Code.org He Haora Waehe https://code.org/learn	<p>Nā Code.org' i waihanganga i te kaupapa e kiia nei ko te 'Hour of Code', ko te aronga o tēnei he atawhai i ngā akoranga-ā-hiko e pā ana ki ngā mahi waehe mō ngā tamariki ahakoa he aha te pakeke. Ko te hanganga o ēnei akoranga-ā-hiko he whakamahi i ngā atāmira, me kii, e whakamahia ai ngā tūāhangata rongonui e mōhio whānuitia ai e ngā tamariki katoa o te ao, pēnei tonu i a Minecraft, Star Wars, Moana and Frozen. Ko te nuinga o ēnei akoranga-a-hiko kua tuhia ki ngā reo maha, ko ētahi kua tuhia hoki ki te reo Māori. Ko tētahi hua anō ka puta i ēnei akoranga ko te whakaako i ngā momo tikanga-ā-iwi (pēnei tonu i te Gamefroot's Mihi Maker).</p>
Unplugged https://code.org/curriculum/unplugged	<p>Kua kohikohia e Code.org i ētahi akoranga hei whakaako i ngā āhuatanga katoa o te pūtaiao rorohiko, ā, ka tutuki ai tēnei inā he rorohiko tā te ākonga, kāore rānei. Ka taea te whakahaere i ēnei akoranga hei akoranga motuhake, hei kīnaki rānei i tētahi akoranga pūtaiao rorohiko.</p>
Ngā Kōhi https://studio.code.org/courses?view=teacher	<p>E whakaako ana e Code.org i ngā Akoranga mō ngā ākonga kei te reanga K-12, ā, mō ngā kaiako hoki e rapu ana i ngā akoranga whakangungu. Ka taea e koe te rehita mō ēnei akoranga, ā, kāore hoki he utu. Ko tētahi atu painga, māu anō e whiriwhiri i te roanga, i te rāpopoto rānei, o te wā hei wā ka oti ai koe i ēnei huarahi ako katoa. Kei reira hoki he roopu kaiako e kaha ana ki te whakawhitiwhiti kōrero, whakawhitiwhiti whakaaro hoki, mō ā rātou hīkoinga aha atu rānei.</p>
Mā ngā ākonga: https://studio.code.org/projects/public	<p>Kei te wahanga 'kaupapa o te whārangi ipurangi a Code.org e ahei ai ngā ākonga kia waihanganga kēmu kia tākarohia e ētahi atu, ā, kia tākaro rānei i ngā kēmu kua waihangatia e ngā ākonga huri noa i te ao.</p>
Vyond https://www.vyond.com/	<p>He taupānga 'utukore' Vyond kia taea ai ngā ākonga te huri i ā rātou pakiwaitara, pitopito mātauranga hoki, hei pakiwaituhi. Hei mōhiotanga anō, kua aukatia ētahi āheinga ki te taupānga utukore.</p>

Rauemi	Whakamāramatanga
GameFroot Te Hanga Mihi http://make.gamefroot.com/#/activity/mihi-maker	Kua waihangatia e Gamefroot i ētahi akoranga-ā-hiko e whakaako ana i ngā tāonga e tino hāpai ana i ngā mahi waehera, hēoi, ko tētahi aronga anō tā rātou he whakaako ki te minenga me pēhea e whakatakoto ai i te pepehā o te tangata. Ka kitea whānuitia te reo Māori ki tēnei o ngā akoranga-a-hiko.
BBC Bitesize Computing https://www.bbc.com/education/subjects/z34k7ty	Kei tēnei whārangi ipurangi i ētahi pitopito kōrero, paku kiriata hoki, e hāngai ana ki ngā āhuetanga o ngā rorohiko i tēnei ao, ngā tahurua me te māwe raraunga, ngā taputapu rorohiko, tuhononga, pūmanawa rorohiko, putu raraunga me te mahi papatono.
ScratchJr Taupānga https://itunes.apple.com/au/app/scratchjr/id895485086?mt=8	He pūmanawa tautono a ScratchJr ka taea te tiki ake i ngā taputapu hiko ā Apple me ngā tatapu hiko ā Android hoki. He maha ngā akoranga kua whakamau ki tēnei pūmanawa tautono e whakaāhei ana i ngā tamariki kia hanga i ā rātou ake pakiwaitara, kēmu hoki. Mā te whakahono i ngā pouaka taupānga, ka taea e ngā ākonga te tohutohua ngā kiripuaki kia nekeneke, kia peke, kia kanikani, kia waiata hoki. Hei tāpiri ki tēnei, ka ako e rātou me pēhea te rapu whakautu ki ngā raruraru, kia hanga kūrae, kia whakaputa hoki i ā rātou pūkenga toi ki roto i ngā mahi hangarau. Ka whakamahi ngā ākonga i ngā pūkenga pangarau, pūkenga reo hoki, kia hangāia i tētahi horopaki pai hei akiaki, hei tautoko rānei, i te whanaketanga o ngā mahi pangarau, mātau-ā-reo hoki, mō ngā kōhungahunga. Mēna kāre e taea e ngā ākonga te whakamahi i ngā momo rorohiko rerekē, ka taea tonu te whakamahi i ngā rauemi utukore kei te whārangi ipurangi a Scratch (tirohia te taurahono ipurangi kei raro iho).
Ngā Papa Akoranga https://www.scratchjr.org/teach/activities	Kei te whārangi ipurangi ā ScratchJr ētahi ngohe hei whakaako i ngā ākonga me pēhea te whakamahi i a ScratchJr.
Ngā Rauemi Kaiako https://www.scratchjr.org/teach/curricula/animated-genres	Mā ScratchJr e hoatu i ngā akoranga rerekē mō te pūtaiao rorohiko ki ngā tamariki, ēngari ka taea tonu e rātou te whakatinana i ngā pūkenga kia whakaaro hohonu ai, kia rapu whakahoki rānei ki ngā raru taumaha. Ka tirohia ngā akoranga ki ngā huarahi hei hanga pūmanawa tautono, hei whakaputa whakaaro i roto i ngā mahi hangarau, me ngā hoahoa e whaiwhakaaro ana ki ngā kaiwhakamahi.
Te Paetukutuku https://scratch.mit.edu/	Kei te whārangi ipurangi ā Scratch ētahi hōtaka kua whakaritea kētia, mā ēnei hōtaka e taea ai ngā ākonga te auahatia i ngā pakiwaitara matihiko, ngā kemu, ngā pakiwaituhi hoki. Ka taea hoki ngā ākonga te pupuri, te atawhai rānei i ēnei hanganga kia kitea ai te minenga.
Ngā Akoako Ataata https://scratch.mit.edu/help/videos/	Kei te whārangi ipurangi o Scratch tētahi rārangi ataata e mau ana i ngā papa akoranga ataata e whakaatu ana i ngā tini pūkenga kia mārama mai ai koe me pēhea te whakamahi i a Scratch.
Ngā Akoako kua whakaritea e ngā Kaimahi https://scratch.mit.edu/studios/1817151/	He kiriata i hangaia e ngā kaituitui i tēnei kaupapa taupānga hei tiroiro mā te iwi. Kua hangaia mo ngā kaiwhakamahi.