



# Digital Technologies

# Hangarau Matihiko

## Curriculum User Research - English Medium

The English-medium user research project focussed on understanding key user group capabilities and needs for digital technologies.

For the Ministry of Education  
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## Contents

1. Summary of key findings .....	5
Range of awareness and experience .....	5
Benefits of the new curriculum .....	5
School implementation processes.....	6
School drivers that may affect implementation.....	6
Barriers to implementation .....	7
2. Recommendations.....	7
Recommendation 1 – Information and curriculum materials.....	7
Recommendation 2 – Professional learning and development (PLD).....	8
Recommendation 3 – Equity of implementation .....	9
Recommendation 4 – Equipment and funding .....	9
3. User Profiles .....	10
Teachers.....	10
User profiles: English-medium teachers.....	11
Additional key insights.....	15
Students .....	21
User profiles: Students .....	22
Additional key insights.....	24
Families and whanau .....	25
Industry.....	27
Description.....	27
Barriers.....	27
Teacher education .....	28
Needs .....	28
Funding .....	29
Other support .....	30
Changes to programmes.....	30
Concerns and suggestions related to implementation .....	30

4. Conclusion ..... 30

- Project background..... 31
- Project purpose..... 32
- Project outcomes..... 32
- Out of scope..... 33
- Project team ..... 33

6. Methodology and approach..... 34

- Data sample ..... 34
- Data collection ..... 35
- User profiles..... 36
- Limitations ..... 36

7. Information sheets ..... 38

- Introductory information..... 38
- Teacher survey questions ..... 39

# 1. SUMMARY OF KEY FINDINGS

The English-medium user research project focussed on understanding key user group capabilities and needs for digital technologies. User groups included teachers and students and industry groups. Information about family and whānau perceptions of the changes emerged from the focus groups with teachers. Each of these user groups were interviewed or surveyed to inform implementation strategies that will drive the successful uptake of the new Digital Technologies | Hangarau Matihiko (DT | HM) curriculum.

Six schools from across New Zealand participated in this user research. From these schools, 32 teachers and 27 students participated in focus groups. Nineteen representatives of industry stakeholders and teacher education organisations completed an online survey.

## Range of awareness and experience

In our engagement with schools and other stakeholders we found that most were not very familiar with the intent and content of the new curriculum. Teachers reported difficulty in accessing the draft curriculum, with some describing usability issues with the presentation and wording of the material.

However, when the curriculum was unpacked at the beginning of the school focus-group sessions, teachers were positive about its relevance and potential and were able to identify learning taking place that relates to the new curriculum and areas that would be new.

We noted varying levels of experience and confidence with DT within schools. The school staff we engaged with felt that a high proportion of teachers would need extensive support and professional development to be confident to implement the curriculum. Personal profiles that illustrate levels of awareness and engagement with DT were developed as an output of this research. These profiles are in the main body of this report.

## Benefits of the new curriculum

Stakeholders saw much potential benefit in the new curriculum.

- Learning about DT will become part of the standard classroom curriculum and will be more consistently available for all students. This will help to reinforce the understanding that technology skills are for everyone, regardless of gender or ability.
- It will enable students to gain a fuller understanding of the concepts and processes behind creating DT, and a better understanding of the real-world context and how this connects to what they are learning. For example, some students do coding in programmes such as Scratch, but may not really understand why their code does or doesn't work and how their coding activity relates to the application of technology.

## School implementation processes

All six of the participant schools described their likely implementation processes for the new curriculum. These will involve unpacking the curriculum, reviewing existing programmes to identify gaps, planning where best to fit the new curriculum, and teacher professional development.

At primary and intermediate level, e-learning leaders and other staff with an interest in DT are likely to have significant responsibility for driving implementation, but for most schools, all teachers will need to be involved. At secondary level, responsibility for implementation will rest largely with the technology department, but with some coordination with school leaders and other departments such as maths.

Three of the participant schools noted that they will need to take the implementation slowly. All schools noted that significant time will be required for teacher professional development, planning, and implementation.

One principal commented that although there are some staff in the school who have significant experience with DT, the implementation will be a learning experience for all. *"In February, none of us will be an expert."*

## School drivers that may affect implementation

Implementation of the new curriculum may compete for priority with other drivers, programmes, and frameworks in operation within schools.

Some schools may not be in a position to prioritise the new curriculum. For example, one participant school is implementing a strategic development plan focusing on learner agency and collaborative learning.

Another school had just completed a comprehensive curriculum review and, as a result of participating in this research project, saw that they will need to integrate the DT curriculum into their review.

Schools are also managing the need to fulfil assessment requirements that may affect the way the new curriculum is implemented. This may also affect the ways teachers are involved. In some secondary schools teaching programmes are built around National Certificate of Educational Achievement (NCEA) requirements. An intermediate school commented that the DT curriculum might be better implemented by specialist technology teachers, as their classroom teachers are focused on helping students meet National Standards.

## Barriers to implementation

The new curriculum represents a significant change for schools and students. At present much of the learning about DT is being undertaken by a relatively small group of early adopters. This will change to more integrated, generalised learning for all.

The three main barriers to implementation are:

- Not all teachers have the expertise and knowledge to confidently implement the curriculum. Three of the participant schools and one teacher educator highlighted how the content of the DT curriculum represents knowledge that is new to many teachers. In other learning areas, such as literacy or maths, all teachers have some grounding. For schools where all teachers will be involved in implementation, teacher buy-in must first be achieved. This is key to addressing any misconceptions about the new curriculum, gaining support for its intent, and the participation of teachers in professional development that will enable them to contribute effectively to its implementation.
- Lack of time for effective implementation. Both schools and teacher education providers need adequate release time from regular work for professional development, planning, and implementation. Industry organisations that provide assistance to schools also need to address the cost of the time taken away from other work.
- Lack of equipment. Four of the six participant schools commented that they would need additional hardware and/or software to implement the new curriculum across their school.

## 2. RECOMMENDATIONS

### Recommendation 1 – Information and curriculum materials

The digital technologies curriculum document should be made available in both print and online formats, with the most urgent priority being an easily downloadable online version. Teachers would like to have the following material available online:

- examples of effective curriculum planning
- examples that demonstrate effective teaching practice at each level
- exemplars of effective learning and assessment for each progression level, from junior primary through to NCEA level. At NCEA level, exemplars are needed for each achievement standard.

This type of resource material needs to be effectively curated and structured according to the curriculum (for example, the progression levels). Having a clear grasp of the progressions is important to allow teachers to gauge what is needed to implement the curriculum at their level. Examples should be in a variety of formats, including video. Materials should enable teachers to see the links to their existing knowledge and current practice. The curriculum material should be easy to understand, use non-technical language, and the information should be broken into manageable chunks.

Four of the six participant schools commented that they would like teaching resources to be available online. These should include lesson plans and classroom materials that can be used by those teaching DT for the first time, without the need for extensive adaptation. The development process for all resource materials should include input from teachers and trialling in schools.

All user groups need to have access to information that is tailored to their specific needs (i.e. students and whānau need simple and clear explanations of the changes and the benefits).

## **Recommendation 2 – Professional learning and development (PLD)**

Provide teachers with opportunities for four types of externally provided PLD:

1. To “unpack” the new curriculum, develop understanding of its intent and content and any overlap between this new curriculum and their current teaching and learning programmes. This was important for all participant schools, with most staff having little knowledge of the specifics of the new curriculum. Getting buy-in to the big picture vision – the “why” of the new curriculum – will be an important first step for some teachers.
2. To support school and digital technology leaders to plan and manage curriculum implementation and provide effective internal PLD for colleagues. For example, assisting DT leaders to identify strategies to help their colleagues move through the stages of Whangū (unaware) and Kōrero (thinking/investigating), through to Mōhio (investigating/trialling).
3. To enable specialist skill development and training in, for example, how to use Scratch and how to program. This was very important to the participant schools, as many teachers have little prior experience with what is required within the new curriculum. Developing their content knowledge will be key to building their confidence to implement this curriculum.

4. Ongoing PLD to help teachers develop effective teaching practice. Teachers in four of six schools indicated a preference for face-to-face, tailored PLD, facilitated by competent experts. One school suggested a blended-learning approach, with some face-to-face and some online PLD.

### **Recommendation 3 – Equity of implementation**

The design and provision of support must ensure that implementation of the curriculum is equitable for all students. There is a need to provide additional external leadership and support to schools that do not have staff within the school with the DT experience and interest to effectively lead implementation.

Provide support for schools to access industry expertise. This is particularly necessary for schools that do not have access to such expertise within their school community.

Design inclusive resources that support the engagement of students of all abilities, cultural backgrounds, and genders.

Ensure that all students get the help they need to understand DT concepts and tasks. This may require extra assistance within classrooms so that students can access individual help when required.

### **Recommendation 4 – Equipment and funding**

Provide schools with adequate start-up and ongoing funding for the purchase of equipment, hardware, and software required for the effective implementation of the curriculum.

Make funding available to schools to engage industry organisations, such as IT companies, to provide them with direct support. Such funding may grow the capability of industry to provide this type of support.

## 3. USER PROFILES

### Teachers

#### *Introduction*

Groups of teachers from six schools completed preliminary, online surveys and took part in focus group meetings. There were three schools for which Communities of Learning /Kahui Ako membership was not a significant aspect of the research. The four schools who have agreed to be named in the report include:

- Richmond Primary School, Napier (small, provincial urban, low-decile, primary)
- Arahoe Primary School (large, urban, mid-decile, primary).

Three schools were from the same Community of Learning/Kahui Ako:

- Havelock North Intermediate School (mid-sized, provincial urban, high-decile, intermediate)
- Te Mata Primary School (mid-sized, provincial, urban, high-decile, primary).

The size of the focus groups ranged from three to 13 and generally reflected the size of the school.

## User profiles: English-medium teachers

STAGE	AWARENESS	CONFIDENCE	SUPPORT NEEDED
Stage 1: <b>Whangū</b> (Unaware)	I am <b>not aware</b> of the DT Curriculum changes (first heard about it through the DT/HM User research Project).	I have <b>little to no</b> confidence to effectively implement the new DT Curriculum.	I <b>need extensive</b> professional development, resourcing, support, and guidance.
Stage 2: <b>Kōrero</b> (Thinking/investigating)	I am <b>somewhat aware</b> of the DT Curriculum changes.	I have <b>little to some</b> confidence to effectively implement the new DT Curriculum.	I <b>need extensive</b> professional development, resourcing, support, and guidance.
Stage 3: <b>Mōhio</b> (Investigating/Trialling)	I am <b>well aware</b> of the DT Curriculum changes (actively researched, attended PLD).	I am <b>confident</b> to begin implementing the new DT Curriculum.	I <b>need</b> professional development, resourcing, support, and guidance.

TEACHERS	STAGE 1: WHANGŪ (UNAWARE)	
Proportionality <sup>1</sup>	Teachers at this stage	Support required for teachers at this stage
<p><b>Whangū</b> (See methodology, limitations, p. 18).</p> <p>The focus groups indicated most of their colleagues in primary and intermediate schools are likely to be at this stage.</p> <p>Few, if any, specialist secondary teachers are at this stage, although the majority of secondary teachers who specialise in other curriculum areas, would be at this stage.</p>	<p><b>Interest levels</b></p> <p>Will acknowledge the value and importance of the new curriculum when it is unpacked.</p> <p><b>Current experience, knowledge, and relevance</b></p> <ul style="list-style-type: none"> <li>wrongly assume the new curriculum is about digital fluency, (using), rather than about DT, (creating)</li> <li>will find their involvement in implementing the curriculum daunting and may resist personal involvement</li> <li>are unaware that they likely to be engaging in teaching strategies and approaches that are consistent with the new DT Curriculum.</li> </ul>	<p><b>Introduction and information</b></p> <p>Facilitated unpacking of the curriculum statement and its rationale.</p> <p>Hands-on PLD aimed at demystifying curriculum content.</p> <p>Online video support materials, explaining the curriculum and showcasing examples of good practice.</p> <p>Support materials in simple language.</p> <p><b>Implementation and design</b></p> <p>Personalised and ongoing support from expert colleagues, and/or external facilitators to develop effective teaching practice.</p> <p>Sufficient time to develop a new set of competencies without experiencing PLD overload.</p>

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<sup>1</sup> The English-medium focus groups did not reflect a representative cross-section of teachers across the three stages of the user profiles. The teachers who participated were at the Stage 2, Kōrero (thinking/investigating) and Stage 3, Mōhio (investigating/trialling) levels, and generally held positions of responsibility or speciality for DT in their schools. The information included in the user profile for Stage 1, Whangū (unaware) has been drawn from the commentary of these participants, as they reflected on the needs of their colleagues who have been less immersed in this area of teaching and learning. They indicated that this Stage 1, Whangū group would include a majority of primary and intermediate school teachers.

TEACHERS	STAGE 2: KŌRERO (THINKING/INVESTIGATING)	
Proportionality	Teachers at this stage	Support required for teachers at this stage
<p><b>Kōrero</b> – 12 of the teachers who attended the focus groups were at this stage. These tended to be those with general leadership responsibility.</p> <p>A sizeable minority of teachers in schools at all levels are likely to be at this stage.</p>	<p>Primary and intermediate teachers are:</p> <p><b>Interest levels</b></p> <ul style="list-style-type: none"> <li>enthusiastic about the intent and content of the new DT curriculum</li> <li>exploring innovative and future-focused practice.</li> </ul> <p><b>Current experience, knowledge, and relevance</b></p> <ul style="list-style-type: none"> <li>not yet well-informed about the detail of the new DT curriculum or the intent and content of the wider technology curriculum</li> <li>will be supportive of the curriculum implementation when they become aware of its intent and content</li> <li>involved in an e-learning leadership role</li> <li>likely to have been involved in organising opportunities for students' coding clubs, robotics programmes, and such, usually outside the school timetable</li> <li>unlikely to be developing students' computational thinking to the level envisaged in the new curriculum</li> <li>likely to be responsible for leading implementation in their school</li> <li>likely to think their confidence level is inadequate</li> <li>not necessarily capable leaders or PLD facilitators; may observe that other staff are not confident, but don't have effective ways to help them shift through the three stages.</li> </ul> <p>Secondary teachers at this stage are:</p> <p><b>Current experience, knowledge, and relevance</b></p> <ul style="list-style-type: none"> <li>likely to have a related learning area specialisation, such as science, maths, technology.</li> </ul>	<p><b>Introduction and information</b></p> <p>Facilitated unpacking of the curriculum statement and its rationale.</p> <p>Hands-on PLD aimed at demystifying curriculum content.</p> <p>Online video support materials, explaining the curriculum and showcasing examples of good practice.</p> <p>Support materials in simple language.</p> <p><b>Implementation and design</b></p> <p>Personalised and ongoing support from expert colleagues, and/or external facilitators to develop effective teaching practice.</p> <p>Sufficient time to develop a new set of competencies without experiencing PLD overload.</p>

TEACHERS	STAGE 3: MŌHIO (INVESTIGATING/TRIALLING)	
Proportionality	Teachers at this stage	Support required for teachers at this stage
<p><b>Mōhio</b> – 20 of 32 teachers who attended the focus groups were at this stage. These tended to be e-learning leaders and DT specialists.</p> <p>A small minority of teachers are likely to be at this stage.</p>	<p><b>Interest levels</b></p> <ul style="list-style-type: none"> <li>were specialist computer science, DT (or similar) teachers at secondary level or primary/intermediate teachers with a personal interest and some specialised training related to the curriculum</li> <li>likely to be very enthusiastic about the curriculum content and the opportunity to bring it into the mainstream curriculum.</li> </ul> <p><b>Current experience, knowledge, and relevance</b></p> <ul style="list-style-type: none"> <li>likely to develop a good understanding of intent and content of the new curriculum, link it to what they have been doing, and recognise gaps that will need development.</li> <li>secondary teachers place more importance on the development and release of the Level 1 NCEA standards and their supporting materials, than on the draft curriculum.</li> </ul>	<p><b>Introduction and information</b></p> <ul style="list-style-type: none"> <li>Opportunities and encouragement to contribute to the wider integration of the DT Curriculum.</li> <li>Identifying the resource, support, and PLD needs of colleagues.</li> </ul> <p><b>Implementation and design</b></p> <ul style="list-style-type: none"> <li>Ongoing provision of teaching resources, and assessment exemplars.</li> <li>Support in planning and prioritising the implementation process.</li> <li>PLD in effective leadership and/or facilitation.</li> <li>Opportunities to network and share teaching resources and ideas with other DT curriculum leaders, face-to-face in the local area, and online.</li> <li>Allocated time to provide PLD opportunities for colleagues.</li> <li>Other forms of recognition of their increased responsibilities (remuneration, role designation).</li> </ul>

## Additional key insights

### *Teachers' awareness of the new curriculum*

- Colleagues in other schools may assume that the current changes are about digital fluency or learning with DT (consuming technologies). However, it would not take much exposure to the curriculum to dispel that assumption.
- Some had difficulty finding the draft curriculum online, and those that did had not explored it thoroughly because of its size and complexity.
- Many of their staff would struggle with the curriculum, feel intimidated, and would not be very confident: *"When they see what it involves, many staff will freak out."* (Primary school leader).
- It became clear that some teachers have a good understanding of some aspects of the curriculum. For example, in discussion at one primary school, the teachers we spoke to were clear about:
  - What makes a good algorithm, how to explain the benefits of using algorithms through real life examples, and how to teach students to create algorithms by starting with physical learning experiences, such as stepping things out in the playground, procedural writing, and then moving into Scratch.
  - The concept of data representation, described in simple terms (coloured-in pixels)
  - Using a process to develop technology to meet an outcome
  - Using software to store data and selecting appropriate applications for this.
- Other aspects were not so well understood:
  - Ideas "about" algorithms – for example, that there can be more than one for the same problem
  - How to teach the debugging process
  - The more theoretical components of designing and developing progress outcome 2, such as the roles of components and humans, and an accurate understanding of how devices change over time.

### *Perceived benefits of the new curriculum*

- Future-focused and opening up career pathways. However, some responses suggested the respondents were thinking more about the value of digital fluency, rather than DT:

*It will provide valuable learning for those students interested in pursuing a career in the field, as well as providing interesting learning for those using technology elsewhere.  
(Secondary teacher)*

*We were long overdue for an overhaul of how DT looks in our schools. (Secondary teacher)*

*It is a move towards modern thinking. Future-based and sets our kids up for success in the future. Kids are not just the users but the creators. (Primary e-Learning leader)*

*It will validate what many schools are already doing. (Primary teacher)*

### *Learning about digital technologies already taking place*

- The secondary schools that took part have NCEA Computing/DT options available at senior level, but little provided for students in years 8 and 9.
- Most primary and intermediate schools surveyed had coding clubs and have had robotics workshops or programmes, but these are frequently outside the core curriculum. They do not always develop the depth of understanding required by the new curriculum.

*Two teachers have done some things. There is a coding club. We've had a robotics programme come into the school for all year 6 students. We had LEGO technics a few years ago, but apart from that, we don't have the resources. One teacher borrowed robotics kits from another school for much of last year, for pockets of kids to dabble with. But there is no strategy in place – no computational thinking platform. (Deputy principal, primary school )*

*There are opportunities for kids to take part – exploration in coding club, Minecraft in maths, but with no real depth. The underpinning pedagogy is not here. The skill level with staff is not here. (Deputy principal, primary school)*

- Most schools report high levels of engagement in robotics programmes.

*[The robotics programme] was an enticement for behavioural change. Much of the DT stuff done in the school now is because kids enjoy it so much. (Primary teacher)*

*This kind of stuff is what really switches the kids on, but it's only being used by a few kids.  
(Primary teacher)*

- Some schools report that learning related to designing, developing, and creating is already quite familiar to them (students defining the outcomes they want and working through a

process to achieve those outcomes). This is seen in learning related to the technology curriculum (food and materials technology), and also in other aspects of the curriculum.

### *Approaches to implementation*

- Addressing a lack of confidence among teachers was seen as a major challenge. One primary school teacher, who has resolved the confidence barrier for herself (for example, she is comfortable with the students' skills developing until they know more than she does) described how classes can become so absorbed with their technology work that "*when the bell goes, they don't want to go anywhere*". She thought that being able to take a class to this level could be very empowering for a teacher.

*Get past the fear – you see the kids so absorbed, you have to get absorbed yourself, because they drag you in.*

- One school leader commented on the need to move away from an outsourcing model, which is how they currently approach much of the DT learning within the school. In this model, technology is seen as something done by experts (who might be external providers or other teachers at the school who are more confident with technology).

*The challenge is how you generalise it back into classroom practice.*

- Some schools had a clear implementation process in mind. They thought it would require a lot of discussion, an implementation plan, a process, and significant training to develop understanding, to implement it successfully.

- *Inform the community of the new curriculum.*
- *Invite members of community to be part of a parent focus group.*
- *Inform the community through newsletters and parent evenings.*
- *Develop innovators and early adopters, identified from a focus group that will champion and lead the implementation process.*
- *Encourage these teachers to share real-life examples and journeys with the remaining staff. Develop a mentoring structure/PLG where early adopters support and motivate reluctant teachers.*
- *Promote the curriculum as part of the school charter and school inquiry.*
- *Develop a bank of lessons and examples for teachers to share and access.*

*(Primary school leader)*

- One primary school had a strong conviction that the extensive effort they have put into developing their own curriculum vision and planning framework in recent years ensures they are well placed to implement the curriculum.
- One primary school identified a significant implementation issue that is likely to affect other schools. Over the past 18 months they have put a lot of work into developing a three-year curriculum and associated PLD development plan, focusing on developing learner agency and collaborative learning spaces. While they can identify some synergy with the new DT curriculum, they do not want to shift their focus at short notice and are therefore likely to defer full implementation of the new curriculum until their planned strategic goals have been achieved. However, they agreed that some ad hoc implementation would take place.

*We are 150% behind the DT curriculum, but it can't be our priority yet because we are committed to our other strategic goals.*

*However, they [e-learning leaders] will dabble, because they're forward thinkers and ultimately we want this stuff, and know our kids need it. They will build their skill set.*

*(Primary school leader)*

- At least one high-decile primary school was able to identify resources in the school community that they could call upon, with some whānau working in the industry and some 'design-thinking parents'. They are already using experts, such as scientists, to come into the school. One low-decile school believed there would be no such support available from their school community.
- Several schools identified that seeking the support of local DT businesses would be a priority.

*We see the benefits of connecting the children with people who are working with technology, to help frame the learning for them, and help to connect the things they are doing at school, which might be simple procedural writing, with real-world processes, and how things might be in the future.*

*(Primary school leader)*

### *Other support and guidance*

Other types of support and guidance, which could assist with implementation were:

- Encouragement, guidance, and support for teachers to share good practice within and between schools, both face-to-face and online.
- Guidance and support with both PLD and resource materials, focusing on how the new DT curriculum relates to the technology curriculum and how it could best fit within cross-curricular approaches at both primary and secondary level. Three participant schools raised questions about the best way to approach the new curriculum from a cross-curricular perspective.
- Support for schools to develop connections with the DT industry to support PLD and curriculum implementation. This relationship needs to be facilitated in both directions. Schools and industry need to be informed of needs, opportunities to connect, practical constraints, and how to “talk to” each other.
- Opportunities for school digital technologies experts and leaders to develop their technical skills, knowledge, and leadership/facilitation capabilities.
- Recognition of work related to the new curriculum, which is being carried out by schools. One school commented that the most valuable support that could be provided by the MoE is recognition of, and awahi for, the work that schools are doing to develop local curricula and innovative, future-focused learning opportunities for their students.
- A range of PLD options that support schools to shape their implementation, rather than a one-size-fits-all approach. Schools will need support in different areas.

### *Hard copy and online materials*

Teachers recommend publishing the curriculum and key information both online and in hard copy to ensure it is easily accessible to all teachers. Critical information includes the curriculum content, key messages, summaries, and explanations that help teachers to understand the intent of the curriculum and the changes it requires.

Overwhelmingly teachers requested that the curriculum document and all supporting materials and resources are available online, so this should be the highest priority. They would like a 'one-stop shop' for this material, as long as it is easily accessible and downloadable, and in user-friendly formats. They particularly like having short videos included among the mix of support material.

A small number of respondents indicated they valued having a hard copy of the curriculum to pull off the shelf occasionally when needed. However, a significant number admitted they seldom refer to *The New Zealand Curriculum* (NZC) in hard copy. Bearing in mind that this research did not involve a wide cross-section of teachers, there is likely to be a small percentage of teachers who would prefer the curriculum and main support materials in hard copy. The lack of a print version of the curriculum creates a risk of further alienating some teachers whose support for the new curriculum could be difficult to gain.

Several technology teachers said they valued having hardcopy, poster-type material, such as infographics and flowcharts, outlining student progressions and related material. However most of this type of material could be made available online, as long as it was easily located and downloadable.

### *Possible benefits of Communities of Learning/Kahui Ako (CoL) membership*

- All six participant schools were members of CoLs. Three of the schools belonged to the same CoL.
- Three schools saw their CoL as having potential for sharing resourcing for PLD for the new curriculum. One school has already made a tentative first step by extending to their CoL an offer of PLD made to their school by the Aotearoa Code Club.
- One school noted that their CoL might enable them to work together to unpack the progressions within the new curriculum for years 1–13. "... unpacking the progressions together will be brilliant."
- One college noted that it would be important to work with the intermediates in their CoL to ensure continuity for students. However three schools felt that their CoL were already focusing on PDL for other achievement challenges and learning areas (literacy and numeracy and Māori student learning and transitions). PDL for an additional curriculum area may not fit easily.

- Teachers in CoL schools may feel they have enough PLD to cope with without adding another requirement. This could be a barrier to timely implementation of the DT Curriculum.
- CoL schools might attempt to integrate the DT curriculum implementation into the normal activity of the CoL.
- Teachers involved in CoL schools are likely to collaborate informally over curriculum implementation, especially in relation to transition points.
- Some CoL are still at quite early stages of development, with one school noting their CoL did not yet have staff appointed to cross-CoL lead roles. Another school noted that their CoL *"isn't yet at the stage of looking at the bigger picture around, for example, the process of implementing a new curriculum"*.
- Secondary schools are perhaps just as likely to work with other secondary schools in their area (outside their CoL), as work with other schools within their CoL.

## Students

### *Introduction*

Students from these three primary schools (and one secondary school) were interviewed:

- Richmond Primary School, Napier (small, provincial urban, low-decile, primary)
- Arahoe Primary School (large, urban, mid-decile, primary)
- Te Mata Primary School (mid-sized, provincial, urban, high-decile, primary).

At two schools an attempt was made to select a representative cross-section of students for the focus groups. At one other school this was not possible and a small group of boys at one level was interviewed. At the fourth school, a group of students who had been involved with coding and robotics was selected. Teachers made comments about students in all focus group meetings.

## User profiles: Students

STAGE	AWARENESS	CONFIDENCE	SUPPORT NEEDED
Stage 1: <b>Whangū</b> (Unaware)	I am <b>not aware</b> of the DT curriculum and what its implementation will mean for my learning.	I have <b>little to no</b> confidence with the learning outlined in the new DT curriculum.	I <b>need extensive</b> teacher, peer, and whānau support to learn about the DT curriculum.
Stage 2: <b>Mōhio</b> (Investigating/trialling)	I am <b>aware of aspects</b> of the learning outlined in the new DT curriculum.	I have <b>some confidence</b> with aspects of the learning outlined in the new DT curriculum.	I <b>need ongoing</b> teacher, and peer, and whānau support to extend my learning about the DT curriculum.

STUDENTS	STAGE 1: WHANGŪ (UNAWARE)	
Proportionality	Students at this stage	Support required for students at this stage
<p>The majority of students at primary level are likely to be at this stage.</p> <p>Fewer students will be in at this stage in schools that have active coding clubs, robotics programmes and the like, and in secondary schools with strong technology/DT departments.</p>	<p><b>Interest levels</b></p> <ul style="list-style-type: none"> <li>have no interest in joining such a club or programme.</li> </ul> <p><b>Current experience, knowledge, and relevance</b></p> <ul style="list-style-type: none"> <li>may not have taken part in a club or programme related to aspects of the DT curriculum, because opportunities were not available at their level, or at their school.</li> <li>are likely to have some DT-related knowledge and skills developed through other learning areas.</li> </ul>	<p><b>Introduction and information</b></p> <p>Explanation about the relevance and importance of the learning</p> <p>Opportunities to engage, or be hooked into the learning</p> <p>Support from peers whose learning is more advanced.</p> <p><b>Implementation and design</b></p> <ul style="list-style-type: none"> <li>Effective support from a teacher who is enthusiastic, confident, knowledgeable, and skilled</li> <li>Links with other learning areas made explicit</li> <li>Learning designed to meet their diverse learning needs</li> <li>Equitable access to equipment, hardware, and software.</li> </ul>

STUDENTS	STAGE 2: MŌHIO (INVESTIGATING/TRIALLING)	
Proportionality	Students at this stage	Support required for students at this stage
<p>A minority of students at primary level are likely to be at this stage.</p> <p>A greater number of students will be in at this stage in schools that have active coding clubs, robotics programmes and the like, and in secondary schools with strong technology/DT departments.</p> <p>The students in one focus group estimated that only about 10 students at each year level do coding.</p>	<p><b>Interest levels</b></p> <ul style="list-style-type: none"> <li>are likely to be very engaged and enthusiastic about their learning.</li> </ul> <p><b>Current experience, knowledge, and relevance</b></p> <ul style="list-style-type: none"> <li>are likely to have taken part in a club or programme related to aspects of the DT curriculum (primary and intermediate level)</li> <li>are likely to be taking a computer science or equivalent course (secondary level).</li> </ul>	<p><b>Introduction and information</b></p> <p>Support from peers whose learning is more advanced.</p> <p><b>Implementation and design</b></p> <ul style="list-style-type: none"> <li>Effective support from a teacher who is enthusiastic, confident, knowledgeable, and skilled</li> <li>Learning designed to extend their learning and meet their learning needs, particularly during the initial phase of implementation when the focus is likely to be on the learning needs of beginners.</li> <li>Links with other learning areas made explicit.</li> <li>Equitable access to the equipment, hardware, and software required.</li> </ul>

## Additional key insights

- Some schools currently provide significantly more DT learning opportunities than others. Students in primary and intermediate schools are engaging in a range of programmes and using a range of resources to support their DT learning. Examples are robotics, Mindstorms, and Scratch.
- Where opportunities exist for DT learning at primary and intermediate schools, these are usually provided outside the school curriculum and hours.
- Students at years 9 and 10 tend to have fewer opportunities for DT learning than at other levels.
- Students taking part in robotics programmes and coding clubs are generally very enthusiastic about, and engaged in, their learning. At one school the students in the gifted and talented programme are very interested in coding, getting into Minecraft mods, and have been to Mindlab to learn about robotics and coding.
- Students who have some coding/programming experience believe it could be a challenge to extend the learning to all students at the school. They noted that not all students are at the same level and that some would not be interested. They expressed concern that some will find this difficult and will need a great deal of help. They felt that introducing DT regularly in small modules/programmes would be an effective approach.
- Students could easily identify the small number of teachers who are into DT, but indicate that many teachers may not be very interested or will need to learn a lot prior to implementation.
- There is a tendency to think of the DT curriculum as being oriented more to boys than girls. This preconception needs to be addressed. However, teachers generally thought that as this new curriculum (including coding and programming) becomes part of normal classroom practice, it will normalise and reinforce the notion that technology skills are for everyone, regardless of gender.
- Students in high-decile schools are more confident that members of their whānau are able to help them with their DT learning.

## **Families and whānau**

- Due to the tight timeframes and new topic area, schools were not comfortable about involving their whānau and families in the research. Subsequently, we relied on teacher reflections of family and whānau perceptions regarding the new curriculum.

### *Varied capacity to provide support*

Teachers and students had varied expectations about:

- parents and whānau level of awareness and knowledge about DT
- the level of support they expected parents and whānau to be able to provide with the curriculum.

Expectations about whānau knowledge and capacity to provide support tended to be higher in high-decile schools.

## *Involvement in implementation*

All six schools saw a role for parents and whānau in implementation.

Even in schools where there was a lower expectation of parents and whānau being able to provide support, it was seen as being important to make them aware of the curriculum and its importance, and showcase student work.

In some schools parents may have high expectations of being kept informed. One school noted that their community is interested in related work the school has been carrying out in digital fluency, and that if some teachers in the school are doing this work well, and others are not, *“parents will ask why”*.

Some schools were confident that there would be parents and whānau who work in technology and who would be able to help the school in some way. One school noted that they already tap into their community to access expertise and skills for other curriculum areas, and will do so for DT.

Schools discussed involving parents and whānau by:

- informing the community through the school website, newsletters, Seesaw.
- parent evenings, focus groups, and whānau hui to inform about the new curriculum. One school described how this type of consultation would mean they could work through parents’ concerns about issues such as screen time, equity of access, cyber safety, and their children’s presence online, and that such dialogue would be an effective way to avoid resistance. They suggested that this consultation would be more successful if it were framed around the big picture and having some inspiring conversations – *“have you thought about,”* rather than *“your child must do this, because”*.
- workshops where parents can learn along with teachers and students. Three schools described how workshops could involve parents and whānau.
  - Having experts unpack the curriculum in an open seminar where teachers and the community can look at it together and discuss how it will fit their students
  - As part of a roll-out of digital devices – one school has run workshops where teachers and parents learnt from the students. These were very successful.
  - The principal at another school described workshops they had run for maths, where parents come in and learn. They found this worked well. *“If they know about it, then they can be enablers not barriers”*.

## Industry

### *Category*

The consultation involved:

- representatives from organisations involved in sector training through either Vocational Pathways or ITO programmes. Sectors: Primary Industries, Health and Social Services, Service Industry
- The CEO of an IT sector-representative organisation
- Six individuals working in the software industry.

## Description

Organisations and individuals tended to have low awareness of the new curriculum but noted many potential benefits of increased learning in schools about digital technologies. For example, they considered that having young people coming into their industry with these skills would enhance processes within the industry.

Only one potential negative impact was identified. There was a concern that an increased focus on technological skills could lead to a reduced focus on the interpersonal skills required in the health and social services sector.

IT sector respondents in particular saw much potential for their sector to support the new curriculum (through awareness-raising initiatives, workshops for teachers and students, giving talks, and mentoring) and some respondents are already involved in providing this type of support in schools.

Many IT sector staff who provide support to schools are motivated by altruism and their organisation's values, rather than personal gain (four individual respondents). One respondent felt they may be more likely to provide support to their local school when their own children reach school age.

## Barriers

- Awareness – a lack of awareness and knowledge about the specifics of the curriculum and of opportunities for organisations to support schools was identified as an issue by six respondents.
- Cost – the cost to industry organisations of providing support (staff being released from client work and the costs of providing workshops) was identified as a barrier by five respondents.

Other barriers mentioned that could affect the readiness or ability of organisations to provide support included:

- the potential impact on the privacy of client data (one respondent)
- sceptical attitudes to government programmes (one respondent).

### *Needs*

- Clear curriculum information – All three non-IT sector respondents, (from ITOs and organisations involved in Vocational Pathways programme delivery) requested clear, jargon-free information about the specifics of the new curriculum. One respondent suggested that provision of workshops and case studies would be beneficial.
- Outreach to organisations – One ITO respondent and three IT staff respondents suggested that the Ministry of Education should advertise and use other methods of outreach to ensure that organisations are aware of opportunities and ways to provide support to schools.
- Funding – The IT sector organisation representative and two IT staff respondents requested funding to help organisations in their sector to provide support to schools. Funding was requested for devices, to assist with running workshops, and to cover the general costs of providing direct support to schools.

In addition, two IT staff responses mentioned:

- having access to insight into what works well, in terms of the types of support they are providing to schools
- provision for the licensing of industry intellectual property.

## **Teacher education**

- Teacher education providers were surveyed, with nineteen responses from faculty programme leaders and management working in initial, undergraduate, and post-graduate-level teacher education for early childhood education, primary, and secondary education.

## **Needs**

### *Resources:*

- Examples of pedagogy, student work, classroom examples, digital exemplars, including videos, indicative resources and practical examples of ways of teaching the theoretical

understandings within the new curriculum, at both adult and student level (eight respondents)

- Curriculum information and guidelines (three respondents)
- Links to relevant theory, which could be used as course readings (one respondent)
- Research in relation to DT and ECE (one respondent)
- An updated version of Foundation for Discovery (2005) (one respondent)
- Links to online activities that their students can use to upskill in DT (one respondent)
- List of links to organisations that provide support in DT (Teachers ask them for this information.) (one respondent)
- Reviews of relevant tools (one respondent).

Professional development:

- For the respondent and/or colleagues (five respondents)
- Two respondents also suggested professional development for both sides of the practicum component of teacher education courses
  - for practicing teachers to enable them to effectively lead student teachers when on practicum
  - with practicum partners in order to facilitate alignment.

## **Funding**

Four respondents indicated that additional funding would be beneficial to support the new curriculum, specifically for:

- programme development (one respondent)
- professional learning (two respondents)
- purchase of equipment (two respondents)
- additional staff and/or expertise (two respondents)
- their outreach programme, which supports teachers.

Two respondents suggested that funding could be made available through targeted research grants, which benefit the sector through supporting the development of evidence-based material. One respondent suggested that funding could be sought through sponsorship.

## Other support

- One respondent indicated that in their view, effective teaching of the mathematics curriculum is crucial to the effective implementation of the new DT curriculum, and that this must be better supported.

## Changes to programmes

- Eight respondents indicated that programmes at their institutions are in the process of being revised to support the new curriculum. One is undertaking a revision across all programmes, which will be in place from 2019. Meanwhile, content will be added to their technology and maths programmes.
- Seven respondents indicated that decisions about changes to programmes at their institutions have yet to be made.

## Concerns and suggestions related to implementation

- Lack of time – one respondent noted that they already struggle to adequately prepare primary teachers and that adding additional curriculum will add to this pressure and could lead to poor implementation, if not well resourced. They suggested that funding four years of teacher preparation might be a way to address this.
- Concern that practising teachers have adequate release time and professional development was mentioned by two respondents. One also suggested, *"Perhaps, if the Ministry overhauled the requirements of all teachers to undertake some professional development for certification purposes, and paid them appropriately, there would be more buy-in."*
- One respondent noted that although they are committed to ensuring student teachers learn about how pedagogy can be enhanced through DT, they themselves are only "competent users". They do not have the skills to be creators of DT.
- One respondent pointed out that with the emphasis on DT, it is important to ensure that *"Hangarau does not become synonymous with Hangarau Matihiko."*

## 4. CONCLUSION

This English-medium, user research project aimed to understand key user group capabilities and needs for the implementation of the digital technologies curriculum. User groups included teachers and students, and industry groups. Information about family and whānau perceptions of the changes emerged from the focus groups with teachers. Each of these user

groups offered useful information about effective implementation strategies that will drive the successful uptake of the new curriculum.

The project identified a range of key insights and the readiness of each user group. Across the majority of user groups we found that most were not very familiar with the intent and content of the new curriculum. When the curriculum was unpacked further, teachers were positive about its relevance and potential. They were able to identify learning taking place that relates to the new curriculum and learning that would be new.

Students were the most optimistic user group. While they had no idea of the upcoming curriculum changes, they were the most adaptable group, willing and ready to take on the challenge of learning a new subject and incorporating this into their education. Some schools currently provide significantly more DT learning opportunities for students than others. There is a tendency to think of the DT curriculum as being oriented more towards boys than girls and this preconception must be addressed.

Teachers reported that while family and whānau would support the changes, their level of awareness and knowledge about DT is variable. Accordingly, the level of support parents and whānau need to effectively support the curriculum will vary. In general, expectations around whānau knowledge and capacity to provide support tended to be higher in high-decile schools.

Industry and tertiary groups tended to have low awareness of the new curriculum, but they recognised many potential benefits of increased student learning about digital technologies. Overall, industry saw real potential for their sector to support the new curriculum through awareness-raising initiatives, workshops for teachers and students, giving talks, and mentoring.

The new curriculum offers both challenge and opportunity for our education system. Some of the challenges include raising awareness and understanding to increase levels of confidence and abilities. The opportunities lie in the forms of support that can drive successful implementation. There is potential here for us to engage with, and learn about the impact of the digital world to our benefit both nationally and internationally. Our tamariki are the leaders of tomorrow. These new skills will equip them to create better outcomes for themselves and their communities.

## 5. Appendix 1: Project Overview

### Project background

Over the past 10 years, digital technologies (DT) and Hangarau Matihiko (HM) have become a major driver of economic performance and social progress. There are expectations that every student's education will encompass learning about digital technologies. This will ensure that today's students will become active participants in the national economy. To meet these

challenges, digital technologies are being strengthened in the technology and hangarau learning areas from levels 1–8 in *The New Zealand Curriculum* and *Te Marautanga o Aotearoa*. In 2018, schools will begin implementing these curriculum changes. From 2020, the curriculum will be available for all students from years 1–13.

## **Project purpose**

The purpose of this project was to understand key user group capabilities and needs within English-medium school settings to inform implementation strategies and drive successful uptake of the new DT | HM curriculum. A separate Māori-medium report addresses particular issues facing this sector. Specifically, the Ministry's objectives for this work are:

- to understand key user needs of the following groups:
  - Students
  - Teachers
  - School leaders
  - Communities of Learning
  - Parents and whānau
  - Industry and tertiary stakeholders.
- to inform the implementation of the new DT | HM Curriculum.
- to drive the successful uptake of the new DT | HM Curriculum.

This work will assist the Ministry to understand the needs of key user groups so that they can best support them and drive the successful uptake of the new DT | HM curriculum content through the deployment projects.

## **Project outcomes**

- An understanding of teachers' current levels of confidence and ability to implement the new DT | HM Curriculum content
- An understanding of how the implementation the DT | HM Curriculum may affect all user groups
- The identification of user needs to support the successful implementation of the DT | HM Curriculum
- The identification of industry and tertiary stakeholder understanding of the DT | HM Curriculum and their role and potential contribution to implementing this curriculum
- An understanding of how a Community of Learning context may affect implementation.

## Out of scope

This user research does not focus on these areas. However, it is likely that they will be discussed in the research and may be reported on.

- Horizon scan of existing resources to support DT | HM implementation
- How to use digital devices and infrastructure
- Trends in digital devices and infrastructure
- Refinement of the DT | HM curriculum content.

A separate Māori-medium report has also been prepared and addresses particular issues facing this sector.

## Project team

TEAM MEMBER	ROLES AND RESPONSIBILITIES
<b>Mike Perry</b>	Researcher for English-medium user groups. Involved in research design data, collection analysis and report writing.
<b>Rebecca Cox</b>	Researcher for English-medium user groups. Involved in research design data, collection analysis and report writing.
<b>Christina Ward</b>	Project sponsor with over responsibility of both Māori and English-medium teams and reporting.
<b>Alex Hotere-Barnes</b>	Support with analysis and report writing.

## 6. METHODOLOGY AND APPROACH

Prior to engaging with respective user groups, we developed information sheets that outlined the purpose of the research and requested informed consent to participate. These information and consent forms were tailored to each setting. Subsequently, we used common research ethics conventions in regard to individual anonymity and individual choices regarding participation. We leveraged existing professional and personal relationships with user groups to invite and support participation.

When working face-to-face with schools, we used a flexible and negotiated approach. For example, we:

- held focus groups at times and in spaces that worked best for each school
- ensured that the questions were tailored to each age group
- created participatory activities that introduced the changes in an easy-to-understand way, gauged the support and resources already available and any gaps that existed, and surfaced the external or other additional support that would be needed during the implementation process.

### Data sample

To understand key user needs in regard to the new curriculum and inform the Ministry about pathways to successfully implement it, we engaged face-to-face with six English-medium schools. We purposefully involved schools from a range of settings, including:

- urban, rural
- large, small
- a range of socioeconomic areas
- schools with high numbers of Māori students, Pasifika students, and students with English as second language
- a mix of schools experienced and inexperienced in teaching digital technologies (experience, confidence, and knowledge with teaching digital technologies curriculum content).

Six schools participated in the research. The following schools have agreed to be named in this report:

- Richmond Primary School, Napier (small, provincial urban, low-decile, primary)
- Arahoe Primary School (large, urban, mid-decile, primary)
- Havelock North Intermediate School (mid-sized, provincial urban, high-decile intermediate)

- Te Mata Primary School (mid-sized, provincial, urban, high-decile, primary).

From the six schools:

- thirty-two teachers were interviewed
- twenty-seven students were interviewed.

School focus groups were attended by either:

- principals and/or deputy principals
- teachers with general curriculum and marautanga responsibility or digital fluency expertise and responsibility
- teachers and leaders responsible for technology and digital technologies
- a range of students.

Because the topic was new and timeframes were short, schools reported that they did not want to put their family and whānau groups under pressure to participate in the research. Consequently, whānau experiences in this report derive from teacher reflections and conversations with families and whānau, rather than to direct communication within the research process with whānau and community members.

The secondary user groups (nineteen respondents) included industry and tertiary stakeholders, including:

- universities
- Crown Research Institutes
- private businesses
- non-profit organisations.

We created an electronic survey that targeted industry and tertiary providers for the secondary user groups. Again, we invited groups that have an interest and or investment in digital technologies to participate.

More detailed information about the composition of the user groups can be found in the respective user profiles.

## **Data collection**

We audio recorded and took notes of focus group discussions. All information was stored in a password-protected and secure space (physically and digitally). When all the information was collected, a thematic analysis for each user group was undertaken to develop user profiles.

## User profiles

For the purposes of this research, a framework was developed to identify the various stages of teacher capability, competence, and needs in terms of key user groups for curriculum changes. The framework is based on the Māori-medium, e-Learning Planning Framework/Te Rangitukutuku and has been adapted for application to this user research<sup>2</sup>. The framework aligns to each separate user group/profile and user profile statements vary according to the user group.

This first full draft report was shared with Ministry for feedback. After considering this feedback, a final research report was provided to the Ministry.

## Limitations

Several limitations of this project have been identified, which may or may not contribute to the results presented here. Nonetheless, these limitations should be taken into account for the improvement of future user research projects by CORE Education and the Ministry.

- The timeframe for this project limited the opportunities to speak to more schools and to engage face-to-face with whānau, families, and Communities of Learning/Kāhui Ako.
- Many schools initially invited to participate would have been excellent candidates for data collection, but were unable to take part due to their mid-year workloads (reports and exams).
- Schools were not comfortable about involving their whānau and families in the research because of the tight timeframes and the new topic area. Therefore, we have relied on teachers' comments and reflections about family and whānau perceptions of the new curriculum.
- The English-medium focus groups did not reflect a representative cross-section of teachers across stages 1–3 user profiles. The teachers who participated were at stage 2 Kōrero (thinking/investigating) and stage 3 Mōhio (investigating/trialling), and generally held positions of responsibility or speciality for DT in their schools. The information included in the user profile for stage 1 Wahangū (unaware) has been drawn from the commentary of these participants as they reflected on the needs of their colleagues, who have been less immersed in digital technologies. They indicated that this stage 1 Wahangū group would include a majority of primary and intermediate school teachers.

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<sup>2</sup> For more information about this framework and rubric see: <http://elearning.tki.org.nz/Professional-learning/Māori-medium-e-Learning-Planning-Framework>

- Some members of the secondary user group reported that they did not have enough information about the changes to make an informed decision to participate.
- The sample size of schools' and industry/tertiary survey responses is small.

Combined, these limitations indicate that our findings are tentative and cannot be generalised to apply across primary and secondary user groups. The information provided needs to be interpreted with care when considering future curriculum implementation efforts.

## 7. INFORMATION SHEETS

### Introductory information

The Ministry has contracted CORE Education to undertake research to identify what schools need to ensure the new DT Curriculum is implemented effectively in 2018 and beyond.

We will be asking schools for their views on the implications the new curriculum may have for their school, how the new curriculum should be implemented, and what support they will need to ensure this is done well. Initially, we are seeking input from school leaders and school teachers.

Please note that this research is not looking for feedback about the content of the curriculum. That will be addressed by a separate consultation process.

#### *How your school can contribute*

We invite and encourage your school to contribute to this research. We will be giving school leaders and teachers the opportunity to share their thinking via an online questionnaire and face-to-face:

- As a first step, please complete the online questionnaire for school leaders and school teachers. This can be completed individually or with a group response if you prefer.  
Link to questionnaire: <https://www.surveymonkey.com/r/7VTSBDZ>
- CORE will also be conducting face-to-face meetings with around 6 schools, to explore further the feedback gathered in the online questionnaire. These will be held with groups of school leaders and school teachers at each school, and would take a minimum of one hour.

We will also be seeking input from students, parents/whānau and other stakeholders, and we ask for your cooperation in helping us establish opportunities for that to take place.

#### *Privacy and this research*

We want to ensure that school staff and students are able to share with us their concerns and ideas relating to the new curriculum.

The final report to the Ministry will identify which schools were consulted, however individual responses, feedback and comments will not be attributed to specific schools or individuals, unless those individuals specifically request to be identified.

We look forward to the possibility of engaging with members of your school community to gather your views around the implementation of the new curriculum.

Thank you.

## Teacher survey questions

### *Teacher questions pre-focus group visits*

All English Medium schools were invited to provide a pre-focus group online survey.

1. Are you completing this survey as an individual respondent, or as a group?

Individual respondent

Group response

2. What are the school role/s of the respondent/s? For each respondent, please also indicate the student year levels you work with.
3. What is the name of your school? (Please note responses will be aggregated and not attributed to specific schools in our reporting.)
4. How familiar are you with what's expected in the proposed new DT curriculum? Please elaborate on your answer.
5. Do you think the new DT curriculum is a positive development? Why or why not?
6. In the past, when implementing new curricula, what has helped the process, for kaiako/teachers, ākonga/students and whānau?
7. In the past, when implementing new curricula, what has hindered the process, for kaiako/teachers, ākonga/students and whānau?
8. What is the process likely to be for implementing the new DT curriculum at your school?
9. What resources and support will be needed to enable your school to get up and running with the new DT curriculum?
10. Who is likely to be involved in implementing the new DT curriculum at your school? (e.g. teachers, specialist teachers, teacher support, students, whānau, and others within and beyond your school).
11. Is there teaching and learning similar to that described by the new DT curriculum already taking place for students within your school? If so, please give a brief description.
12. What is the level of readiness (in terms of confidence, skills, and resources) of staff at your school to be in a position to implement the new curriculum?

13. The new curriculum outlines the knowledge and skills students need to become creators of DT. This is a different focus from using DT to support learning in other areas.

The curriculum identifies six themes (algorithms, data representation, digital applications, digital devices and infrastructure, humans and computers, and programming), and the key ideas computational thinking, design thinking, and creating/making.

With this in mind, are there any particular sections of the new curriculum where more resources and support might be needed to enable teachers at your school to implement the curriculum effectively?

14. What impacts might there be for your school in implementing the new curriculum? (including positive and negative impacts).
15. What aspects of curriculum implementation are best supported by online resources and which are best supported by printed resources?
16. What do you see as enablers and barriers to full implementation of the curriculum at your school?
17. What ideas do you have to mitigate the barriers?

Thanks for your time in completing this survey. If you are happy for us to contact you with any follow-up questions, please leave your contact details below.

The following questions relate to the broader curriculum, i.e. across the learning areas, including technology:

- How often do you refer to the curriculum documents, and which parts do you reference most often?
- Does this change through the year? Which format do you use and for what purpose (online versus print)?
- What aspects of curriculum implementation are best supported by online resources and which are best supported by printed resources?
- How do you incorporate the curricula into your local curriculum?
- How do you implement changes to your curriculum as needs change within your community?

### *Focus group questions*

This plan formed the basis for the schools' focus groups, allowing for some customisation depending on the pre-visit survey results. The plan assumes a session of 1–1.5 hours, with the researcher working with a group of approximately 4–7 staff at each school. Teachers were informed in advance that some of the session would be involve audio recording to help the researchers to extract the detail of conversations and to and be clear about what teachers are saying.

- 1) **Preamble** – as part of introducing the session, researchers clarified that they want to understand teachers' real needs, and are looking in depth into this for a sample of five schools. The findings will represent their experiences and perspectives, articulating the support they want from MOE. The researchers asked for any questions, concerns before starting.
- 2) **Presentation** – overview of the new curriculum – six themes, three key areas, from scaffold material.
- 3) **Research discussion** – three main sections outlined below.

*Implementation – How teachers see the new curriculum being implemented at the school, and what support they need for this*

#### Questions:

- Readiness for implementation
- Discuss the impact of the implementation - on school leaders, teachers, students and whānau (expand on answers from survey). As a prompt, what might be the impact on other curriculum areas or activities?
- Usage of curriculum documents - in general, not just for technology:
  - When do they refer to the curriculum documents? Which parts are used and for what purpose?
  - Do they use the online or print formats? Which formats do they need to have and why?
- How do they make changes to their curriculum as needs change within the community? (In general, not specific to technology.)

#### Suggested prompts during the activity:

- How much of a change is this from what they do now – what will be new to them?
- How might localising the curriculum to the school be part of the process?
- Enablers and barriers – What's going to be hard? What will be straightforward?
- What role might whānau have in the implementation process?

- What role might students have in the implementation process?

### *Curriculum – deeper look at the support they will need for specific parts of the curriculum*

This section explores the content of the curriculum itself. Researchers discussed with the whole group or divided the group into pairs and invited them capture notes in a document.

This was structured around the six themes / three key areas, and used the outcome statements and other scaffolds.

#### Questions:

- What do they already know?
- In which areas is prior knowledge and resourcing weaker?
- What resources are needed, for example, what can be provided online – website resources, examples of teaching and learning, assessment examples?
- Professional development – What does this need to be about?
- Other types of resource needed? (Infrastructure, hardware, software, support staff)
- What will teachers / school leaders / students need?
- The assessment styles could include things like project-based assessment, collaborative and cross-subject assessment – Is this new? Does it need any specific support?
- What role might whānau have in supporting this learning?

### *Readiness and confidence*

Whole group discussion audio recorded with notes taken of main points.

This session delved more deeply into what teachers think about their levels of readiness and confidence. What do people need in order to feel ready to take this on?

### *Identifying the gaps*

In this section, researchers asked about:

- aspects of teaching practice (as opposed to knowledge of this curriculum / the topic), which could affect delivering the new curriculum. Are there specific teaching skills, attitudes, or practices, which would help in delivering this curriculum? Does there need to be more support in building these?
- What do they think their students' levels of confidence and readiness might be?
- Do they think students will see the relevance of the new curriculum and want to learn it? If not, what do they think would help to engage students?

- Might there be impacts or implications for students of the new curriculum, that are less obvious and that we might not be aware of?

**Session closing, including debrief on the research process.**

Audio recorded with notes taken of main points

How did teachers find the survey and focus group session? Any suggestions for researchers?

Any suggestions for how researchers might consult with students, whānau?

How much impact has being part of this research had on their awareness of the new curriculum?

Next steps – The researchers made sure teachers had an email contact and invited them to send any extra comments that come up after the session.

Within each section, questions were tailored for each school according to the data submitted in survey responses from the school.

**Section 1 – What’s new about the DT/HM Curriculum?**

Discussion in this section was aimed at understanding the teaching and learning related to the new curriculum that was already occurring within the school, what would be new, and understanding teachers’ levels of confidence and readiness. For several groups, once the new curriculum had been unpacked through the presentation, participants were able to identify at least some aspects that related closely to work already taking place within the school.

**Section 2 – Implementation**

Questions (depending on survey responses, and discussion) included:

- How do we usually make changes to our local curriculum as needs change within the community? (In general, not specific to technology)
- How can we localise this curriculum?
- Enablers and barriers – What's going to be hard? What will be straightforward?
- Will being part of a CoL help with the implementation?
- What role might whānau have in the implementation process?
- What role might students have in the implementation process?

**Section 3 – Support and resources**

Questions (depending on survey responses, and discussion) included:

- Looking again at the specific areas of the new curriculum (the six themes, and the progress outcomes applicable to years 1–6) , are there specific parts of the new curriculum where more support (eg resources, PD) will be needed?

- What would you like the MoE to provide in terms of resources to support you?
- How do you need PD to be provided (eg online, in person)? Would you be looking for PD for any specific areas? Will these needs be covered by existing PD providers? What would you hope for from the MoE?
- When do you refer to the curriculum documents? Which parts are used and for what purpose? Does this change through the year?

*Do you use the online or print formats? Which formats do you need to have and why?*

#### **Whānau interview questions**

What questions do whānau have about the new curriculum?

What are the positives and negatives/concerns relating to the new curriculum?

How can whānau help? What might their role be in supporting students (during implementation phase and in their learning)?

What do whānau need in order to support students (information, support, networking, resources)?

#### **Student interview questions**

What questions do you have about the new curriculum?

What are the positives and negatives/concerns relating to the new curriculum?

Are you looking forward to getting stuck into the new curriculum? Why or why not?

Do you feel like you are ready to get started with the new curriculum?

Is there anything that you are concerned about?

What support will you need from your teachers to help you with this learning?

What support will you need from your whānau?

#### **Industry stakeholder questions**

What is your level of understanding of the new DT curriculum?

(rating scale from 1 – low level of understanding to 5 – high level of understanding, plus box for optional comment)

What might the positive and negative impacts of the new curriculum be, for you/your organisation?

What might you and/or your organisation's role or potential contribution be in supporting schools to implement the new curriculum?

What support or resources would you/your organisation need from the MoE in order to contribute?

Have you/your organisation been involved in supporting schools in the past, or are you currently doing so?

(choose from options:)

Yes – in the past, but not currently involved

Yes – currently providing support

No – have not been involved

Don't know or unsure

If you/your organisation has been or is involved in supporting schools, please describe the type of support / capacity.

Are you aware of any barriers which might prevent you/your organisation from being able to support schools with this curriculum?

What might you/your organisation hope to gain from supporting schools with this curriculum?

### **Tertiary educators' questions**

This brief survey focused on tertiary training providers' needs for support and the programme changes they are planning to make.

**Survey title:** Digital Technologies I Hangarau Matihiko curriculum – Teacher training provider survey

**Survey introduction:** This survey has been set up to identify support and resourcing which the Ministry could provide to assist teacher training providers in addressing the new DT I HM curriculum. This survey is part of a research project for the Ministry.

What type of teacher training does your organisation provide?

What is your role within your organisation?

What changes are likely to be made to your organisation's programmes for teacher trainees or teachers, in order to support the new DT curriculum?

What support or resources from the Ministry would be of assistance to help your organisation address the new curriculum in programmes for teacher trainees and teachers?

If your organisation provides other types of support to schools on DT, are there any resources or other forms of support which the Ministry could provide to assist with this?

Are there any other comments that you would like to make in relation to teacher training provider perspectives on the new DT curriculum?

Please enter your name below if you would like to be identified with any of your comments in the final research report. Leave this field blank if you would prefer your comments to be reported anonymously.

Thanks for your time completing this survey. If you are happy for us to contact you with any follow-up questions, please leave your contact details below.

## *Key quotations from participants*

### **Responses aligned with Stage 1: Whangū (Unaware) teacher-user profiles**

*I estimate we have only six early adopters in a staff of 30. And the rest will struggle ... and throw their hands up in horror. (Primary school deputy principal)*

*Teachers' typical "too hard basket", "too busy, too hard", "nah, not doing it!" response to change is not acceptable. (Primary school e-Learning leader)*

*Another important part of our Poutama (curriculum framework) is the passion projects ... and inquiry process. Designing and producing digital outcomes will fit perfectly with that. (Primary school assistant principal)*

*Perhaps we could use the Gradual Release Model that we're using elsewhere. Perhaps buddying up ... learning together, then releasing to avoid a haves and have-nots situation. (Primary school deputy principal)*

*We need some simple summaries and outlines of the curriculum content. Many teachers will find it quite scary. (Primary teacher)*

*When they see what it involves, many staff will freak out! (Primary school leader)*

*We've got many staff who would never have interacted with Scratch, with computer programming, even at its most basic level. (Primary school teacher)*

### **Responses aligned with Stage 2: Kōrero (thinking/investigating) teacher-user profiles**

*We need to grow an in-depth understanding of the curriculum, then connect and enhance school-based curriculum. (Primary school leader)*

*Two teachers have done some things. There is a coding club. We've had a robotics programme come into the school for all year 6 students. We had LEGO technics a few years go, but apart from that, we don't have the resources. One teacher borrowed robotics kits from another school for much of last year, for pockets of kids to dabble with. But there is no strategy in place ... no computational thinking platform. (Primary school deputy principal)*

*They (e-learning leaders) will dabble, because they're forward thinkers ... and ultimately, we want this stuff and know our kids need it. (Primary school leader)*

### **Responses aligned with Stage 3: Mōhio (investigating/trialling) teacher user profiles**

*It will validate what many schools are already doing. (Primary school teacher)*

*This kind of stuff is what really switches the kids on, but it's only being used by a few kids. (Primary school principal)*

*The most sensible place is to start with specialists. We're thinking that some aspects of the curriculum could be taught and supported by teachers across the curriculum, especially computational thinking. But other aspects need to be done by specialists, especially developing digital outcomes. (Intermediate school leader)*

*The blended learning team will unpack it with senior management. From there I suppose we will set goals and devise a plan with the learning leaders and then the staff for implementation. (Primary school leader)*



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