
8. Learning with digital technologies

Digital technologies have become integral to New Zealand schools, though the extent and nature of their use in learning varies. In 2017, the Technology learning area of NZC was revised to strengthen opportunities for students to learn *about* digital technologies. This involved two new areas of learning: computational thinking (CT) and developing and designing digital outcomes (DDDO).²⁸ Schools were expected to start teaching the revised technology learning area in 2020. An ERO report in late 2018 found that many schools were unprepared to do so.²⁹ From 2018, the Ministry of Education has funded Kia Takatū ā-Matihiko, the National Digital Readiness Programme, which aims to support teachers, kaiako, school leaders, and tumuaki to feel supported, confident, and well equipped to implement the new digital technologies (DT) and hangarau matihiko (HM) curriculum content. Schools have also been able to apply for centrally-funded PLD to support digital fluency.

This chapter starts with principals' perspectives on digital technologies and their use. It then looks at some ways students are using digital technologies for learning, including growth in activities such as gaming and coding. Teacher views on the value of digital technologies for learning are then described, followed by their views of the new Digital Technologies outcomes.

Principals are more confident about teachers developing digital pedagogy than about meeting digital costs

Figure 34 shows that most principals were confident that their teachers were developing effective pedagogies using digital technologies to enhance learning, though around a third did not think they had adequate resources to support good quality learning with these, or that all or almost all their students had good access to digital technologies at home. Two-thirds (67%) said their school was on track to incorporate the new DT curriculum content in 2020, and 61% said their school had engaged with professional support around the new DT content.

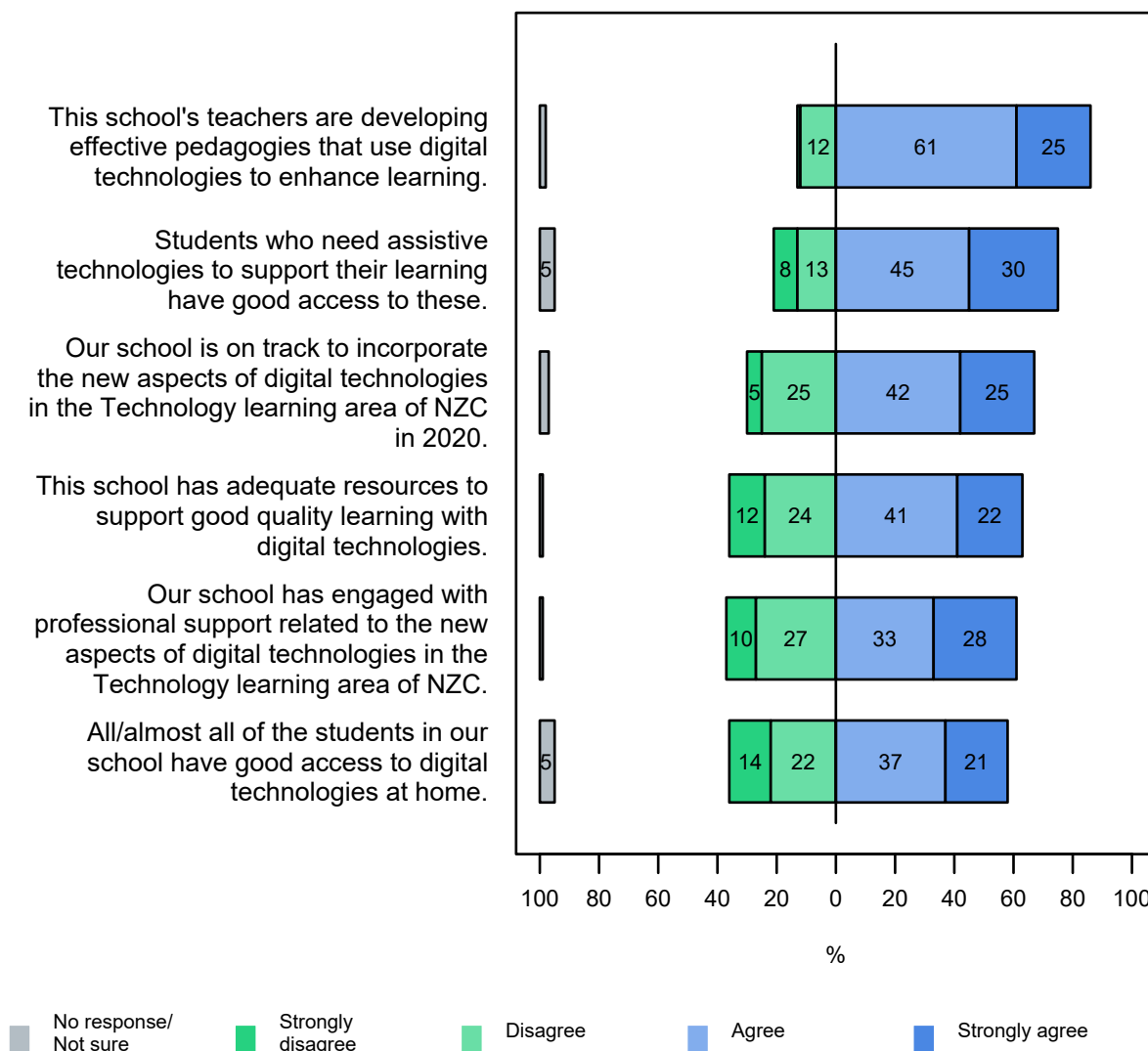
In a separate question on the major issues facing their school, 64% of principals identified the cost of purchasing, maintaining, and replacing digital devices and infrastructure—one of the top four issues.³⁰

28 Equivalent revisions were made to strengthen hangarau matihiko in Te Marautanga o Aotearoa, with the addition of Te tupuranga whakaaro rorohiko and Te tupuranga tangata me te rorohiko, within ngā wāhanga ako hangarau.

29 Education Review Office. (2019). *It's early days for the new digital technologies curriculum content*. <https://www.ero.govt.nz/assets/Uploads/Its-early-days-for-the-new-digital-technologies-curriculum-content.pdf>

30 Table 34 has the full picture of the major issues identified by principals.

FIGURE 34 Principals' perspectives on digital technologies and their use (n = 145)



More use of digital technologies in classrooms

Previous national surveys identified that using the internet for research and digital word processing were already very common ways of using digital technologies in most classrooms. Figure 35 shows how often teachers said their students used digital technologies for a selection of other purposes that we have been tracking over several years.

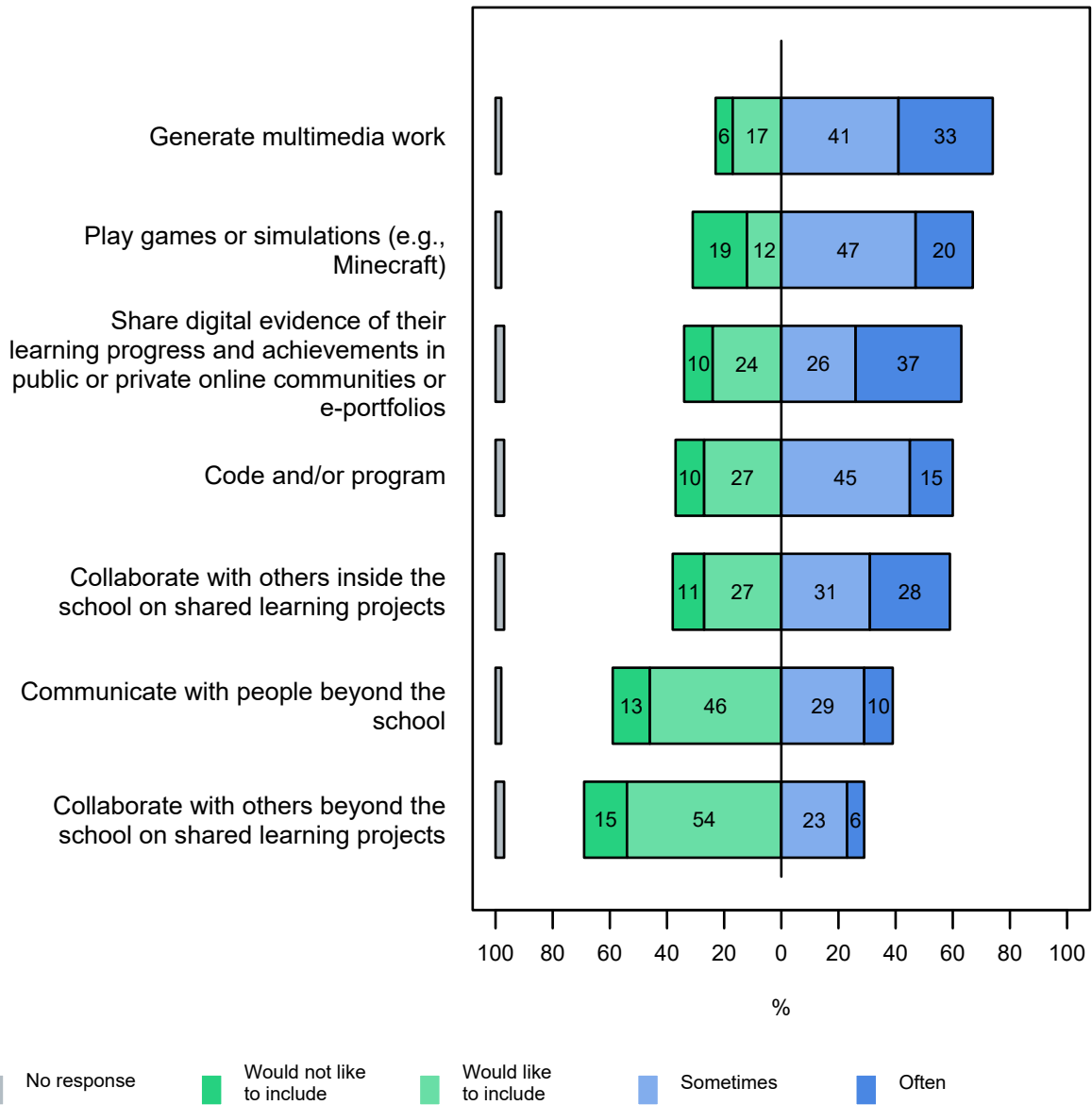
Some clear changes since 2016 were evident from teachers' responses relating to the use of digital technologies for learning 'often' or 'sometimes':

- code and /or program—60%, up from 19% in 2016
- generate multimedia work (e.g., images, movies, music, animations)—74%, up from 56% in 2016
- play games or simulations—67%, up from 55% in 2016
- collaborate with others inside the school on shared learning projects (e.g., co-creating documents or discussion forums)—59%, up from 47% in 2016
- collaborate with others beyond the school (e.g., experts, community groups, people at other schools) on shared learning projects—29%, up from 14% in 2016.

8. Learning with digital technologies

Of the digital technology uses we asked about, ‘share digital evidence of learning progress’, ‘generating multi-media work’, and ‘collaborating on shared learning projects within the school’ were the most frequent. Some teachers said they wanted their students to be using digital technologies in ways they weren’t currently doing, though around 10% did not want to include any of these in their programme, and 19% did not want to play games or simulations in their classroom. These are lower proportions than in 2016.

FIGURE 35 Purposes for students’ use of digital technologies (Teachers, $n = 620$)



The new digital technologies areas of computational thinking for digital technologies (CT) and designing and developing digital outcomes (DDDO) include an emphasis on developing knowledge and capabilities associated with coding. Many core computer science concepts associated with coding can be taught without digital devices, using “unplugged” activities such as physical games and puzzles suitable for young learners.

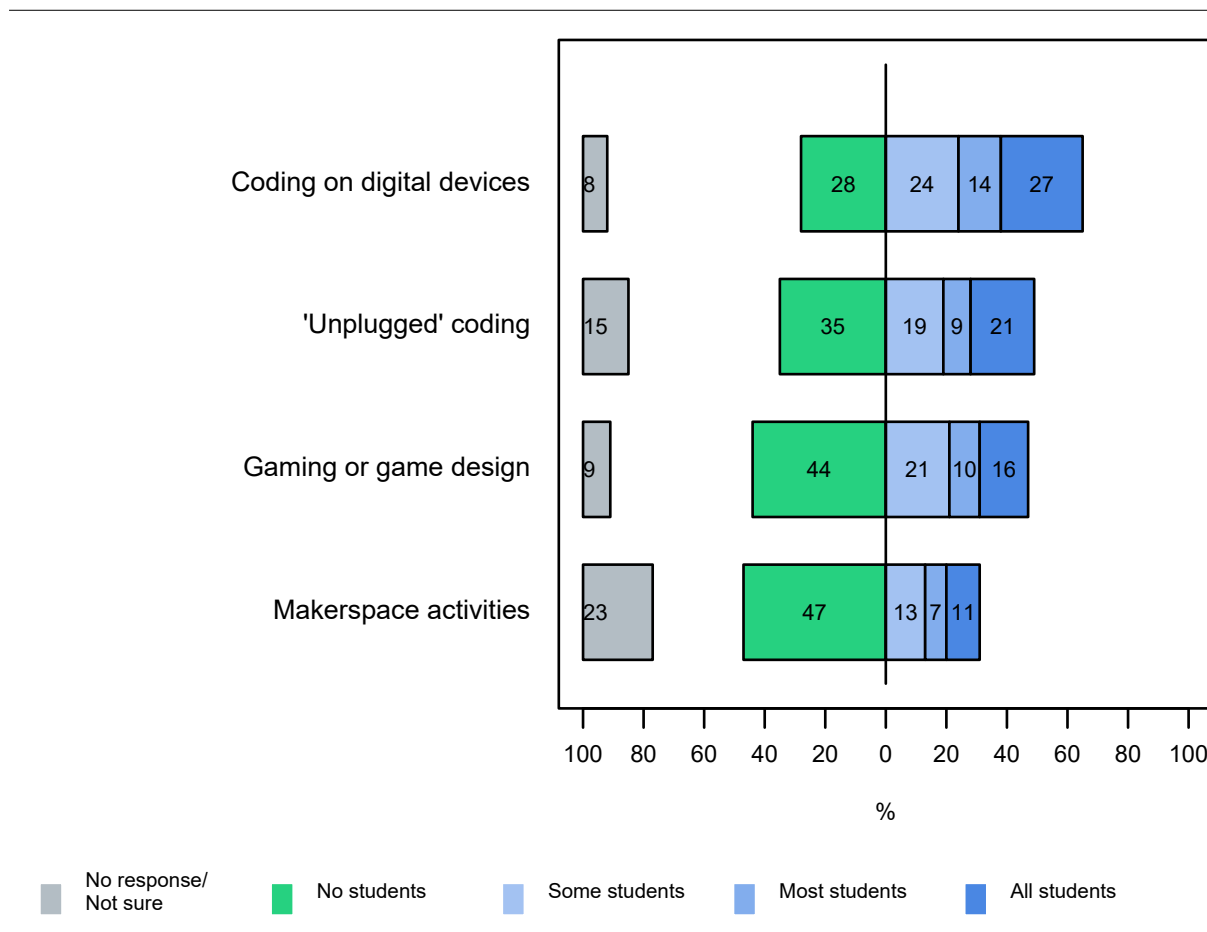
There have been increases in teacher reports of the participation of ‘all’ or ‘most’ students in gaming and coding since 2016:

- coding on digital devices—41%, up from 12% in 2016
- gaming or game design—26%, up from 12% in 2016.
- makerspace activities—18%, up from 2% in 2016.

Reasons for marked increases in these activities are likely to include: that these are good contexts to develop CT and DDDO; teachers are getting more exposure to how to utilise gaming, coding, and making effectively in their classroom pedagogy through the Ministry of Education funded programmes; Minecraft attracted children and teachers noticed this and tried to work with those interests; and devices and connectivity have generally improved for most schools.

Figure 36 shows that not all students were involved in these activities, even when the activities were included in a class programme. All students in a class were most likely to be included in coding on digital devices, and “unplugged” coding (not using digital devices). These findings raise the question about whether, in some classrooms, coding and gaming activities are taken up by those who already have an interest or affinity for these activities, including home availability and support as well as school co-curricular opportunities, such as lunchtime and after-school clubs.

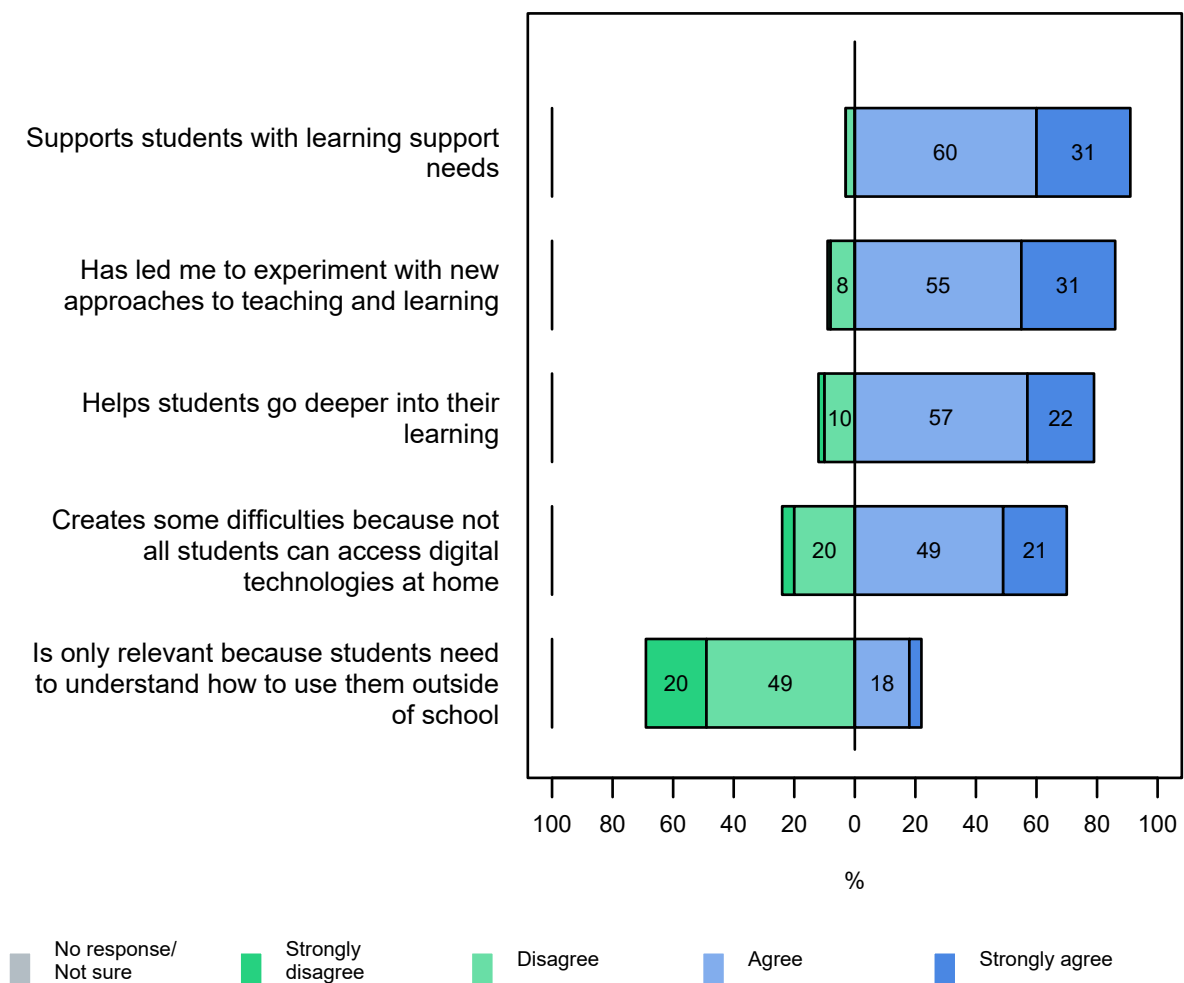
FIGURE 36 Participation in gaming and coding (Teachers, n = 620)



Teachers are positive about digital technologies for learning

Most teachers were positive about their experiences with digital technologies in student learning, as shown in Figure 37. There was high agreement that digital technologies can support students with learning support needs, can help students go deeper into their learning, and lead teachers to experiment with new approaches to teaching and learning. Few saw them only being relevant because students need to use them outside the classroom. However, many thought that the use of digital technology in their class created some difficulties because not all their students could access digital technologies at home.

FIGURE 37 Teachers' experiences of using digital technologies for student learning (n = 620)



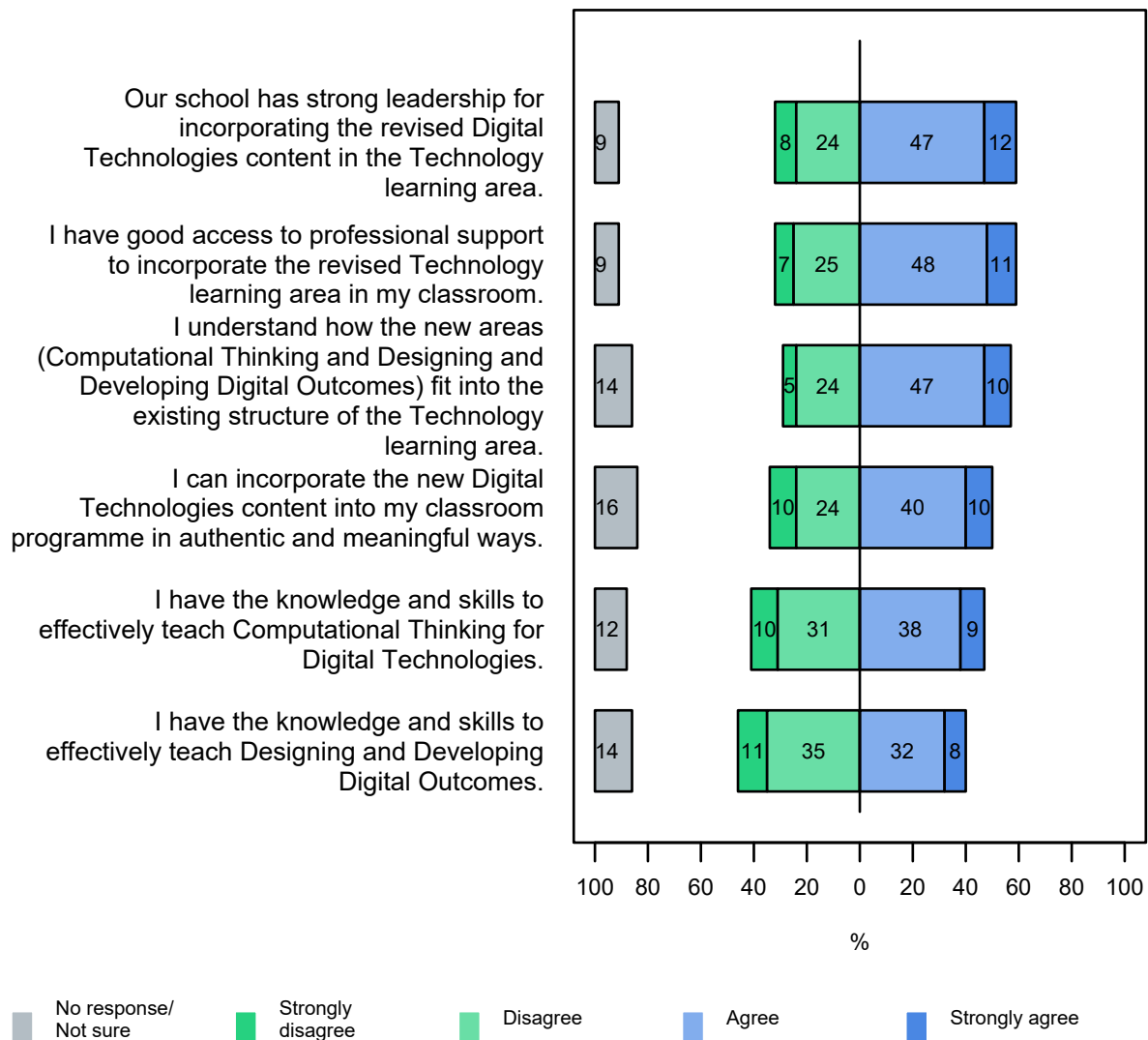
Overall, teachers' reported experiences in 2019 were similar to those reported in 2016. There was a slight increase in teachers agreeing that using digital technologies helps students go deeper into their learning (79%, compared with 72% in 2016).

There was also a slight increase in teachers reporting that their school equipment was adequate and reliable (66%, compared with 60% in 2016), and in reporting that digital technologies were available whenever their students need them for their learning (60%, compared with 52% in 2016).

Nearly half of teachers are not yet confident in their knowledge and skills for the revised NZC Digital Technologies content

Overall, around half the teachers who responded to the survey expressed confidence around the new Digital Technologies content, their school leadership for incorporating it, and their access to professional support, as shown in Figure 38. This is mainly at the 'agree' rather than 'strongly agree' level. However, 46% didn't think they have the knowledge and skills to effectively teach Designing and Developing Digital Outcomes, and 41% doubted their knowledge and skills in relation to Computational Thinking for Digital Technologies.

FIGURE 38 Views of the revised NZC Digital Technologies (Teachers, n = 620)



Summary

This 2019 national survey snapshot shows that digital technologies were commonly used in primary school learning, with some types of use showing increases since 2016, including creating multimedia, coding, gaming, and collaboration with others inside and beyond the school. Teachers were generally positive about their use. Both teachers and principals pointed to inequities, however, related to not all students having home access to digital technologies.

In some classrooms, activities such as coding on devices, “unplugged” coding, and gaming may not be happening for all students, possibly indicating that students’ pre-existing interests and affinities may drive some of this activity in some classrooms.

There was a mixed picture of school and teacher confidence about the working with the new Digital Technologies curriculum. While the Ministry of Education increased its professional development support, and indicated it did not expect the new curriculum to be fully in place by 2020,³¹ the picture here points to the value of continuing support and ways for schools and teachers to share their learning in giving effect to the new curriculum.

The picture here also gives some useful information to evaluate changes since COVID-19 and the government’s rapid provision of digital technology hardware and software for students to learn from home, and whether experiences of learning and teaching in the “learning from home” period influence what happens in the longer term with digital technologies learning and use.

31 <https://www.rnz.co.nz/news/national/395986/new-nz-digital-curriculum-set-for-2020-are-schools-ready>