

Tau 8 Ngā Rauemi mā te Kaiako



Māpura Matihiko
Digital Ignition

Inā ka āhei au... ka whakamahia

He Whakamārama

I roto i tēnei ngohe, ka tirohia ngā ākonga ki ētahi pūkenga hanga rongoā matihiko. Me tirohia ngā ākonga ka pēhea tā rātou taonga hoko e whakatikatika i ngā raru o te ao, ā, ka pēhea hoki ēnei āhuatanga e tutuki. Ka āta rangahaua ngā ākonga i ngā painga o te mahi tahi i a rātou e titiro ana ki ētahi pūkenga, me ētahi tūranga e hiahiatia ana kia hanga mai i ngā rongoā matihiko.

Te Tiaroaro Marau

Te Marautanga Hangarau o Aotearoa

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 Tupuranga Tangata me te Rorohiko

Whakatupuranga 4

- Ka whakamārama i ngā mātāpono waiwai o te whakahaere tūmahi, ka whai tukanga auau ki te whakatau mahi hoahoa me ngā momo taputapu hangarau matihiko ki te whakahiato; ki te pupuri; ki te whakamātau; ki te arotake kōrero matihiko hoki e tutuki ai tōna pūtake.

Te Whakaharatau Hangarau:

Taumata 4

Ka whakamahia he mahere, ka whakamātauria kia kitea:

- Te whanaketanga;
- Te tōtika o te mahi.
- Ka whakahiatotia ngā pūkenga ā-ringa, ā-hinengaro, taha auaha anō hoki.
- Ka whakamātauria te hua i runga anō i te āhua o te hiahia me te urupare a ngā kiritaki.
- Ka mārama ki te whakahaere o ngā pūnaha hangarau.

Te Marautanga Hangarau o Aotearoa

Ngā Ahuatanga o te Hangarau:

Taumata 2

Ka whakawhitiwhiti kōrero mō te hononga o te tangata me te taiao, arā:

- Ka whakamārama i ngā uara e whakamahia ana e te tangata;
- Ka whakamārama i ngā tikanga o te whakamahi rawa.

Ngā Ahuatanga o te Hangarau:

Taumata 4

Ka āta whakaaro ki ngā uara me ngā whakapono kua whakamahia, kia mārama ai ngā āhuatanga o te otinga kua puta. Me āta whakaaro ki:

- Ngā mātāpono hangarau;
- Te hāngaitanga ki te tangata;
- Te pāpātanga ki te taiao;
- Te pāngā ki ngā wā e heke mai nei.

Ngā Ahuatanga o te Hangarau:

Taumata 6

Ka tirohia ngā uara me ngā whakapono o iwi kē, ka:

- Whakahāngai ki te otinga;
- Mōhio ki ngā whakaharatau;
- Whakarite ki ngā hangarau a tangata kē;
- Mārama ki ngā ārai me ngā huarahi wātea ka taea.

Ka tūhura i ngā āhuatanga matua o te tangata e pā ana ki:

- Ngā pūnaha, ngā tukanga rānei;
- Te hiahia o ngā kiritaki;
- Ngā rautaki whakatairanga ki te kiritaki.

Te Marau Reo Māori

Te Reo Māori a-Ta

Taumata 4

- Ka whakamahi i ētahi rautaki rangahau mō te huhua o ngā take.
- Ka tukatuka, ka whakahāngai i ngā mōhiotio.
- Ka whakarōpū i ngā whakaaro e orite ana, e hāngai ana ki roto i tētahi mahere tuhituhi, kia kitea ai te noho raupapa mai o te tuhinga.
- Ka rāwekeweke i ngā āhuatanga reo me te hanganga o te tuhinga kia rangona ai tōna ake reo.

Te Marau Tikanga-a-Iwi

Ngā Mahinga Ohaoaha

Taumata 4

- Ka whakamārama i ngā take me ngā huarahi e rereke ai te titiro me te whakamahi a te tangata i te rawa me ngā putanga iho o ēnei ahuatanga.
- Ka whakamārama i ngā take me ngā huarahi e whai ai te takitahi me te rōpū kia tiakina ngā motika o te kaiwhakapeto.

Ngā Taipitopito Awheawhe

Ngā Putanga Ako

Ka tāea e ngā ākonga te:

- Tautohu i āna hiahia, me te mōhio me pēhea e hoatu ai ki te hāpori.
- Mahi tahi ki ōna hoa mahi ki te hanga mai he otinga matihiko mō ngā raruraru.
- Whakaaro ki ngā otinga matihiko e hāngai ana ki te kaimahi, mai i ngā whēako o te kaimahi pūmanawa tautono me te kaimahi pūmanawa rorohiko
- Wetewete i ngā hangarau matihiko me te mōhio pū ki ngā pūkenga tika ki te hanga mehanga.
- Mōhio ki te nui o ngā pūkenga e tāea ai e ia te hanga mehanga matihiko.
- Tautuhi e pēhea ai ngā pūkenga matihiko hangarau e awahina ai i a ia ki te hanga mahi tūturu nei kia whakatikatika i ngā raruraru o te ao.

Ngā Taputapu

- [] He pepa Tūranga Mahi
- [] Papa pikitia me ngā pepa piripiri

Te roanga

- 3 hāora
- *Pito Kōrero: E tāea ana hoki tēnei mahi ki roto i ngā akoranga huhua.

Ngā whakaritenga

- Tāngia kotahi te pepa mahi mā ia tamaiti
- Whakaritea he urutanga ki ngā rorohiko he ipurangi me te kōhao hiko kei roto.
- Me uru mārika ki te hangarau ororongo-tiroiro kia purei ai i ngā ataata :
<https://www.youtube.com/watch?v=hLtkC-G5dY>

Māhere Ako

He whakatakinga

1. Whakaatu ki ngā ākonga 'te papatākoro pōhewahewa o ngā hanganga hirahira' ki tā Tīpene Honetana i kī ai. Pūreitā te ataata ka pātai ai ki ngā ākonga kia āta tirohia ki ngā pūkenga e whakamahia ana e te kaihangā.
<https://www.youtube.com/watch?v=hLltkC-G5dY>
2. Tomokia tētehi matapaki karāehe e hāngai ana ki ngā whakaaro matua i hua ake ki roto i te ataata, ā, rangahaua ngā whakaaro rorohiko e tika ana i a koe e hanga ana i te:
 - Whakatikatika (whakamātau me te tākaro)
 - Hanganga (maheretanga me te waihangā)
 - Rae tōtā (te tōaitanga)
 - Mahi ngātahi (mahi ā rūpu)
 - Whakapaipai (rapunga me te whakatika raruraru)
3. Whakahirahiritia ngā hangarau o te ataata me tāna whakapiki ake i ngā mahitanga o te tangata, me tāna tīni hoki i te pāpori me te taiao.
4. Kōrero tikahia te āhuatanga ki te huhua o ngā ara mātauranga o te hangarau, me ngā huarahi e tāea ai te whakawhānui i ngā āheinga. Hei tauira, tēnei hangarau kua roa e whanake ana i roto i ngā titonga o kaupapa nunui. Ko tā te kaitito hou he hari i ngā pūkenga me ngā whakairo o mua, ā ka hanga mai he mea hou.

Te Whakahaere Māhere Ako: Wāhanga 1 – He aha te raru?

1. Pātaihia ki te ākonga kia whakaaro ki tētehi raruraru nui ki a ia. Ki te whakawhāiti i tēnei, me hanga e te kaiako he kaupapa mā ngā ākonga. Ko ngā kaupapa pea ko te: awhina whānau, ko te tiaki whenua rānei.
2. Whakamārama atu ki ngā ākonga ko tā rātou he hanga i tētehi matihiko otinga ki te whakapaipai i te raruraru. He ipurangi, he kēmū, he taupānga rānei tēnei matihiko otinga. E tāea ana hoki e te ākonga te whakauru i ngā paerongo ki te taiao kia hoatu ai i ngā pitopito kōrero mō ā rātou taupānga/ipurangi/kēmū. Hei tauira, mena e hiahia ana te ākonga ki te hanga i tētehi taupānga haratau, kei te pirangi hoki ki te hanga i tētehi hū he paerongo whakapā kei roto ki te kaute i ngā hikoinga.
3. Whakamōhio atu ngā tukanga mahere, ā, whakamāramatia te painga o te tukanga ki te āwhina i te kaimahi ki te hanga taputapu papai e whakatika ai i ngā raruraru, e tutuki hoki i ngā hiahia o te kai mahi.
 - a) **Whakatairanga:** Te mōhio ki ngā raruraru mai i ngā tirohanga huhua, me te mōhio hoki ki te hiahia o ngā tāngata e rarururutia ana.
 - b) **Whakaaroaro:** Rapua ngā whakaaro katoa e tāea ana, ā, titiro mēnā ka āhei te whakatika i te raruraru.
 - c) **Mahere:** Whirihia te whakaaro papai, ā, titiro mēnā he papai ngā whakanikoniko o te whakaaro ki te kaimahi.
 - d) **Hanganga haratau:** Hāngai mai he mahere mahi o te otinga.
 - e) **Hakamātau:** Whakamātau i te hanganga haratau ki ngā kaimahi, ā, tirohia te whakamahinga, me te rapu kōrero whakahoki hei whakapai ake i te hanganga haratau.
 - f) **Arotakenga:** Aromātaitia te otinga mō te kaimahi kia kite ai mehemea ka hāngai ngā hiahia i matapaetia, mehemea rānei he akoranga kē atu me ako.

4. Wāwāhia ngā ākonga ki ngā rōpū e whā, nui ake rānei.
5. Pātaihia ki ngā rōpū kia whakaarohia tētehi raruraru e pirangi ai rātou te hanga mai i tētehi matihiko otinga. Hei tauira, ka hiahia pea rātou ki te hoatu mātārere ki te kura hei whakatikatika i te rahi o ngā pepa e moumoutia ana.
6. I roto i ngā mahi rangahau, tīmata ki te ara tuatahi o te mahere tukanga. pātai ki ngā ākonga kia rangahaua te raruraru o te rōpū i tō rātou kotahi. Me whakaaro e rātou:
 - He aha te raruraru?
 - Kei hea te pūtake o te raruraru?
 - ka toro te raruraru ki a wai? E hanga ana tātou i te mahere otinga mā wai? (te kaimahi)
 - He aha ngā hiahia o te kaimahi e hāngai ana ki te raruraru ki te otinga rānei?
 - He aha ngā āraitanga ki te kaimahi e whakamahi ana i ngā otinga? (hei tauira. Te wā, te moni, te mōhio ki te hangarau?)
 - He aha ngā painga ngā hē rānei o ngā otinga (ngā take e rite ana rānei) ki ngā raruraru
 - He aha ētehi atu mea kua hangaia mō tēnei momo kaimahi? i pēhea nei rātou e kite i ngā hiahia pai mō ngā kaimahi?
7. Ko ngā kaupapa rerekē hoki me whakaaro, pēnei i te rangahau i te ngako o te raruraru, te uiui i te tangata e pāngia ana ki te raruraru, me te rangahau hoki i ētehi atu huarahi kua mahia mai e ngā tāngata huri noa i te ao, mō te whakatika i ēnei raruraru.
8. Ma tēnei tukanga me kōhi whakaaro whakaohoho kia whakaritea tētahi mahere hanga, mahere whakahoahoa i tōna rongoā.

Te Whakahaere Māhere Ako: Wāhanga 2 - He aha te rongoā?

1. Me mōhio pū ngā ākonga ko tā rātou matihiko otinga he pae tukutuku, he kēmū, he pūmanawa tautono rānei. E tāea ana hoki e te ākonga te whakauru i ngā paerongo whakapā ki ngā mahi e hāngai ana ki te pae tukutuku, te kēmū me te pūmanawa tautono. Hei tauira, mehemea kei te pīrangi rātou ki te whakarite pūmanawa tautono, ka pīrangi pea rātou ki te hanga i tētahi hū me ngā paerongo whakapā kia āhei te kaute i ngā hikoinga.
2. Whakamōhio atu ki ngā ākonga me whakaoti ināiane i rātou te Taumata 2 o ngā tukanga mahere. He 10 mīniti ki ngā rōpū ki te ōhiamanomano i ngā whakaaro katoa kei a rātou e hāngai ana ki te raruraru. Me huatau e ngā ākonga ki ētahi 50 whakaaro nui atu.
3. Me mōhio hoki rātou ko te ōhiamanomano he rautaki ki te whakatō whakaaro, kaua ki te whakawā me te whakaparahako i te whakaaro - mā te rahi o ngā whakaaro e kite ai koe i te otinga pai. I tēnei wā o te mahi, me kaua ngā ākonga e whakawā i a rātou ake whakaaro, i ngā whakaaro a ākonga kē atu rānei, me nui noa atu te whakaaro, me whai i te 'ae, hei apiti atu' hei nuka whakatō whakaaro.
4. Me tuhi ngā ākonga i o rātou whakaaro ki runga i ngā pepa piripiri, ā, ka tāpiritia ki ngā pepa nunui, ki runga rānei i te pakitara o te akomanga. Whakamōhio atu ko tēnei rautaki he rautaki e tāea ai ā rātou whakaaro te nekeneke, me te whakarite/whakatōpū pai hoki i ngā whakaaro.
5. Pito kōrero: e maha ngā huarahi ōhiamanomano. Hei tauira, ka tukuna kia whakaaro puku ngā ākonga mō te 3 mīniti, ā, ka tuhituhi ngā whakaaro katoa ka toko ake i mua i te whakakotahinga o ngā rōpū ki te whanake i ngā whakaaro i puta.

6. Hoatu he wā ki ngā ākonga kia whakawhiti kōrero mō te whakaaro e hiahia ana ki te whakawhānui. He pai pea kia whakaemia e rātou ngā whakaaro ki ngā horopaki ōrite, ā, ka pōtī-ā-wahangū nei i ngā whakaaro papai e toru (ia ākonga ka tuhi i o rātou whakaaro ake papai e toru, katahi ka hāngai ngā pōtī ki ngā whakaaro rongonui, me te mōhio ki te whakaputa whakaaro). Ko te whakaaro mutunga me matihiko otinga.
7. Me whai whakaaro ngā ākonga:
 - Ka pēhea e whakatika ai te raruraru?
 - Mā wai e whakamahi i tēnei whakataunga? He whakataunga/otinga tika tēnei mō te kaiwhakamahi?
 - Mā wai e whai pānga ki tēnei otinga? Ka whakaaweawe kinotia, mēnā ae, me pēhea koe e whakaiti ai i te raru?
 - Me pēhea e whakahihiko i te tangata kia whai i tēnei otinga (ngā hiahia, mahere pai, hangareka)?
8. Tukuna he wā kia maheretia o rātou waihanga (Taumata toru o te mahere tukanga), me whakamārama e rātou te waihanga, whakamāramatia ngā wāhanga o te waihanga e uru ai ki te kaimahi ātanga, kōrerotia ngā āhuatanga rerekē me te painga ki te kaimahi otinga. Me whakamārama hoki te ākonga i te mahi o tā rātou waihanga, me te āheinga ki te mahi.

I a rātou e mahere ana i a rātou waihanga, me whai whakaaro:

- Whāinga: He aha te whāinga mō te kaimahi i a ia ka whakamahi i te taupānga/kēmū/pae tukutuku? He whai kia ako i tētahi mea, ki te whakangāhau rānei, ki te āwhina i tētahi rānei?
- Wāhang: He aha ngā wāhanga rerekē o te taupānga/kēmū/pae tukutuku? E hāngai ana ēnei wāhanga ki te kaimahi, ā, ka whai i te whāinga matua?
- Pūrere: He aha ngā hiahia kia tika te whakahāeretanga o te taupānga/kēmū/pae tukutuku? He pāerongo e hiahiatia ana?
- Tohutohu: Me whai tohutohu te taupānga/kēmū/pae tukutuku? Me pēhea te kaimahi e mōhio ai ki te whakamahi?
- Whēako: He aha te tirohanga (kaimahi ātanga) me te rongo (kaimahi whēako) o te taupānga/kēmū/pae tukutuku? Me pēhea e maheretia ai te kaimahi ātanga kia hāngai ki ngā hiahia o te kaimahi? He aha ngā momo e hāngai tika ai ki tētahi kaimahi whēako papai??
- Wero: He ngāwari, he uaua rānei ki te whakamahi?
- Pito kōrero: me mahara ngā ākonga he aha te kaimahi atanga me te kaimahi whēako:
 - Ko te kaimahi ātanga he wāhanga o te pūrere matihiko e mahi ana me te kaimahi (pēnei i te whakaaturanga, ngā pātene, te oro me te kāmera).
 - Ko te kaimahi whēako te kare-ā-roto o te kaimahi i a ia ake whakamahi matihiko hangarau.
- Pito kōrero: e tāea ana e koe te mahere tepenga e pīrangi ana kia whakaarotia e ngā ākonga i a rātou e hanga ana i te mahere. Hei tauira, mēnā rānei kua hangaia kētia te hangarau e hiahia ana rātou. Ka whakaaro kē ki ngā utu, tepenga, me te āheinga o ngā otinga ki roto i te ao tūturu nei.

Te Whakahaere Māhere Ako: Wāhanga 1 - Ko wai ngā kaimahi?

1. Ka mutu ana te hanganga mai o ngā waihanga o te rōpū, me pātai ki ia tangata kia tuhia he rārangi kupu o ngā kawenga me titirohia, ā, tirohia ngā kawenga katoa me te haepapa o te kawenga rā ki te hanganga haratau o te waihanga.
2. Hoatu ki ngā ākonga he pitopito kōrero mātārere kia whakatau ai rātou i ngā pūkenga tika me ngā tangata tika ki te hanga mai i te hanganga. Hēoi, akiaki i ngā ākonga kia whānui kē atu ngā mōhiotanga, rangahaua ngā pūkenga ngā mahi rānei e tika ana ēngari kāore e whakaurua ana ki te pepa mahi. Hei tauira, mehemea kei te pīrangi ngā ākonga ki te hanga hū mō te kaute hīkoinga, me whiwhi hoki e rātou he hūmekā.

He ngohe torohanga: - Te whakatairanga i te rongoā

1. Me tuari e ngā ākonga a rātou titonga ki te toenga o te karaehe i roto i ngā mahi whakaari ā-rōpū. I te wā e whakahoahoa atu ana i te titonga me whakamōhio tika i ngā raruraru tuatahi, i te titonga me tana āheinga ki te whakatika i te raruraru, me ngā whakaaro hoki i te wā i tuhia anō ko te kaimahi kei roto i ngā whakaaro. E tāea ana e ngā kaiako te whakahaere i te tūranga o te 'whare mako' me te pātai i ngā pātai mō te mahere.

Te Whakamutunga

1. I te matapaki karaehe, tuku i ngā ākonga kia whakaaroaro ki ngā whēako o te whakamutu i te Taumata 3 me te 6 o te tukanga mahere.
2. Pātai ki ngā ākonga kia tuari i ētehi whakaaro hirahira i kite ai rātou nō rātou e hanga ana i ngā hanganga.
3. Pātai ki ngā ākonga kia tuari ko tēhea o ngā mahi me whiwhi rātou, i a rātou ka hoko 'haia i tētahi rōpū' ki te hanga haratau i tā rātou hanganga.

Ngā Kupu Hou

Kaimahi	Ko te 'kaimahi' te tangata ka whakamahi noa i tētahi momo taputapu
Kaimahi whēako	Te rongo o te tangata i a ia ake whakamahi i te matihiko hangarau
Kaimahi atanga	Ko te wāhanga o te pūrere matihiko hei pānga mā te kaimahi (pēnei i ngā pātene, te oro me te kāmera)

Ngā rauemi mā te kaiako

Ngā hononga tautoko

Te papatākoro pōhewahewa o ngā hanganga hirahira' ki tā Tīpene Honetana i kī ai	<ul style="list-style-type: none">• https://www.youtube.com/watch?v=hLtkC-G5dY
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He pepa whakamārama Tūranga Mahi

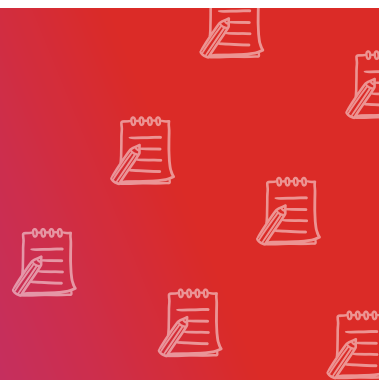
Te Tūranga Mahi	Whakamārama
Kaiwhakatauirā whakanikoniko	Ko te haepapa mō ngā pikitia ka whakamahia ki roto i te mehanga matihiko. Ko tāna he titiro ki te whakamahinga.
Kai hanga i te nekehanga	Ko tāna he hanga i te nekehanga a te pikitia. I ētahi wā he kaiwhakatauirā whakanikoniko anō hoki. Ko tā rātou he whakaaro hoki ki ngā mehanga matihiko.
Kaiwhakatauirā oro	Ko tāna he whakarite i te oro e rongo mai nā te kaimahi. I te nuinga o te wā e rua ngā momo oro ka whakahaerehia. Ko te oro-ō-muri me ngā orotaunaki.
Kaimahi wheako (UX) whakanikoniko	Ko tāna he āta titiro ki te mutunga atu o te mahi. Ko ngā pātai, ko wai te kaimahi? Kei te whakamahi i te aha? Āhea rātou whakamahi ai? Kihea rātou whakamahi ai? He pēhea hoki tā rātou whakamahi? Ka whiua ngā pātai kia waihanga mai i tētahi whēako e hāngai ana ki ngā hiahia me ngā wawata o ngā kai mahi.
Kaimahi ātanga (UI) whakanikoniko	Ko tāna he whakarite kia tika ngā whakahaerenga o te kai mahi, ā kia hāngai hoki āna mahi ki te mutunga atu o tā te kaimahi whēako i whakatau/ hiahia ai.
Kaimahi rangahau	Ko tāna he mōhio ki ngā hiahia, kare-ā-roto me ngā wawata o ngā kaimahi i roto i te titiro ki o rātou oranga me te tuku pātai. Ka hoatu i ēnei kōrero ki te UX kia āhei ia te whakarite i te kaimahi whēako.
Kaituhituhi rārangi take	Ahako te kupu me whakawhiwhi ki te otinga matihiko, pēnei hoki i ngā tohutohu, ka tuhia ēnei e te kaituhi kōrero. Kei a rātou te haepapa ki te mōhio me pēhea e hono ai ki te kaimahi i roto i ngā tuhinga me te hoatu kōrero tika hei whakamahinga tikatanga mā rātou.



Kaitohutohu ahurea	Kei te āhua o ngā hiahia o te titonga, ko tā te kaitohutohu ahurea he titiro mēnā ngā pūmoto o te matihiko otinga e haere tahi ana me te tikanga.
Kai whakahaere hinonga	Ko tāna he whakarite rautaki mō te mahere me te whakahaeretanga o te matihiko otinga. Waihoki ko tāna he whakahāere i te whakawhitinga kōrero me te hunga e mahi tahi ana i roto i te hinonga, kia kua rātou e takaroa i roto i ngā mahi ēngari kia mutu wawe.
Kaitohutohu marau ako	Ko tā te kaitohutohu marau ako he mōhio ka pēhea e ako ai te tangata. Ko tāna he titiro mēnā he tika te matihiko otinga i roto i te āheinga o te kaimahi ki te ako, ki te hanga he rārangi take tika.
Kairorohiko	Ko tāna he hanga, he tuhi me te whakamātau i ngā hōtaka rorohiko. Ko te haepapa ki a rātou he tuhituhi i ngā tohu muna e pai ai te haere a te matihiko hangarau.

Ēhara tēnei i te rārangi kōrero o ngā mahi katoa. E ai ki tā te hanganga, me rangahau pea e koe ētehi atu momo mahi. Hei tauira, mēnā koe i hanga hū ki te kaute i ngā hikoinga a te kaimahi, me whai hūmekā hoki koe.

Ētahi rauemi mā te Kaiako



Rauemi	Whakamārama
<p>Pōkapū matihiko hangarau:</p> <p>Whakaarotanga anō he kaihangā rautaki ako</p> <p>https://www.digitaltechnologieshub.edu.au/teachers/lesson-ideas/think-like-an-inventor/design-thinking-process---ideation</p>	<p>Ko te whāinga o tēnei mahi ake he mārama i te mahinga a te mahere tukanga me te hanga i ētahi whakaaro kē atu e hāngai ana ki te mate mōmona o te tamariki. Ka whakamahi tātou i ētahi mahere whakahihiko whakaaro me te whakamātau ko tēhea te whakahaeretanga papai mō te hanga whakaaro.</p>
<p>ngā rautaki whakaako kēmū papai</p> <p>https://www.digitaltechnologieshub.edu.au/teachers/lesson-ideas/think-like-an-inventor/what-makes-a-good-game</p>	<p>I roto i tēnei akoranga ka whakahaerehia e te ākonga he mahere tukanga ki te hanga kēmū. Ka whakaarotia te minenga, ā ka whakamahi kupu me ngā hoahoa ki te whakatō i a rātou mahere. Ka hanganga haratau i a rātou kēmū pēnei i tā te kaihangā kēmū e mahi ai.</p>
<p>Māhere whakaaroaro – mahinga rautaki ako</p> <p>https://www.digitaltechnologieshub.edu.au/teachers/lesson-ideas/think-like-an-inventor/design-thinking-process---empathy</p>	<p>Ko te whāinga o tēnei akoranga he mārama i te whakahaerenga o te tukanga whakaaroaro me te mōhio ki ngā kaimahi otinga ki te hanga i tētahi matihiko otinga hei whakaheke i te nui o te parapara ki roto i te wāhi kura.</p>
<p>Hāngaia mai he kēmū pekanga</p> <p>https://www.digitaltechnologieshub.edu.au/teachers/lesson-ideas/integrating-digital-technologies/create-a-board-game-that-uses-an-ozobot</p>	<p>Ka hāngaia mai e ngā ākonga he papa kēmū, ā, ka hoatu i ngā whakataunga rerekē ki te kaitākaro. I roto i te kawenga o te rakuraku me te makimaki ka hanga ngā ākonga i ētehi pūmotu rerekē ki te 'paki'. Ka hua ake ēnei pūmotu i roto i te whakamahinga o te Ozobot.</p>

Rauemi	Te tikanga
<p>hanga he patapātai tātai 1 ā, hanga he patapātai tātai 2</p> <p>https://www.digitaltechnologieshub.edu.au/teachers/lesson-ideas/making-maths-quizzes-1</p>	<p>I ēnei akoranga ka hanga e te ākonga i ētahi patapātai hōtaka tātai e hāngai ana ki te pāngarau, ā, he ngāwari he uaua, kei te āhua o tō mōhio ki ngā whakautu.</p>
<p>Hāngaia he patapātai rānei he kēmū rānei</p> <p>https://www.digitaltechnologieshub.edu.au/teachers/lesson-ideas/integrating-digital-technologies/storm-survivor-input-decision-making-and-loops</p>	<p>I roto i te mahinga tahitanga ka hanga ngā ākonga i tētahi kēmū, patapātai rānei ki te āwhina i ētahi atu ki te whakariterite mō te matapae huarere taikaha. Me whakauru ngā ākonga i te hātepe poutū i roto i te kaimahi tāuru, whakataunga tauki me ngā pōkuru, me te whakamahinga hoki o ngā whakaahuatanga me ngā oro.</p>
<p>Ngā tauira marautanga: Whakaaro rorohiko hanganga me te whanaketanga o ngā matihiko putanga</p> <p>http://technology.tki.org.nz/Technology-in-the-NZC/CT-Progress-outcomes-exemplars-and-snapshots</p>	<p>Ka hoatu e Te Tāhūhū o te Mātauranga i ngā tauira o te mahi i roto i ngā wāhanga o te hangarau mō te whakaaro rorohiko me te hanganga/whanaketanga o ngā matihiko putanga. Mō te whakatauiria i ngā whakaakoranga hangarau, ka kitea ki roto i te tūhono pae tukutuku hangarau ngā mātai kēhi, whakaako atapaki pū, me te whakaaturanga ākonga.</p>
<p>He rārangi tākaro: kaihanganga kēmū</p> <p>www.interactive.org</p>	<p>“ngā kaihanganga kēmū: paki tarāwhare” he wāhanga-10 raraunga matihiko e hāngai ana ki te tukanga motuhake o te kōrero paki, e hanga ana e tohutohu ana i roto i tēnei ahumahi whanake mutunga kore. Mai i ngā kupu whakapuaki o ngā kēmū matua e 15 (ko ēnei ngā tino kamupene whakaaweawe). Ka whakamātauria ngā whiringa me ngā wero i roto i te hanga taki kōrero o ngā kēmū hirahira rawa atu, me ō rātou tuahangata.</p> <p>I tīmata tuatahi te “ngā kaihanganga kēmū: paki tarāwhare” i te māranga o pēpuere 15 2017. Kokiritia te pae tukutuku” www.interactive.org mō ngā whakamahuki</p>
<p>GameFroot Hanga Mihi</p> <p>http://make.gamefroot.com/#/activity/mihi-maker</p>	<p>He tākaro ngāwari me te whakahoahoa te hanga mihi , ā, ka tāpiritia ngā tohu muna, ngā akoranga hāpori me te ahurea taketake. E tāea ana e ngā ākonga te whakatō i a rātou ake tohu muna mō tā rātou ake kēmū me te ako hoki me pēhea e whakatakoto i o rātou pepehā i te Reo Māori,</p>
<p>Kōkiri animate</p> <p>https://www.vyond.com/</p>	<p>He hōtaka whakanekeneke a pakiwaituhi e tāea ai e te ākonga āna ake paki te hanga me ngā pitopito kōrero mātauranga rānei. Anō hoki, he tepenga tō te hōtaka kore utu, ā, he paranitanga anō hoki.</p>

Resource & Link	Description
Code.org: Hei apitihanga https://code.org/curriculum/unplugged	<p>He whakaemunga i ētahi akoranga matihiko hei whakaako i ngā mātāpono o te pūtaiao rorohiko. E tāea ana ēnei akoranga hei akoranga motuhake, hei akoranga āwhina rānei mō ngā kōhi pūtaiao rorohiko.</p>
Kōhi https://studio.code.org/courses?view=teacher	<p>He kōhinga i ētehi akoranga matihiko mō ngā ākonga kei te reanga K-12 me te whakaako tika i ngā kaiako. E tāea ana te hono kore utu, ā, ka kawea i ngā mahi i roto i tāu wā e pai ai. Kei roto hoki i te tūhono ko ngā rōpu kaiako kia mahi ngātahi koe me ngā kaiako e whai ana i te huarahi ōrite.</p>
Mā ngā ākonga https://studio.code.org/projects/public	<p>Kei te wahanga 'kaupapa o te whārangi ipurangi a Code.org e āhei ai ngā ākonga kia waihangia kēmu kia tākarohia e ētahi atu, ā, kia tākaro rānei i ngā kēmu kua waihangatia e ngā ākonga huri noa i te ao.</p>
BBC Bitesize Computing https://www.bbc.com/education/subjects/z34k7ty	<p>Kei tēnei whārangi ipurangi i ētahi pitopito kōrero, paku kiriata hoki, e hāngai ana ki ngā āhuatanga o ngā rorohiko i tēnei ao, ngā tāhūrua me te mawae raraunga, ngā taputapu rorohiko, tūhononga, pūmanawa rorohiko, putu raraunga me te mahi papatono.</p>
ScratchJr Te Paetukutuku me te Taupānga kore utu https://www.scratchjr.org/	<p>He taupānga kore utu mā te Apple me ngā wāea Android tēnei. He hōtaka ako kua tō kētia kia āhei ngā tamariki ki te whakahaere i a rātou ake paki me a rātou ake kēmū. I roto i te whakaemunga o ngā hōtaka kaiwhakanikoniko paraka, ka āhei ngā tamariki ki te whakaneke i ngā tuhangata. i roto i tēnei whakahaeretanga ka whakapai hoki ngā tamariki i ngā raruraru, ka hanga hinonga, me te whakapaoho auaha nei i a rātou anō ki runga rorohiko. Ka whakamahi hoki rātou i te pangarau me te reo i tētahi horopaki tino reka tino whakaaweawe hei āwhina i te whanaketanga o te ako nama me te ako reo mō te nohinohi.</p> <p>Mehemea kāore he urunga tā tō karaehe ki ngā paparorohiko, e tāea tonutia ana te uru ki ngā rauemi mai i te pae tukutuku raku (ā raro), ēngari, he uaua ake tēnei momo.</p>
Papa Ako https://www.scratchjr.org/teach/activities	<p>Kei roto i tēnei pae tukutuku ngā mahinga rerekē mōu me āu ākonga ki te mahi i ētahi mahi hou i roto i te ScratchJr.</p>
Rauemi kaiako https://www.scratchjr.org/teach	<p>Kei roto i tēnei ngā momo marau e whakaatu ana i ngā aroaro o te pūtaiao rorohiko ki ngā tamariki, ā, waihoki e tuku ana ki a rātou te āheinga ki te parakatihi i ngā pūkenga whakaaro-whakapae me te whatika raruraru.</p> <p>Kei roto i ngā akoranga ka whakakapi ngā kaupapa pēnei i te hanga hōtaka, whēako i roto i te hangarau me te mahere kaimahi-pū.</p>

Resource & Link	Description
Scratch taupānga te Pae tukutuku rānei https://scratch.mit.edu/help/videos/	<p>Kei roto i tēnei taupānga me tēnei pae tukutuku te hōtaka kua mahia kētia hei whakaako i ngā ākonga ki te hanga paki matihiko, kēmū, me ngā whakanekeneke. Ka tāea e rātou ēnei waihanga te tuari ki tāngata kē atu.</p>
Ataata akoako http://scratch.redware.com/videos	<p>Kei roto i tēnei pae tukutuku ngā momo ataata akoako rerekē, ā, kei roto ko ngā pūkenga nunui hei āwhina ki te whakahaere i a rakuraku.</p>
Akoako kaiwhakamahi http://scratch.redware.com/videos	<p>Kei roto i tēnei pae tukutuku ngā akoako maha kua hāngaia mai e ngā kaimahi.</p>