



Office of the Prime Minister's Chief Science Advisor  
Kaitohutohu Mātanga Pūtaiao Matua ki te Pirimia

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# He Uru Kahikatea

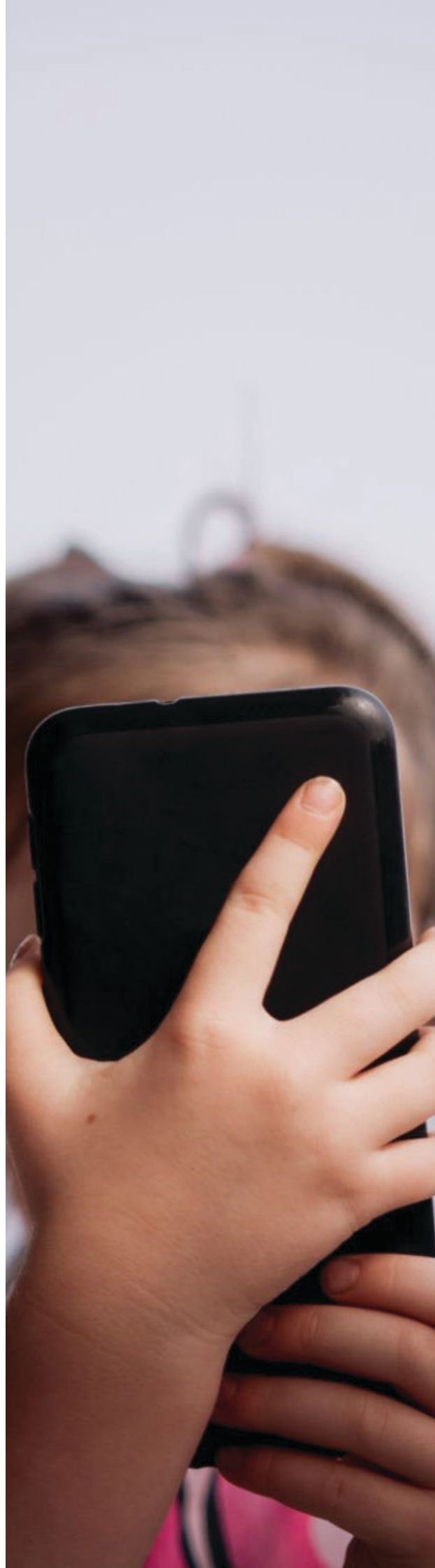
## Building young people's resilience through media and information literacy and digital citizenship skills

A report from the Prime Minister's Chief Science Advisor,  
Kaitohutohu Mātanga Pūtaiao Matua ki te Pirimia

### Key messages



October 2023



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## Foreword

This report was commissioned by PM Ardern and is part of a series of workstreams across government tackling the challenge of mis-, dis- and malinformation. We use the term polluted information to include all three terms, reflecting the problematic nature of our information landscape. We focus on how we might enable young people to be more resilient in this polluted landscape. Resilience is a contested term, and the title of our report – He Uru Kahikatea – is an acknowledgement that resilience sits at the level of communities, not individuals. There is strength in tackling this problem collectively.

In the current online environment, the need for media and information literacy and digital citizenship to build this resilience has never been more pressing. We focus on a systematic education approach to supporting media and information literacy and digital citizenship. While polluted information and other challenges young people face are not confined to the online environment and social media, the internet has amplified their reach and impact. The rapidly changing online and social media environment: artificial intelligence, new platforms, rising time spent online, platforms changing and adapting, and deepfakes, increasingly confront young people. The ability to decipher which information is credible is critical, and support to develop dispositions and attitudes which help young people interact positively online are urgently needed.

There is no silver bullet; rather, there is a need for a whole of system approach that supports teachers, schools, parents, caregivers, whānau, and young people, locally tailored to communities. The approach must also uphold Te Tiriti o Waitangi. This report does not make specific recommendations, which were outside our terms of reference, but does build an evidence base to support an approach within Aotearoa New Zealand. There is a need to expand the evidence base within the New Zealand context. This should include different mechanisms to track the impact of actions that seek to promote media and information literacy and digital citizenship at an individual classroom, school, and national level. The report outlines the importance of equipping teachers with knowledge, tools for assessment, and resources, and the role of three New Zealand curricula in promoting media and information literacy and digital citizenship. Ensuring that media and information literacy and digital citizenship are culturally and contextually relevant is pivotal to their success; this must occur along with community support and buy-in. We highlight the importance of including teachers, parents, caregivers, whānau, and the wider community in the journey.

We hope this report serves as a wero (challenge) to create a national approach to media and information literacy and digital citizenship, supporting young people as not only consumers of information but also critical thinkers and responsible digital citizens, ready to navigate the media and information landscape of today and prepared for the information landscape of tomorrow.



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## Overview

This summary report pulls out the key messages from our full report 'He Uru Kahikatea: building young people's resilience through media and information literacy and digital citizenship skills'. The full report provides a fully referenced select review of the academic and grey literature, enriched by stakeholder engagement, and was written to meet our Terms of Reference. It does not provide a comprehensive review of New Zealand government activities.

The short report presents an overview of the key messages distilled from the full report.

## Key messages and executive summary

### Key messages

These key messages provide a snapshot of the full report, and are elaborated in this executive summary.

#### **Polluted information**

- We use polluted information as a collective term for all types of contested information contributing to an online environment that causes harm to young people. This includes misinformation, disinformation and malinformation.
- Polluted information can cause harm; it is not restricted to the online environment or social media but has been amplified by them; enhanced media and information literacy and digital citizenship skills can protect young people from harm.

#### **Media and information literacy and digital citizenship**

- The online environment offers both opportunities and risks for young people. They need to be equipped with tools and strategies to maximise benefits and minimise harms.
- Media and information literacy and digital citizenship are needed to ensure young people can be resilient, especially in the context of a rapidly changing online environment.
- Beyond existing strengths in specialist media education, and in other parts of the curricula, media and information literacy and digital citizenship are most successfully learned when they are embedded in and across all curriculum learning areas.
- Digital skills, critical thinking, and social emotional skills are all foundational parts of media and information literacy and digital citizenship, and young people, whānau, and teachers need to be supported to have a baseline of these skills.
- Young people need access to media and information literacy and digital citizenship resources and strategies they can use for interacting with and supporting their peers.

#### **Initial teacher education and in-service professional learning and development**

- Initial teacher education (ITE) and in-service professional learning and development (PLD) already include critical analysis skills but should explicitly include opportunities for learning about media and information literacy and digital citizenship to equip teachers with the skills needed for their resilience as well as for teaching young people.

### **Support for schools, kura, and teachers**

- Leaders in schools, kura, and Early Learning Services (ELS) need support to help grow teachers' confidence and competence in teaching media and information literacy and digital citizenship.
- Teachers need to be supported by resources and adaptable lesson plans for teaching that reflect different learning stages and disciplines, are relevant for the Aotearoa New Zealand context, and are numerous enough to be drawn on throughout the year.
- Parents, caregivers, and whānau need to be included in school, kura, and ELS initiatives with a view to increasing their understanding and ability to support young people in media and information literacy and digital citizenship.

### **Equity and Te Tiriti**

- English medium schools, Māori medium schools, kura kaupapa Māori, and ELS will uphold Te Tiriti o Waitangi by ensuring equity in access and outcomes in media and information literacy and digital citizenship education for rangatahi Māori and communities (whānau, hapū, iwi).
- Programmes, resources, and adaptable lesson plans that are made by, alongside and with diverse communities including: Māori, Pacific, immigrants, refugees, neurodiverse, rural communities, disabled, and LGBTQI+ are all important in the New Zealand context.

### **A national approach, locally led**

- A national strategy can be helpful in guiding media and information literacy and digital citizenship in the education system.
- A national level approach, whole of school approach, and classroom level approach to media and information literacy and digital citizenship, are all critical. Community expertise should also be integrated wherever possible.

### **Libraries**

- Libraries and librarians already have expertise in media and information literacy and digital citizenship and can play a central role in designing and facilitating media and information literacy and digital citizenship initiatives – particularly as a means of growing collective community understanding, agency, and action.
- They need resourcing and support to do this, both to access qualified librarians and to upskill other staff through professional development.

### **Developing effective tools and measuring progress**

- Meaningful measures of media and information literacy and digital citizenship capability for both young people and teachers are needed to evaluate success. These are not widely available, and challenging to design. Currently available measures that can be used for tracking effectiveness have been critiqued for their utility in New Zealand.
- Research and development is needed for designing effective instructional tools and measures that are fit for purpose and reflect the unique context of New Zealand.

## Introduction

This report, He Uru Kahikatea: building young people's resilience through media and information literacy and digital citizenship skills, takes inspiration from the whakataukī 'He Uru Kahikatea', which refers to a stand of kahikatea trees. This whakataukī, and the report's broader title, speak to the idea that the root system of a stand of kahikatea trees is as deep and tangled as the tree is tall - which keeps them resilient and tenacious in the face of environmental challenges. Incorporating this whakataukī into the report's title reflects the importance of collective action, collaboration, and community approaches to resilience. Just as a stand of kahikatea is extremely difficult to fell because they are supported by the intertwined roots of other kahikatea, young people, schools, their whānau, and community are stronger together in the face of the mis-, dis-, and malinformation which pollute our information environment online. We use polluted information as a collective term for all three types of contested information. Polluted information is not restricted to the online environment or social media, but the advent of the internet and rapid advances in digital technologies and social media have amplified the pollution of the information landscape.

The report is centred on Aotearoa New Zealand, while drawing from international best practice. It presents a synthesis of evidence about the role the education system does and could further play to help young people navigate polluted information and build positive digital citizenship skills for interacting online. The context in which this occurs is complex and while there are substantive opportunities for young people in the online environment, there are also many challenges, including polluted information.

Local evidence and current provisions have been extensively investigated through consultation, document analysis, searching evidence and data bases and national and international case studies. This has necessarily been up to a particular point in time. We acknowledge developments in curricula and resources within different agencies are ongoing.

We use digital citizenship as a collective term for skills such as self regulation, perspective taking, and being empathetic, considerate, inclusive, and collaborative in the digital world. Media and information literacy is focused on the skills needed to critically engage with information, media, and digital technologies. Both media and information literacy and digital citizenship are key to building resilience in young people as they navigate polluted information and engage in the online environment.

## Context

### **Young people are facing a complex and changing online environment**

Young people are facing challenges, many of which existed long before the online environment, but which have likely been exacerbated by its proliferation. These include polluted information, radicalisation and extremism, privacy violations, image based abuse, cyberbullying, mental health challenges, and body image concerns. There are also many things that young people may gain from the online environment, including a sense of community and belonging. The technologies that are shaping the online environment are also changing and developing, these range from artificial intelligence (AI) to moderation techniques that social media platforms undertake, to how the things young people see on their social media is individualised through curation algorithms and AI. In this complex context, media and information literacy and digital citizenship skills are important to help

young people minimise the risks, meet the challenges, and maximise the benefits of the online environment.

### **An opportunity for New Zealand**

Media and information literacy and digital citizenship have had limited focus across the education sector. This presents an opportunity for the education system to strengthen the resilience of young people through a media and information literacy and digital citizenship initiative. The evidence base internationally and, in particular, nationally is still developing. There is a significant opportunity to enable a strengths based and community focussed approach when envisioning a media and information literacy and digital citizenship system in New Zealand.

A range of attitudes, dispositions, and skills to think critically and reason effectively with information is required to mitigate the challenges that young people face in the evolving dynamic, and complex digital landscape. This necessitates empowering educators and school leaders to understand and develop media and information literacy and the accompanying digital citizenship pedagogies, moving beyond monitoring and restricting young people online. Ongoing PLD and support for teachers across early learning, primary, and secondary education in English medium, Kaupapa Māori, and Māori medium is needed to ensure that they have the necessary digital competence and media and information literacy skills to effectively teach young people to navigate the online environment.

### **Challenges to consider**

There are many challenges which key actors will need to consider. New social media platforms are constantly emerging; therefore, research that is peer reviewed, thorough, and held up to scrutiny is struggling to keep pace. To be effective, media and information literacy and digital citizenship skills need to be taught in ways that respond to, and ideally anticipate, the constant changes young people experience online and offline. This will support young people to develop the dispositions and sensitivities to act and adapt. Digital inequities are still prevalent among young people in New Zealand. Despite the significant, rapid actions of Te Tāhuhu o te Mātauranga | The Ministry of Education (MoE) to bridge the digital divide during the COVID-19 pandemic, there are still many Māori, Pacific, and young people from lower socioeconomic groups who face ongoing inequalities in access and usage. There are also significant differences between individual schools, kura, and ELS; these inequities need to be considered if implementing media and information literacy and digital citizenship in the education system.

### **International comparisons**

Some of the countries highlighted in the literature as having successful responses to polluted information are examined. In these countries media and information literacy and, to a lesser extent, digital citizenship, have been successfully embedded into the curriculum, and there are national policies and strategies helping to guide media and information literacy and digital citizenship. Norway has a professional digital competence framework for teachers, which was introduced in 2017, in part as an acknowledgement that teachers must first be equipped with digital skills and understanding before they can teach their young people about digital issues and topics. Finland has a system which supports media and information literacy and digital citizenship, including media and information literacy being embedded in the national curriculum, and a governing body charged with promoting media and information literacy, producing resources and adaptable lesson plans, and coordinating media and information literacy throughout the country. Finland also has a network of

NGOs that receive EU or government support to promote media and information literacy and digital citizenship and run innovative programmes and pilots. While Finland has challenges, including a lack of local adaptation for different communities, their system of media and information literacy and digital citizenship offers insights for New Zealand.

### Research, lesson plans, and gamification

Research must underpin evidence based practice aiding the development of new programmes, adaptable lesson plans, resources, and evaluation measures. There is an evidence base to draw from internationally. The international evidence base shows that adapting programmes, lesson plans, and resources to the local context is key to their success. Adapting lesson plans and resources to different cultural and geographic contexts, and diverse learners more broadly, including Māori, refugee, immigrant, rural, LGBTQI+, and Pacific communities is important in the New Zealand context. This includes teaching media and information literacy and digital citizenship through games, which has met with some success internationally.

Skills, knowledge, attitudes, and dispositions are all important components which need to work together to build young people's resilience. Skills like questioning the intent of the creator or platform and their potential bias or lateral reading, where you stop viewing a piece of content and check what other sources say, are useful. Supportive dispositions and attitudes include reflecting on the impact content has on you and what impact it may have on others, or being inquisitive about the accuracy and intent of content.

Social and emotional skills are a foundational part of media and information literacy and digital citizenship. These skills can start during Early Childhood Education (ECE) and continue to be supported as young people move through to school and kura. For instance, emotional regulation is vital when reflecting on your own emotional reaction and intent behind information. Young people need to develop these skills and teachers need to be equipped to support them to do so during their education.

### **The challenge for key actors**

When teaching media and information literacy and digital citizenship, young people and their teachers need to understand the intent behind content, how content is disseminated, platformed, and curated, and the actions social media and technology companies take offline. The evidence shows that designing curriculum content that relies on highly emotive, controversial, or polarising examples can be ostracising and ineffective; it is therefore important that media and information literacy and digital citizenship support young people in how to think, rather than what to think. Both the teacher and the young person need to be challenged to reflect on their own perspectives, biases, and values.

### **Supporting educators with adaptable lesson plans and a resource hub**

There are limited existing examples of approaches and resources in New Zealand; they include those developed and made available through Te Kete Ipurangi, Netsafe, and Manaiakalani Education Trust (MET), alongside existing online resources from the global community. In Estonia, the Ministry of Education and Research has a common platform from which teachers can draw and adapt lesson plans from templates and share lesson plans and discuss polluted information issues with their peers. Building a media and information literacy and digital citizenship platform that provides peer reviewed resources and adaptable lesson plans could be vital, and the current curriculum refresh

provides an opportunity to do this. Resources and lessons should be adaptable, reflect different learning stages and learning areas, and varied enough to use all year in different contexts. Having these programmes, resources, and lesson plans readily available and made by, alongside, and with diverse learners, teachers, and communities is a vital component of supporting media and information literacy and digital citizenship in the education system.

## The curriculum

The three curricula in New Zealand all offer opportunities to embed media and information literacy and digital citizenship. The Early Childhood Curriculum, Te Whāriki, guides the sector's practice and was refreshed in 2017. Currently, some content is embedded within Te Whāriki to keep young people safe and secure online; however, there is the potential to further strengthen young people's digital capability. There are also places in the curriculum focused on social and emotional learning (SEL), which offer places to connect with media and information literacy and digital citizenship. For example, exploring emotional regulation in the Wellbeing | Mana whenua strand, or the importance of respecting others online in the Contribution | Mana tangata strand. When considering Te Whāriki, it is important that media and information literacy and digital citizenship concepts weave into the curricula for schools and kura.

The current curriculum refresh provides an opportunity to incorporate media and information literacy and digital citizenship. Currently, the New Zealand Curriculum (NZC) for English medium schools and Te Marautanga o Aotearoa for kura, and Māori medium schools set out the broad direction of what is taught, with the local curriculum guiding more granular direction set by schools. School leaders and teachers have the agency to adapt the curriculum to their local context in ways that meet young people's needs. In the NZC, there is potential to more explicitly and extensively include media and information literacy and digital citizenship as a key competency, while in Te Marautanga o Aotearoa there is potential to embed media and information literacy and digital citizenship in the principles and values and attitudes. In both these cases, embedding media and information literacy and digital citizenship in parts of the curriculum that apply to each learning area is in line with the international evidence.

Different learning areas offer different opportunities. Some examples in each learning area (of the NZC) and wāhanga ako (of Te Marautanga o Aotearoa) are outlined below:

- English | Te reo Māori: there is potential to extend existing concepts, such as 'what the purpose of a text is' to include online multimedia content; this could include discussion about paid advertising.
- Mathematics and statistics | Pāngarau: how statistics, graphs and figures can be misrepresented or manipulated.
- Social science | Tikanga-ā-Iwi: the importance of critiquing online sources of information, and interrogating their accuracy, including the intent behind the creator, and the skill of lateral reading. Media and information literacy is important in both media studies and history.
- Technology | Hangarau: the ethics and technology of algorithms, AI, and targeted advertising and how these things can shape the online environment.



- Digital technologies | Hangarau matihiko: teaching children how to design their own digital solutions and become creators of, not just users of, digital technologies, to prepare them for the modern workforce.
- Health and physical education | Hauora: how to critically engage with fitness, wellness, and mental health ‘experts’ on social media and via the internet, and the importance of lateral reading, relational well being, and face to face professional expertise.
- Science | Pūtaiao: the importance of considering the process of scientific inquiry, or lack of scientific inquiry, when considering information online.
- The arts | Ngā toi: how images, videos, and audio can be altered, changed, and created with the intent to mislead and spread online, including deepfakes and AI. How people, places, and ideas are portrayed through media.
- Learning languages | Ngā reo: how different cultural perspectives and understandings can shape the online environment.

Each learning area offers an opportunity to embed media and information literacy and digital citizenship concepts. The international evidence highlights the importance of teaching whole concepts in every learning area. By teaching whole concepts, like lateral reading, critically thinking about the intent of the creator, critically ignoring, and reverse-image searching, young people will have these concepts supported across their learning. It is also important to consider that the curricula are already very full, and including media and information literacy and digital citizenship poses complexity for teachers. It is therefore vital that sufficient support and resources are provided to teachers and schools alongside the curriculum refresh.

### National uptake, coherence, and consistency

A national-level approach, whole-of-school, kura, or ELS approach, and classroom-level approach to media and information literacy and digital citizenship are each critical. A focus on equitable opportunities, minimising the wide variance between schools’, kura, and ELS providers’ digital infrastructure and the digital competency of educators is a key part of a media and information literacy and digital citizenship programme’s success. A national body supporting media and information literacy and digital citizenship is a common feature in countries succeeding in this area, with Finland having a national government body with legislative responsibility to promote media and information literacy and digital citizenship through producing resources for parents, caregivers, the education system, libraries, and NGOs, as well as conducting research and offering seminars and workshops. In these countries, the equivalent to New Zealand’s Te Mana Whakaatu The Classification Office undertakes this work, with a dedicated team focused on media and information literacy and digital citizenship. A media regulator would be suited to carrying out this work, and there is potential to expand the remit of Te Mana Whakaatu The Classification Office to undertake this work in the New Zealand context.

Some teachers will need to be upskilled in their own media and information literacy and digital citizenship as well as learning how to teach these same skills to young people. Research has shown that teacher’s ability to discern polluted information is roughly in line with the general population, therefore making it imperative to provide professional learning opportunities. For teachers, policymakers and researchers, the changing social media landscape including the rise of AI and video-focused platforms, pose serious challenges. The intent of the platforms is changing, and the amount of time that young people are spending on platforms is continuing to rise. Being responsive

to these changes is imperative but made more difficult by the generational preferences in social media platform use. Offering ongoing professional learning opportunities in this area is therefore vital. Teachers need to know what young people are doing online, in a broad sense, in order to provide a curriculum that will support them.

Two avenues are particularly important, PLD and ITE. ITE requirements set by the Teaching Council of Aotearoa New Zealand emphasise supporting and developing critical analysis skills as preparation for the demands of teaching. They currently don't explicitly include media and information literacy and digital citizenship, but have the flexibility to adapt content to reflect current priorities and issues; therefore, content varies across providers of initial teacher education. If media and information literacy and digital citizenship were to be included in the curriculum and/or ITE requirements, pre-service teaching programmes would need capacity, capability, and resources to embed this into programmes.

The PLD system in New Zealand offers several avenues for a media and information literacy and digital citizenship programme to be delivered, through regionally allocated PLD and national adoption of approaches such as Kāhui Ako | Communities of Learning (CoLs). Each of these approaches has its challenges, regionally allocated PLD has limited places and competing priorities, a national approach is potentially resource-heavy and would need to be administered both online and in-person, and CoL have large variances between them, making consistent national uptake difficult. With each option, whole of school approaches are likely the most effective: this means that every teacher needs to be able to upskill, and that highly accomplished teachers may act as mentors in school settings. Teachers also need ongoing opportunities to upskill, not via a one-off course, and any PLD will need to be supported by education leaders, including the allowance of time outside the centre or classroom, so teachers can undertake further learning. Schools, kura, ELS, and education leaders all need support to better understand and increase teachers' media and information literacy knowledge and digital citizenship skills.

### **Using libraries to disseminate information**

Public and school libraries can play a central role in designing and facilitating media and information literacy and digital citizenship initiatives, particularly to grow collective community understanding, agency, and action. The libraries in Finland have funding to support schools through professional development and teaching young people classes focused on navigating the online environment. There is an opportunity in New Zealand to strengthen the role that libraries play as partners in tackling the polluted information landscape, with the National Library well placed to play a leading role.

## Tracking progress and measuring success

A vital part of integrating media and information literacy and digital citizenship at a national level is ensuring that there are measures in place to evaluate the development of teachers' media and information literacy and digital citizenship competencies, alongside young people's progress. This is important to ensure consistency across the country and ensure that the programmes, adaptable lesson plans and resources that the government supports are optimising and growing young people's media and information literacy and digital citizenship skills. Meaningful measurement is challenging in this field, but there are a number of potential ways to monitor progress for both media and information literacy and digital citizenship. Progress needs to be assessed at a national level, potentially through assessments such as Programme for International Student Assessment (PISA), National Monitoring Study of Student Achievement (NMSSA), the Curriculum and Insights and Progress Study, some National Certificate of Educational Achievement (NCEA) standards and the Youth Health and Wellbeing survey, What-About-Me? At a school level, the National Wellbeing@school survey could include measures of digital citizenship and a school entry kete (a basket) could offer assessments of the skills of young people as they enter school or kura. At a classroom level, the Progress and Consistency Tool, Progressive Achievement Tests (PAT), and the Electronic Assessment Tools for Teaching and Learning (e-asTTle) could potentially be adapted to include concepts relating to media and information literacy and digital citizenship. There are also opportunities to create resources that help schools, kura, and teachers track young people's progress. Beyond this, there are options to assess schools' and teachers' capabilities, either through existing assessments like the International Teaching and Learning Survey (TALIS) or through a new monitoring assessment or survey that could occur before and after PLD focused on media and information literacy and digital citizenship, yearly, or when teachers are entering the workforce.

New assessments at all three levels could also be introduced, targeting specific areas of interest. Finland's Save the Children's Huippula is a gamified test for young people aged 10-12 years old focused on digital citizenship and media and information literacy skills and dispositions; the data is anonymised and then given to the teacher alongside adaptable lesson plans and topics that are most relevant given the responses. The data are collected at a school level, as well as regionally, and nationally. Giving a baseline for young people's capabilities at age 10-12, Save the Children aims to create a national benchmark that can be tracked year on year.

There are current opportunities in New Zealand, although somewhat piecemeal, to track media and information literacy and digital citizenship progress. There is further opportunity to expand current assessments and tracking to explicitly include media and information literacy and digital citizenship and for new assessment measures to be formed specifically focused on media and information literacy and digital citizenship.

## Beyond the classroom

Learning is not just restricted to the school environment, and it will be important to consider the effect of a whole-community approach to fostering resilience in a young person. Including parents, caregivers, whānau, and other community members in media and information literacy and digital citizenship initiatives increases their own understanding and positively impacts their ability to support young people. Parents and whānau need readily available and culturally appropriate resources that equip them to have conversations with young people. Topics covered by these resources could be types of media, age ratings, benefits of media, social media, how to work out what sources of information to trust, and being an informed and responsible online user.

### **Supporting the adults around young people**

Adults are not immune to polluted information, and a community approach can ensure that they develop their own skills and understandings. Adults fostering a balanced view of the online environment, and seeing the positives and challenges, is an important part of supporting young people in online contexts. Initiatives codesigned with the community are likely to work to meet the community's digital needs. When resources and adequate support are available, it can reduce the online risks and provide an opportunity to frame the digital space positively. They can enable parents to be aware and make informed choices about how the online space is utilised at home.

### **Strong identities can build resilience**

Young people's identities and familial and cultural connections are all important protective factors for online safety. 'Offline identity' through cultural connection, community, and participation is important because young people are more likely to use help-seeking behaviours when they feel supported, safe, and part of a community. Importantly, because social media can act as a tool to connect people from socially isolated groups like LGBTQI+, disabled, and immigrant communities, it is vital to remember that some young people seek community and connection online and need to be supported to do so in a safe manner.

## Concluding comments

[Figure 1](#) summarises the key themes of this report. Central to mitigating the effects of polluted information and to developing positive skills for social media and the internet is the young person's strengths, not just as an individual but as part of a collective. Supporting the development of media and information literacy and digital citizenship requires a coherent and systematic national response involving schools, kura, ELS, teachers, school leaders, parents, caregivers, whānau, the wider community, and government.

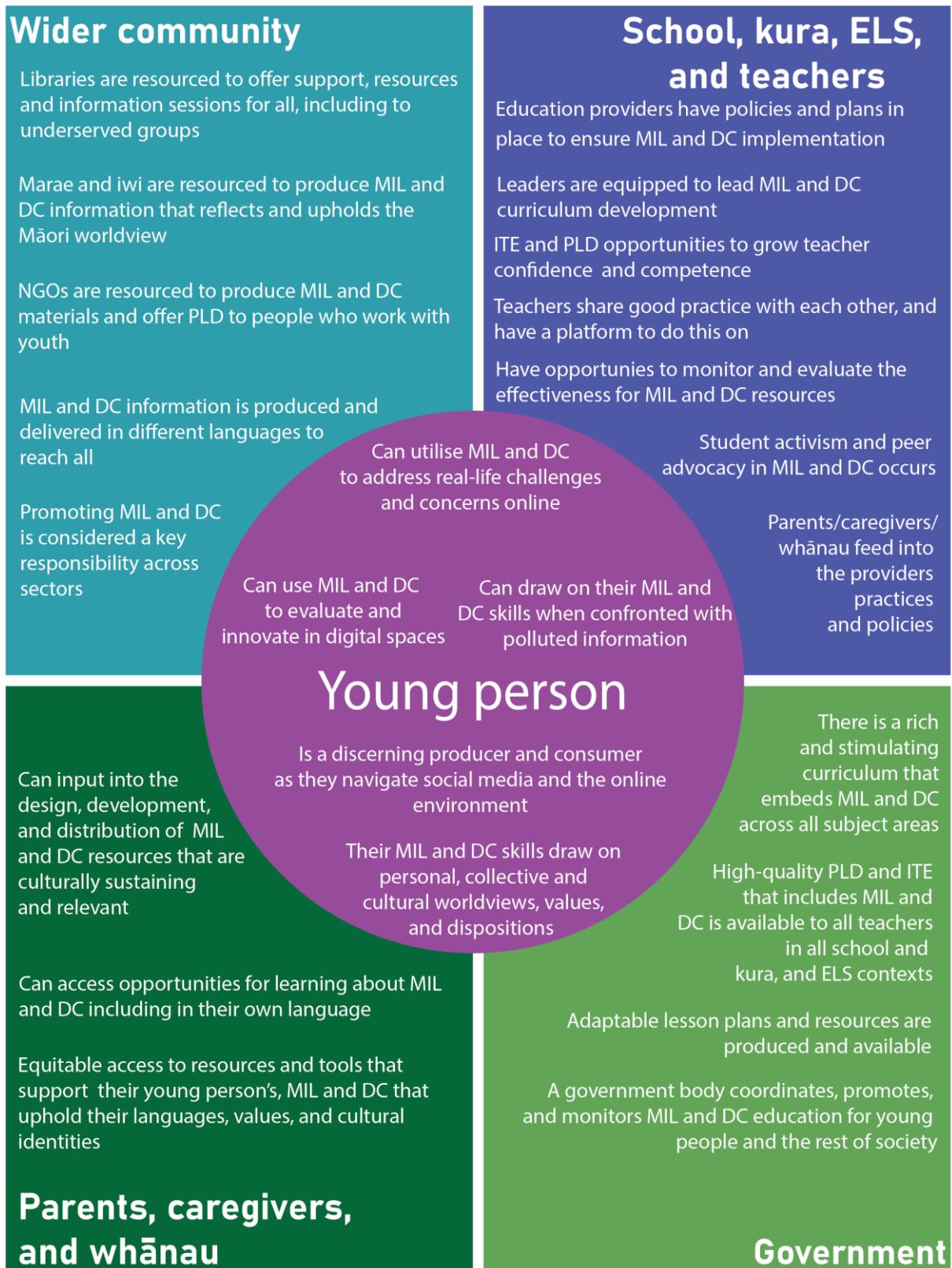


Figure 1: Centring the media and information literacy and digital citizenship system around the young person. MIL = Media and information literacy, DC = Digital citizenship.

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