

Learning to learn in secondary classrooms

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 **NZCER**
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Executive summary

The context for this report

The New Zealand Curriculum (NZC) has now been in schools since 2006 in draft form, and since 2007 in final form. *Learning to learn* is one of eight NZC principles, which are collectively positioned as “foundations for curriculum decision-making” (Ministry of Education, 2007, p. 9). Positioning *learning to learn* as foundational implies that teachers’ thinking and actions related to this concept have the potential to influence other aspects of their curriculum thinking and actions, yet there seems to have been little in the way of evidence-based discussion of teachers’ thinking and actual practice related to *learning to learn*.

This paper responds to that gap for teachers in the secondary sector. It draws on data from the 2012 teacher responses to the NZCER National Survey of Secondary Schools and focuses on questions related to teachers’ perceptions of curriculum implementation and their own pedagogical practices.

Learning to learn is a complex construct

Learning to learn is a construct ripe for teachers to explore. There are strong potential synergies between the idea of learning to learn and recent focuses in professional learning, including the key competencies and assessment for learning. Other areas that are gaining professional attention—such as student voice, metacognition, self-regulation and ‘pathways’ planning, epistemic thinking, community participation in and support for learning, and lifelong/life-wide learning—also have strong potential synergies with learning to learn. However, policy signals that make these types of connections—in NZC itself and in related assessment documents—are rather vague and hence easily overlooked, especially if teachers think that enacting the *learning to learn* principle means doing what they already do, but perhaps a bit better. There is much that teachers could be learning about, and a great many different things they could do differently in their classrooms, to build students’ learning-to-learn capabilities.

Three learning-to-learn factors

This paper discusses three factors derived from the 2012 national survey data which have the potential to help us understand the diverse range of secondary teachers’ views and practices related to learning to learn. Two of these factors are drawn from items about learning opportunities that are likely to be more strongly in evidence in classrooms where key competencies are purposefully integrated into learning: one relates to how much such

opportunities are valued, and the other relates to how often students experience these opportunities in a teacher's class.

This pair of factors is related to the concept of 'metatalk', which refers to talk a teacher uses in order to direct students' attention to specific aspects of the learning action as it is unfolding, and as the teacher wishes it to proceed. All teachers use metatalk to some degree, even if only to give instructions. In this report the focus is on metatalk as a specific type of metacognitive practice. The intended learning action is quite literally talked into place and hence becomes a potential focus for building students' learning-to-learn capabilities. The twin factors, which I call 'importance of opportunities for metatalk' and 'activating opportunities for metatalk', have seven items in common.

The third factor comprises five items from a set of 12 items in the 2012 survey that asked about students' active involvement in a range of assessment practices. The title for this factor, 'growing student assessment capability' relates to the concept of assessment capability, which was first introduced in the report *Directions for Assessment in New Zealand* (DANZ).¹ Assessment capability is more than 'assessment literacy', the difference being the emphasis given to active student involvement in their own assessment sense making and decision making.

Patterns in teachers' views and self-reported practice

Almost all the teachers ($n=1,266$) said they valued the types of learning opportunities that are described in the metatalk factors. Self-reported levels of actually offering these opportunities in teachers' own classrooms varied more widely, however. Differences between the high value placed on the described learning opportunities and the frequency with which they were offered to students can be characterised as the 'value/practice gap'.

There were weak to moderate correlations between the 'growing student assessment capability' factor and the metatalk factors. This suggests that teachers do not always connect involving students in assessment and learning decisions with valuing and offering opportunities to talk about learning—metacognitive talk that raises students' awareness of how they 'are' as learners. Yet this is precisely the sort of self-awareness that needs to be built as part of growing students' assessment capabilities. There could be an opportunity here to use the idea of learning to learn in order to explore ideas about the active role that students should play in their own learning and assessment. Cueing and leading metatalk requires deep subject expertise, so approaching the idea of assessment capability from this angle might help to dispel any suggestion that sharing learning and assessment decisions with students means the teacher abdicates some or most of their responsibility for actual achievement.

¹ Absolum, Flockton, Hattie, Hipkins, & Reid, n.d. The DANZ report was written to support the revision of New Zealand's national assessment policy. The authors brought together a range of perspectives on assessment issues and challenges. Their thinking was supported by a number of commissioned papers written by a wider group with varying assessment expertise and perspectives. The DANZ report and all the supporting background papers are available at <http://assessment.tki.org.nz/Assessment-in-the-classroom/Assessment-position-papers>

Differences related to context

Teachers in low socioeconomic decile schools have been the recipients of recent professional learning with an emphasis on aspects of pedagogy related to motivating students and better tracking achievement to ensure students do not fall by the wayside. Such pedagogies also potentially convey benefits for learning to learn. This was evident in several practices that seemed to be more highly valued, or happening more frequently, in decile 1 or 2 schools.

For the purposes of this analysis, teachers were grouped into four clusters according to the subjects they taught (English and languages; social sciences, arts and commerce; science, mathematics and a very small number of teachers of computing; technology, health/PE, and vocational subjects). Teachers of English and languages, along with teachers of the social sciences, arts and commerce, were more likely than teachers in the other two subject groups to say that it was very important for students to have certain learning experiences with the potential to introduce metacognitive conversations about learning. Teachers of mathematics and sciences were less likely than teachers in the other subject groups to say that students could do these things most of the time. It could be argued that at least some of the differences reflect subject-specific learning challenges; for example, the more interpretive aspects of arts-based subjects compared with science or mathematics.

There were no subject-related differences for valuing or conducting conversations that allow students to “think and talk about how they are learning”, which can be readily seen as applicable in every subject area. However, since all the described practices potentially provide learning-to-learn opportunities, these data raise the question of what it might take to support a wider range of teachers to see practices with learning-to-learn potential as very important, and to do these things more often, in ways that are appropriate to the subject(s) they teach.

Associations between the learning-to-learn factors and other aspects of teachers' work

Relationships between teachers' views and practices relating to learning to learn and other aspects of their work were explored by cross-tabulating teachers' averaged responses to the three learning-to-learn factors with all the other items in the 2012 national survey. This exploratory analysis suggested a range of potential relationships.

Learning to learn in a professionally engaged school community

The exploratory analysis flagged a range of potential relationships between the learning-to-learn factors and teachers' perceptions of the professional learning support and working ethos of their own school.

- One group of items described practices that collectively convey a sense of learning together, with a real focus on learning approaches that lift student achievement and a sense that risk taking will be supported in the process of pursuing these new approaches. Those teachers who thought these practices were “very good” or “generally happened in their school” were also

more likely to be in the highest-level group for all three learning-to-learn factors (i.e. they were the most likely to see practices as very important, or do them the most often in their classrooms).

- One group of statements collectively conveyed a clear sense of feeling attuned to the wider vision, values and collaborative professional learning practices of the school. Teachers who strongly agreed with these statements were also more likely to be in the highest-level group for all three learning-to-learn factors.
- Teachers in the lowest-level group for ‘growing student assessment capability’ were more likely than other teachers to say the school had no plans to enact changes related to: involving different named groups in curriculum decision making; implementing a range of specific types of cross-curriculum initiatives; providing more leadership opportunities for students; or implementing culturally responsive teaching.

In summary, the overall mix of school-wide items where we found indications of potential relationships with the three learning-to-learn factors suggests that a complex mix of individual and collective change factors are influencing the ways teachers support students to learn to learn.

Teachers’ perceptions of their professional learning and associated changes in practice

All three learning-to-learn factors showed indications of a relationship with statements that described professional learning with the potential to provide practical help with engaging Pasifika and Māori students, explore deeper ideas and theory underpinning new approaches, and provide opportunities to extend professional learning via rich interactions with other teachers in the school.

Teachers were invited to identify their main teaching achievements in the last 3 years from a bank of 19 possibilities. Teachers in the highest-level group for all three learning-to-learn factors were more likely to name personal successes related to improving achievement and assessment for learning, extending students’ competencies, using new pedagogical approaches, and better meeting the needs of Māori students. They were also more likely to say they had made gains in making connections between the class programme and local or national contexts, events and issues. It seems that the fruits of pedagogical change apply across a range of classroom outcomes.

Some of the relationships we found provide interesting indications of a link between an *inclusive* view of learners’ potential (i.e., all students can learn with adequate support) and valuing and deploying learning-to-learn practices. This was also apparent in the patterns found for several sets of items related to NCEA.²

² National Certificates in Educational Achievement: NCEA is New Zealand’s school exit qualification, with Level 1,2, and 3 certificates corresponding broadly to the final three years of secondary school.

Teachers' views about NCEA

There are some indications that relationships between learning-to-learn views and practices and views on NCEA could reflect a dynamic interplay between how purposes for learning are understood and reflected in assessment practices and teachers' views of students as learners. A metacognitive focus on learning to learn strongly challenges views about 'ability' and who can be a successful learner.

Eighteen statements canvassed teachers' opinions on NCEA. There were indications of relationships between responses to the three learning-to-learn factors and strong agreement with four statements that encapsulate the inclusive design intent of NCEA (e.g., "NCEA helps the inclusion of students with special learning needs"). These patterns of association suggest that teachers who understand and support NCEA's inclusive intent also more frequently offer experiences with the potential to build students' learning-to-learn capabilities. Teachers who were in the highest-level group for each of the three learning-to-learn factors were also more likely to strongly agree that the best practice workshops³ they attended resulted in more explicit, achievement-focused conversations with students and led to discussions of exemplar tasks with other teachers.

Might specific professional learning with a focus on learning to learn also serendipitously shift views of NCEA for teachers who do not yet understand its design intent? Conversely, might professional learning that revisits the intent of NCEA encourage some teachers to become more convinced of the benefits of an explicit focus on learning to learn, with associated shifts in the learning experiences they offer?

Workload considerations

It is important to note the lack of relationship between being in the highest-level group for any of the three learning-to-learn factors and seeing workload as a vexed issue. Workload and stress do not appear to be associated with whether or not teachers are employing pedagogies that support learning to learn.

Scoping future possibilities

The patterns of relationships summarised above suggest that teachers with a strong learning-to-learn orientation already hold more inclusive views about every students' potential to learn. Other research has demonstrated the comparatively bigger difference that strong learning-to-learn practices can make for lower-achieving students (see, for example, Zohar & Ben David, 2008). These researchers emphasise that it is important that teachers not write off these students as being academically too weak to cope with higher-order thinking. Since epistemic thinking is by definition higher order, challenging ability-based beliefs about the limitations of weaker students

³ Offered by NZQA to support strong assessment-related decision making and moderation practices in specific subject areas.

is also a strong contender for effective professional learning, with the potential to build effective pedagogy for learning to learn.

Another contender for professional learning is how and why students should and can be supported to take greater ownership of their learning. A critical insight to be fostered is that greater learner involvement does *not* mean an abdication of teacher responsibility. Learner involvement and teacher responsibility go in tandem: they are not in competition. However, learning-to-learn conversations with students do require a change in the way teachers use their expertise to guide the unfolding learning. Again, by implication, enacting aspects of learning to learn requires real changes in what teachers see as the main purpose(s) for teaching and learning in their subject areas.

Some of the positive learning-to-learn views and practices documented in this paper are associated with changes to NCEA and professional learning that has supported these changes. Here another kind of opportunity for further strengthening practice should be evident, since NCEA assessment and moderation conversations and practices are continuing to evolve. One specific opportunity might be to involve the NCEA subject moderators and examiners in deep explorations of ideas about learning to learn and the implications for the work they do to support teachers. What it *means* to learn in a specific subject area continues to evolve, at least in the case of subjects that underwent significant changes in the recent alignment with *NZC*. Again, such evolution also opens up possibilities for new conversations about *purposes* for learning.

The same support for learning to learn in the classroom also pertains to teachers' own professional learning opportunities. At the very least, teachers need opportunities to 'join the dots' between different pedagogical initiatives. There are indications that a virtuous spiral is likely to emerge when a range of types of shifts in pedagogy occur. There are potentially many rich stepping-off points for further positive changes in practice, with the potential to support learning-to-learn opportunities.

Finally, there are clear indications in this report that teachers are more likely to do the demanding professional thinking of the kinds just outlined when working with other highly engaged peers in a collaborative way. There is the possibility here to strengthen opportunities for collaborative learning about learning to learn in each and every secondary school.

1. Introduction

The New Zealand Curriculum (NZC) has now been in schools since 2006 in draft form, and since 2007 in final form. The concept of *learning to learn* is one of eight *NZC* principles. These principles are collectively positioned as “foundations for curriculum decision-making” (Ministry of Education, 2007, p. 9). Because *learning to learn* is intended to be foundational, teachers’ thinking and actions related to this concept have the potential to influence other aspects of their curriculum thinking and actions. However, this paper will show that there is still a wide range of views—and levels of classroom action—on various learning-to-learn opportunities. Seven years on from the release of the final version of *NZC*, and 4 years since it was originally intended to be fully implemented, it now seems timely to drill down into learning to learn as a pivotal aspect of the ongoing implementation of *NZC*, and to consider the implications for new types of support for secondary teachers and schools.

This paper begins by outlining the meaning and potential of the phrase ‘learning to learn’. It then takes an in-depth slice of data from the 2012 round of the NZCER National Survey of Secondary Schools as a stepping-off point to explore possibilities for extending learning-to-learn practices in secondary classrooms. Finally, the potential of these practices to build both student and teacher assessment capabilities is explored.

NZCER has produced reports on the progress made implementing *NZC* based on the NZCER National Survey of Secondary Schools 2009 (Hipkins, 2010b) and the NZCER National Survey of Primary and Intermediate Schools 2010 (Burgon, Hipkins, & Hodgson, 2012). These reports showed that *NZC* had been well received and that initial progress with implementation was looking promising. However, it was also becoming apparent that some of this early promise would be challenging to fully realise in practice.

Responses to the 2009 national survey showed a clear pattern of association between secondary teachers’ views of the key competencies—a pivotal new feature of *NZC*—and their attitudes to ideas and actions associated with learning to learn (Hipkins, 2010b). The Curriculum Implementation Exploratory Studies (CIES) similarly reported that ‘early adopter’ schools⁴ quickly perceived in-principle links between key competencies and the idea of learning to learn (Hipkins, Cowie, Boyd, Keown, & McGee, 2011). However, the CIES study also found that the schools in the study reached a plateau after initial rapid progress in exploring the high-level ideas at the front of *NZC* and incorporating these into school-wide curriculum planning; for example, in the school’s vision statement, or a set of agreed key words and phrases to be used when discussing key competencies. Progress stalled at the point where the key competencies needed to be more fully embedded into learning within the different subject areas of *NZC* (Cowie, Hipkins,

⁴ Defined as those that were quick to engage with *NZC* and make early visible progress in exploring it and beginning to develop a school-based curriculum in response.

Keown, & Boyd, 2011). Working out what difference, if any, the key competencies should make to traditional content learning was identified as a challenge that needed to be proactively addressed.

The Ministry of Education responded to this challenge by funding the production of resources that illustrated the reciprocal nature of the relationships between the key competencies and the learning areas of *NZC*.⁵ However, these resources did not explicitly extend to the development of new insights in the area of learning to learn. This paper builds on perceptions of strategic connections between the key competencies and learning to learn to highlight implementation challenges for the latter.

The scope of the *NZC* principle *learning to learn*, and more wide-ranging ideas about the possible nature of learning to learn, are discussed more fully in the next section of the paper. The following two sections then report on teachers' responses to items that describe pedagogies related to learning to learn in the 2012 national survey. The penultimate section explores relationships between teachers' views and practices related to learning to learn and other aspects of their work. This exploratory section sets the scene for the final section, which discusses possibilities for building on progress made to further develop and extend this potentially pivotal aspect of teachers' pedagogy.

⁵ <http://keycompetencies.tki.org.nz/Key-competencies-and-effective-pedagogy>

2. The scope of learning to learn

The vision statement in *NZC* is explicit that we want our students to become “lifelong learners”. *NZC* defines lifelong learners as being “literate and numerate; critical and creative thinkers; active seekers, users and creators of knowledge; and informed decision-makers” (Ministry of Education, 2007, p. 8). This definition seems to assume that building the named skills and dispositions will enhance the likelihood of future and ongoing learning. Teachers might argue that the named skills and dispositions are already central to learning—that is what school is for. This raises the question explored in this section: what could change in teachers’ current practice if learning to learn is to mean anything other than good practice as usual?

Learning to learn and metacognition

NZC extrapolates its vision statement into eight principles. *Learning to learn* is one of these, although its nature as a principle is sketched in rather circular terms: “the curriculum encourages all students to reflect on their own learning processes and to learn how to learn” (Ministry of Education, 2007, p. 9). There is a clear signal in this definition that teachers should support students to pay specific attention to how learning is unfolding in the moment, as well as over time. In other words, the idea of *learning to learn* implies that explicit attention should be directed to acts of learning *per se*: how they happen, how best to support them, how successful they have been, and so on. But to what aspects of learning should attention be directed, and to what end?

Reflecting on learning processes directs attention to metacognition; i.e., thinking about one’s own cognition. However, metacognition is a complex construct, so establishing this in-principle connection can only take us so far. One recent meta-analysis (Barzilai & Zohar, 2014) identified three broad, inter-related areas of metacognitive thought:

- metacognitive knowledge: thinking about knowledge, beliefs, ideas and theories about people as “cognitive creatures”
- metacognitive skills: thinking about skills and processes used to control and regulate cognition; i.e., “metacognition in action”
- metacognitive experiences: thinking about cognitive or affective experiences encountered during learning: Barzilai and Zohar give the example of “a sudden feeling of not understanding what someone has said” (p. 16).

These three areas are simultaneously relevant for:

- an individual thinking about their personal learning

- a group thinking about processes that enable them to learn together (e.g., a team, a class group, a professional learning community, or a committee working with a common purpose)
- thinking about an aspect of human thinking and learning in general.

A teacher's immediate focus is likely to be on either the individual, or the group, or thinking in general. It is challenging to keep all of them in sight when scoping learning to learn as a foundational aspect of curriculum thinking.

One of the ways that teachers might respond to such challenges is through 'metatalk'. This is talk the teacher uses to direct students' attention to specific aspects of the learning action as it is unfolding, and as the teacher wishes it to proceed:

Metatalk is language that supports students' metacognitive functioning in the classroom—that is, language that organizes, foreshadows, summarizes, or connects classroom activities and content ... This type of talk may also be useful in marking for students what type of message is about to come up in the conversational arena and what they, the students, might have to do with the message. This type of talk can, and often is, attached to the ideas and expressions of students where teachers seek to echo or elaborate on student conversations. (Leinhardt & Steele, 2005, p.92)

The factor we called "learning to learn" when reporting on the 2009 national survey addressed the ways in which teachers support students to take greater responsibility for their own learning. The items in this factor addressed goal setting, monitoring learning as it happens, and evaluating results through self-checking and peer review. These types of actions potentially sit within the scope of Barzilai and Zohar's category of metacognitive skills, with a focus on individual learning. A teacher's metatalk might direct students' attention to how they are thinking about goals they have set ("Does this goal feel right?" and "What makes you think that?"). They might also reflect on their thinking about strategies to meet these goals ("Let's think about other times we've set goals. What strategies helped you reach them? Which strategies did you think were most helpful? What made them helpful?"). However, if prompting metacognitive thought is not a *specific* part of the support the teacher provides, then processes such as goal setting are unlikely to contribute to *learning about* learning at all, except perhaps in a happenstance, experiential sense. With this hindsight I have chosen different names for the equivalent factors in this report.

A recent synthesis report from New Zealand's Education Review Office (ERO)⁶ scoped the *learning to learn* principle in much the same way as I did in 2009. The report addressed the extent to which the NZC principles were evident in the curriculum of the schools they reviewed, and examples of good practice were outlined. The nature of these examples suggested that ERO had scoped *learning to learn* as giving learners a greater degree of choice and independence (e.g., via 'inquiry learning'), combined with some structured goal setting and opportunities for the learner to evaluate their own progress towards those goals (Education Review Office, 2012). However, these processes, which ERO describes as "good practice pedagogy" (p.14), wouldn't

⁶ ERO reviews schools primarily for quality assurance purposes. They generate school-specific reports and from time to time synthesise data from multiple schools to write more generic commentary reports about the quality of educational provision in New Zealand.

necessarily be recognised by schools as enacted dimensions of learning to learn unless the potential link between the described processes and metacognitive reflection about them was more deliberately explored.

Learning to learn and the NZC key competencies

The NZC key competencies are adaptations of those developed by the OECD (Rutherford, 2005).⁷ NZC defines the key competencies as “capabilities for living and lifelong learning” (p. 12) and positions them as

key to learning in every learning area. The development of the competencies is both an end in itself (a goal) and the means by which other ends are achieved. (Ministry of Education, 2007, p. 12)

Note that their definition “capabilities for lifelong learning” and this statement about being both means and end are located on the same page. Read together they could be interpreted as implying that lifelong learning is an important end to which the development of key competencies can make an effective contribution. This interpretation links the principle of *learning to learn* to the key competencies if we assume that direct experiences of learning to learn underpin the fostering of a disposition to be a lifelong learner. I’ll come back to the nature of links between learning to learn and lifelong learning shortly.

Direct links between key competencies and learning to learn are also implied in the “Design and Review” section of NZC. The last paragraph under the heading “Key Competencies” says:

With appropriate teacher guidance and feedback, all students should develop strategies for self-monitoring and collaborative evaluation of their performance in relation to suitable criteria. Self-assessments might involve students examining and discussing various kinds of evidence, making judgements about their progress, and setting further goals. (Ministry of Education, 2007, p. 38)

The actions described in this paragraph from NZC draw directly on the metacognitive skills outlined above. However, the statement itself does not say exactly how the key competencies might contribute to the development of these types of metacognitive skills.

A connection to the key competency *managing self* is relatively obvious. However, common-sense readings of self-management are likely to overlook more theoretically informed aspects of this key competency. A surface reading is likely to encompass general attitudes (e.g., working hard) and being organised and ready for learning. Of course such things are important enablers of learning, but routine aspects of self-management run the risk of becoming entrenched behaviour if they are essentially seen as personality traits—just the way certain students are,

⁷ The set of five named in NZC are: *thinking*; *managing self*; *relating to others*; *using language, symbols and texts*; and *participating and contributing*.

which cannot be changed. Missing from this type of surface reading of *managing self* are important theoretical ideas about humans as “cognitive creatures” (Barzilai & Zohar, 2014, p. 16). When teachers are well informed about contemporary research on learning, they are better placed to support students to build deeper self-awareness about how they see themselves as learners and why they act as they do in certain learning contexts.

Illustrating the potential of deeper readings of *managing self*, classroom metatalk could direct students’ attention to instances when resilience and persistence are important (e.g., “I know this seems tough right now, but once it falls into place lots of other things will also seem easier. Let’s try another way and see if we can get it”). The metacognitive knowledge a teacher might seek to build could include introducing students to attribution theories (Dweck & Leggett, 1988). This classical research demonstrated that more successful, resilient learners attribute their success to effort and persistence. By contrast, students who think success is attributable to natural ability or luck are less likely to enjoy consistent and sustained learning successes.

Strong teachers understand intuitively that learning that students find engaging, combined with a range of effective pedagogical practices, sustained over time, can help some students to ‘switch on’ to learning. Explicit attention to the dispositional challenges inherent in being a learner, and to demonstrated positive shifts in dispositions when these occur, could help make this success more sustainable and less context-dependent; in other words, it would more explicitly support the NZC goal of *lifelong* learning. In this way, understanding one’s own beliefs about how success in learning is gained could become the metacognitive knowledge that unlocks new learning endeavours for some students. The case for links between self-assessment and the other four key competencies could also be made. But building knowledge of the potential richness of such links is only likely to happen if the signal to look for them is detected in the positioning of the above NZC statement about “self monitoring” and “collaborative evaluation” under the key competencies heading.

As NZC was in its final stages of preparation I developed a background paper about the nature of key competencies (Hipkins, 2006). This paper identified the role of metacognition in supporting students to stretch and further develop their current levels of competency when competency development itself is one goal for the intended learning. The OECD initiative that developed the idea of key competencies positioned the key competency *thinking* as “cross-cutting” the other key competencies because of this reflective/metacognitive dimension (OECD, 2005). However, little in the general preamble or in the definitions of the five named NZC key competencies has anything specific to say about how this reflective dimension might add to, or change, classroom practice. An oblique reference in the definition provided for *thinking* as a key competency illustrates the challenges schools face when determining what learning to learn actually means for their practice:

Students who are competent thinkers and problem-solvers actively seek, use and create knowledge. They *reflect on their own learning*, draw on personal knowledge and intuitions, ask questions, and *challenge the basis of assumptions and perceptions*. (Ministry of Education, 2007, p. 12, emphasis added)

The first phrase in italics points to metacognitive/reflective dimensions in classroom conversations about learning. Teachers in early adopter schools picked up on this signal as an important way to link key competencies to the *learning to learn* principle, and then to introduce reflective dimensions into actual learning experiences (Hipkins et al., 2011). How widely this connection was made beyond the early-adopter case study schools is an open question. However, as outlined above, metacognition is complex and learning to learn could be understood by teachers within the rather limited scope of metacognitive skills—if they consider it at all.

The second italicised phrase introduces a less familiar idea: the idea of *epistemic*⁸ *thinking*, or thinking about knowledge and knowing. This specific type of thinking is implicit in many of the learning areas of the curriculum. For example, the science curricula of many nations now emphasise the nature of science. In *NZC* the Nature of Science strand is seen as “overarching” and intended to be woven through the more familiar content-based strands. In history there is an emphasis on concepts that are central to historical thinking.⁹ Similarly, the languages strand of *NZC* draws attention to the need to come to an understanding of how languages are shaped by different cultural assumptions.

The key competency of *using language, symbols and texts* can potentially be understood as entailing explorations of how meaning is made in a disciplinary area (Hipkins, Bolstad, Boyd, & McDowall, 2014). Learning to learn has subject-specific dimensions when it is framed in these disciplinary terms, but these are relatively unfamiliar pedagogical ideas for many teachers, whose own education probably did not include an explicit focus on the ‘nature’ of different disciplines and their meaning-making practices.

Relationships between epistemic thinking and metacognition

Since metacognition involves thinking about our thinking in general, and epistemic thinking involves thinking about how we come to know what we say we know, it should be evident that there will be overlaps between them. Scoping the nature of relationships between epistemic thinking and metacognition has the potential to add important insights to teachers’ knowledge about learning to learn when it brings together the more personal aspects (metacognitive reflection) and subject-related epistemic aspects of disciplinary thinking (e.g., the nature of science, historical thinking).

Barzilai and Zohar’s (2014) meta-analysis positions “epistemic metacognition” as the point of overlap between epistemic thinking and metacognition in general. When teachers and students practise epistemic metacognition, they will be thinking about “thinking processes and standards used in cognitive evaluation of knowledge claims” (p. 20). For example, with teacher

⁸ ‘Epistemic’ is an adjective derived from ‘epistemology’, which is the branch of philosophy that concerns itself with the grounds on which knowledge claims are made; i.e., how we come to know what we know, and the grounds on which we can accept knowledge as reliable and trustworthy.

⁹ History education experts see the big six historical thinking concepts as: historical significance; use of primary source evidence; continuity and change; cause and consequence; historical perspectives; and ethical dimensions of historical interpretations. <http://historicalthinking.ca/historical-thinking-concepts>

support, learners could be reflecting on an example that illustrates an important characteristic of disciplinary knowledge. One example might be the impact and implications of a major paradigm shift in a scientific theory—a comparatively recent example is plate tectonics. Knowing how science addresses fallibility in knowledge claims (peer review, transparency in presentation of evidence, rebuttal of alternative explanations, etc.) is important epistemic knowledge to build. However, if students are going to see the relevance of such esoteric ideas to their own lives, their learning-to-learn reflections will also encompass when, how and why knowing these things might be useful, or perhaps where else they have seen something similar.

Conversations that might be classified as being about ‘information literacy’ will entail epistemic metacognition when the grounds on which a knowledge source is trusted are explicitly put under the reflective spotlight. For example, students might come to understand that they should expect to see the evidence that backs up a claim, along with an account of how the conventions for knowledge building in the relevant discipline area have been addressed. When they try to practise such critique, they might come to more personal insights about their own disposition to be this careful—it is hard work and takes time. Are they inclined to rush in and get the job done, or do they care enough to be careful in their evaluation of knowledge claims? And when they think they are being careful, how do they know they are asking the right sorts of questions, or coming up with appropriate answers to the questions they do ask? These aspects of epistemic metacognition loop back to knowledge of the characteristics of the discipline, but also include a dimension of self-awareness about oneself as a knower and learner.

The discussion of *managing self* above can now be seen as potentially including epistemic metacognition when attribution theories are being explored. But many other personal insights about oneself as a knower can potentially be built over time. For example, I know that going for a long walk can help me think creatively when an idea is difficult. Things often fall into place when my surface thoughts are directed elsewhere. Recognising the impact of our feelings on thinking and learning is another important personal aspect of epistemic metacognition. (I know that the physical act of walking can help dispel feelings of frustration that might otherwise block the flow of my thoughts.) This sort of personal awareness explicitly acknowledges the challenging nature of learning that stretches us and fosters the disposition to *be* a particular sort of learner. Such self-awareness is central to the suite of learning-to-learn self-assessment tools and associated pedagogies developed in one large UK research initiative (Deakin-Crick, 2014). Becoming a certain sort of thinker and knower will require multiple and ongoing opportunities to learn about learning, given that dispositions are built over time. This means that learning to learn should be an ongoing and valued learning goal in its own right.

Learning to learn and assessment policy and practice

As outlined above, there are many potential avenues for opening up learning-to-learn conversations between teachers and students. The focus of teacher metatalk could readily be directed to any one of the identified aspects of knowing and learning that is relevant to the

specific learning challenge of the moment. However, this will happen more readily if and when a teacher is willing to focus on the dynamics of the learning as it is unfolding. Here the idea of learning to learn intersects strongly with the idea of assessment for learning:

Assessment for learning is best described as a process by which assessment information is used by teachers to adjust their teaching strategies, and by students to adjust their learning strategies.¹⁰

The model of teaching as inquiry in *NZC* points to the importance of monitoring learning as it unfolds. The sections on “Effective Pedagogy” and designing a local school curriculum make the connection explicit:

Students learn most effectively when they develop the ability to stand back from the information or ideas that they have engaged with and think about these objectively. Reflective learners assimilate new learning, relate it to what they already know, adapt it for their own purposes, and translate thought into action. Over time, they develop their creativity, their ability to think critically about information and ideas, and their metacognitive ability (that is, their ability to think about their own thinking). Teachers encourage such thinking when they design tasks and opportunities that require students to critically evaluate the material they use and consider the purposes for which it was originally created. (Ministry of Education, 2007, p. 34)

The primary purpose of assessment is to improve students’ learning and teachers’ teaching as both student and teacher respond to the information that it provides. With this in mind, schools need to consider how they will gather, analyse, and use assessment information so that it is effective in meeting this purpose. Assessment for the purpose of improving student learning is best understood as an ongoing process that arises out of the interaction between teaching and learning. It involves the focused and timely gathering, analysis, interpretation, and use of information that can provide evidence of student progress. Much of this evidence is ‘of the moment’. Analysis and interpretation often take place in the mind of the teacher, who then uses the insights gained to shape their actions as they continue to work with their students. (Ministry of Education, 2007, p. 39)

With this advice about curriculum planning and pedagogy, *NZC* clearly signals strong connections between assessment for learning and the idea of learning to learn. Indeed, assessment for learning is positioned as “the primary purpose” for assessment. This emphasis can also be seen in New Zealand’s national assessment policy. For example, the current national assessment policy document emphasises the importance of sharing assessment decision making with students so that they can learn to become better judges of their own learning and progress:

All students should be educated in ways that develop their assessment capability within and across all learning contexts. Assessment capable students are able to actively

¹⁰ This is how assessment for learning is defined on Te Kete Ipurangi (TKI), which is the Ministry of Education’s repository of pedagogical advice and teaching and learning resources: <http://assessment.tki.org.nz/Assessment-in-the-classroom/Assessment-for-learning-in-principle>

participate in assessing their own learning, recognise important moments of personal learning, and make ‘what next’ decisions. (Ministry of Education, 2011, p. 25)

The concept of ‘assessment capability’ introduced in the above paragraph was initially proposed in the DANZ position paper (Absolum et al., 2009). Note that this is not a direct synonym for the more commonly used term ‘assessment literacy’. The difference is telling: it lies in the emphasis given to active student involvement in their own assessment sense making and decision making (Booth, Hill, & Dixon, 2014). Booth and her colleagues note three conditions that need to be met simultaneously to build students’ assessment capabilities. Students need teacher support to build:

- understanding of what constitutes quality in the intended learning
- the requisite metacognitive skills to effectively evaluate their work
- strategies to modify their own work during its production (Booth et al., 2014, pp. 141–142).

The DANZ paper further established a clear alignment between student involvement in this type of assessment activity and the *NZC* vision, values, principles and key competencies. It also addressed the issue of connections between learning to learn and lifelong learning:

We see the development of students’ assessment capabilities as a way of integrating the values and key competencies [of *NZC*] with active learning of curriculum ‘content’. (Absolum et al., 2009, p.13)

When students participate in the assessment of their own learning, they learn to recognise and understand main ideas and to apply new learning in different ways and situations. While at school, students have teachers on hand who can help them get better at making such judgments. If we want them to be able to assess their own learning later on, beyond school, we need to help them develop their assessment capabilities now. (Absolum et al., 2009, p. 20)

The DANZ paper noted that the standards-based nature of NCEA provides rich opportunities for conversations with students about how learning will be assessed. Each achievement standard describes three potential levels of success for the specified aspect of learning: Achieved, achieved with Merit, and achieved with Excellence. An exploration of the characteristics that differentiate excellent achievement from a demonstration of learning that only just reaches the minimum standard should help students come to more deeply understand the challenges of the intended learning and what counts as a high-quality demonstration of it.

The DANZ policy paper preceded the recent realignment of existing NCEA achievement standards with *NZC*. In some subject areas the realignment resulted in quite substantive shifts in the focus of assessment and/or the nature of tasks used to generate evidence of learning. These shifts need to be understood by both teachers and students. To illustrate: the history achievement standards now explicitly assess students’ ability to use concepts that are central to historical thinking (Harcourt & Sheehan, 2012; Sheehan, 2014). For example, students need to demonstrate their emerging capabilities in determining historical significance, or recognising perspective taking and its impact on how historical events are perceived and explained. The opportunity is

there for teachers to help students draw links between the topic being investigated and aspects of epistemic thinking—how meaning is made in history; for example, when evaluating an existing account of a historical event, or when thinking about how to conduct a personal historical enquiry.

Substantive shifts in the Statistics strand of the Mathematics & Statistics learning area of *NZC* have created a similar need for classroom conversations about the nature of learning and achievement in unfamiliar new additions to the curriculum. For example, understanding of statistical reasoning¹¹ is highlighted in some of the new achievement standards, with the aim of building students' statistical literacy for their futures beyond school (Pfannkuch, Arnold, & Wild, 2011). Teachers now need to get to grips with statistical procedures such as 'bootstrapping' that have never before been part of the curriculum, and this has been challenging for them (Hipkins, 2014). A focus on how meaning is made in statistical inquiry is central to the intended learning.

As they undertake high-stakes curriculum learning prior to using new NCEA achievement standards to assess their students' learning, teachers are likely to run the gamut of thoughts and feelings that also confront students as they get to grips with new ideas and skills. Discussions with an explicit metacognitive focus on aspects of epistemic thinking—both their personal meaning-making challenges and the meaning-making conventions of the discipline—could help teachers to weave long-term learning-to-learn goals into the planned curriculum and assessment focus. In this way, such curriculum challenges potentially create an opportunity for professional learning that supports teachers to build awareness of their own epistemic experiences.

Both the history and statistics examples have immediate subject-specific learning goals, combined with a longer-term view of the value of the learning that students could take forward into their futures. This dual current and future focus was a noticeable feature of a recent collection of teacher stories developed to illustrate the nature of reciprocal relationships between the *NZC* key competencies and subject learning (Hipkins & McDowall, 2013). When teachers skilfully weave an aspect of key competency development into subject learning, they are likely to strengthen both the intended learning and the aspect of the key competency (or competencies) in focus at that moment. This is what is meant by a reciprocal relationship. At the same time, these teachers are likely to see both immediate and longer-term value in the specific competency / content combination being built. It is this dual focus that is signalled by the use of the term 'capability'; i.e., what students are capable of now, and what they might become capable of in the future (Hipkins, 2013a). The richness of the learning in the teacher stories we developed suggests that being more explicit about both immediate and longer-term purposes for learning could be a potential focus for rich conversations about learning across all learning areas.

¹¹ The contrast implied here is with computation; i.e., the assumption that if you can calculate mean, median, mode etc., and perhaps construct box and whisker plots, you will recognise sampling variability and understand its significance in messy, real-life contexts.

Learning to learn vs lifelong learning

A concurrent focus on both the immediate and future value of learning has the potential to tease out the nature of tacit links between the related but distinct ideas of learning to learn and lifelong learning. It is easy to assume a common-sense connection between these ideas, without necessarily thinking through the implications of that connection (Hipkins & Cowie, 2014). Bronwen Cowie and I recently explored relationships between learning to learn and lifelong learning using the idea of ‘transfer’ of learning, as a way to connect present learning about learning to the demonstration of ongoing learning dispositions and abilities in the future. Key recent insights from the field of transfer research were aligned with pedagogical discussion taking place in the context of *NZC* implementation to arrive at a summary of conditions in which learning-to-learn dispositions might be nurtured. A slightly abridged version of the table we developed is presented in Table 1. A number of these pedagogical conditions are captured by the first of the two item sets from the national survey, discussed in the following sections of this paper.

Looking ahead

Implementation of the *NZC* principle *learning to learn* is clearly challenging. *NZC* and other related policies give diffuse and often implicit signals about what this entails. These signals could easily be overlooked when teachers think that supporting learning to learn means doing what they already do, but perhaps a bit better. Even the brief overview of research ideas presented in this section demonstrates that there is actually much that teachers could be learning about, and a great many different things they could do differently in their classrooms, to build students’ learning-to-learn capabilities.

In this fluid context it seems timely to explore what teachers are already doing well that might support them to take deeper readings of learning to learn. The national survey yields rich data with the potential to inform these questions. Having outlined the considerable and wide-ranging scope of learning to learn as a concept, I turn now to an investigation of areas where there are likely to be opportunities to enhance current practice. I begin by exploring signals about the types of metatalk that teachers already value and that many of them use at least sometimes.

Table 1 **Setting up conditions where learning to learn might flourish**

Insights from the transfer literature	Pedagogical capabilities needed by teachers	Conditions of learning for transfer
<p>Students' past experiences need to be activated as learning resources: links established between their school- and community-based lives are both informative and motivational.</p> <p>Present learning experiences need to be understood as having value for future learning: their benefits are seen to carry forward into the future.</p>	<p>Knowing how to:</p> <ul style="list-style-type: none"> • invite and build on students' existing funds of knowledge • make explicit links between present concepts, conceptual tools and experiences, and anticipated learning topics and challenges 	<p>Space and permission for playful exploration</p> <p>Frequent opportunities to practise flexible thinking</p> <p>Learning tasks include both familiar and novel dimensions (social setting, context, concepts, skills, etc.)</p> <p>Rich experiences of variation increase sensitivity to salient critical features of a phenomenon</p>
<p>Students need to see how to connect experiences and ideas to create richer, more interconnected understanding</p> <p>Students need to develop or strengthen the inclination to look for similarity and differences across the various aspects of their lives as a way of making meaning and gaining power over their lives</p>	<p>Engineer opportunities to revisit important ideas: learning is cumulative and becomes more nuanced over time</p> <p>Create expansive links between small ideas/experiences with the potential to coalesce into much bigger ideas</p> <p>Support students to see how disparate events (in time and place) might be manifestations of the same underlying principles</p>	<p>Diversity of experience, ideas, world views and contexts is positioned as a learning resource</p> <p>Students are accountable for their learning—to themselves and to others</p> <p>There are shared expectations that learning will be useful and used</p> <p>Students have opportunities to be 'intellectual entrepreneurs'</p>
<p>Students need to see themselves—and be seen—as capable of adapting knowledge to new settings</p> <p>They need to become confident innovators who understand how new knowledge might be made, and that they can learn to author new knowledge in some circumstances</p>	<p>Provide scaffolded access to the knowledge-creating and legitimating practices of different disciplines, as well as tools to analyse what is the same and what is different about these practices</p> <p>This scaffolding has an affective dimension that builds student confidence and trust in their capacity to form their own concepts and understand ideas as <i>ideas</i></p>	

Adapted from: Hipkins, & Cowie, 2014, p. 299.

3. Two metatalk opportunities factors

In the 2012 national survey we asked secondary teachers to respond to 13 items that described learning opportunities with the potential to develop and stretch students' key competencies. These items mostly came from an earlier set we used in the 2009 (secondary) and 2010 (primary) national surveys. Their development was informed by prior research on the challenges of implementing key competencies within the taught curriculum (see Hipkins, 2010b, for a discussion of the item rationale). At the time, an explicit focus on learning to learn was not envisaged. The question stem was: "Thinking about the learning experiences of students in your classes, how important do you think each of the following is for your students..." [very important; important; not really important; not at all important] and "How often do they do these things in your classes..." [most of the time; quite often; sometimes; never].

Secondary teachers' responses were described in the overall report from the 2012 survey (Wylie, 2013). To look for patterns in the ways that different teachers responded to the items as a collection, we undertook a principal factor analysis with varimax rotation, using SAS. The extent of the internal consistency with which individuals answer the items that make up a factor is measured as an alpha (α) value. If every individual answered all the items in the factor in a consistent way, the alpha value would be 1.00. An alpha value of more than 0.6 or 0.7 suggests that each teacher answered the item in a reasonably consistent manner overall, and that therefore the items have something in common in terms of how the teachers think about them, or how they enact them.

This analysis yielded two distinct pairs of factors from the set of 13 statements about learning opportunities in teachers' classes. Almost identical factors were found for the importance of the practices in each factor and how often they happened. The 13 statements were almost evenly split between the two pairs of factors. The learning-to-learn potential I could see in one of these factor pairs provided the genesis of this report.

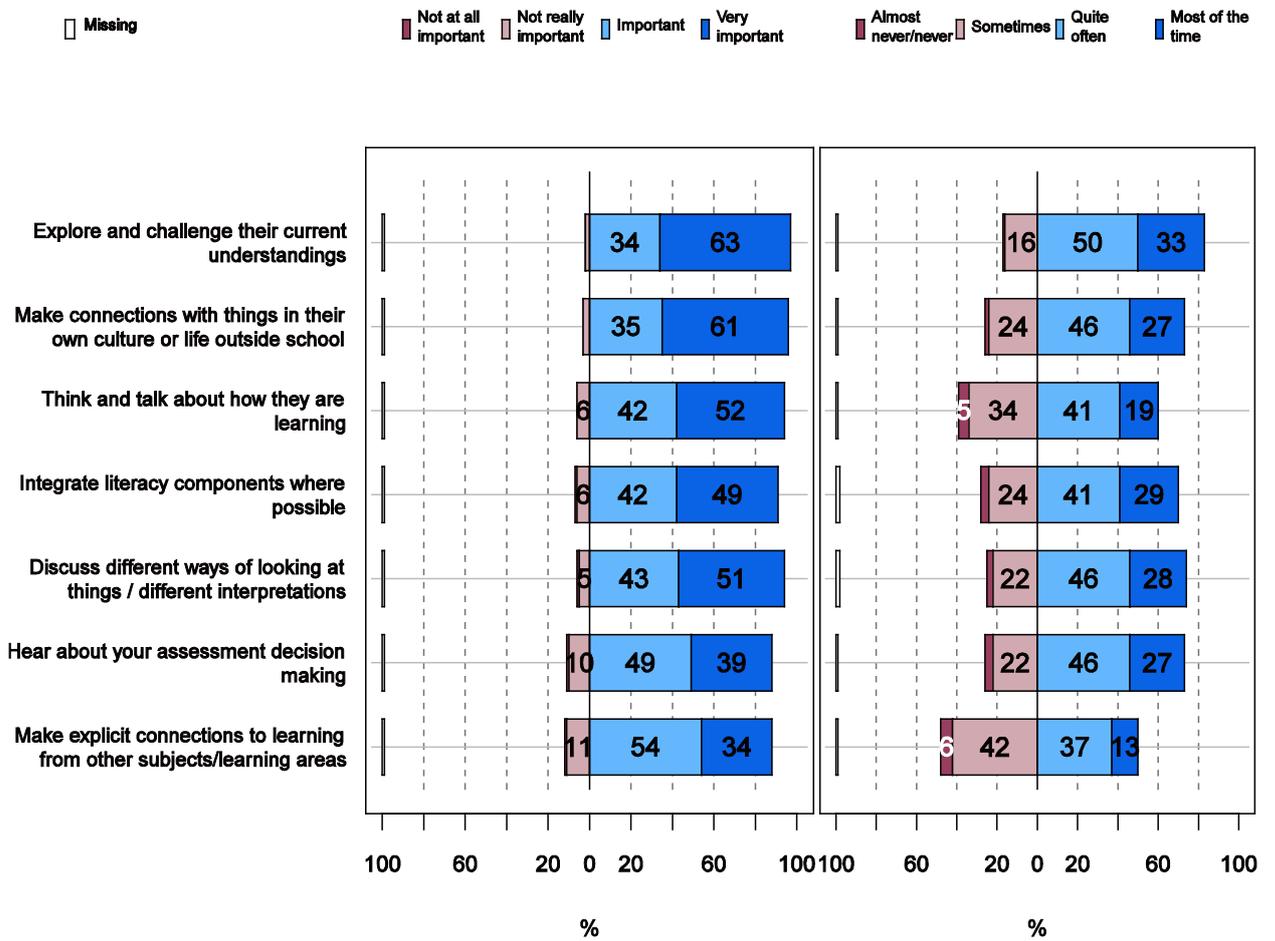
One of these two pairs of factors brought together statements with a focus on actual types of learning experiences (e.g., hands-on activities, problem solving, inquiry learning, projects in the community). All such experiences could be seen as rich grist for learning to learn, but simply valuing and/or doing these things does not necessarily mean this potential will be acted upon. Since none of the items in this pair of factors explicitly identified an aspect of metatalk, it is not possible to infer that the type of active learning described included a metacognitive focus. Furthermore, correlations between this pair of factors and the metatalk pair (on which I will focus) were not particularly strong. For these reasons, and given that my stated intent was to identify ways to build on existing practice with clear learning-to-learn potential, I decided to focus my analysis and discussion on the 'metatalk opportunities' pair of factors, along with a third

factor whose items describe practices with the potential to build students' assessment capabilities. This third factor is discussed in section 4.

Introducing the metatalk opportunities factors

Figure 1 shows the seven items common to both the metatalk opportunities factors. The factor for the importance that teachers attached to these practices (left-hand side of Figure 1) had an alpha value of 0.78. I called this factor 'importance of opportunities for metatalk'. The factor for how often teachers estimated they created these types of learning opportunities (right-hand side of Figure 1) had an alpha value of 0.80. I called this factor 'activating opportunities for metatalk'.

Figure 1 Secondary teachers' responses to items in the metatalk opportunities factors
(n=1,266)



Why metatalk?

It will be readily apparent that opportunities for metatalk are implied rather than explicit in most of the items in Figure 1. What are my reasons for choosing this term to create an identity for this pair of factors? Recall that

Metatalk is language that supports students' metacognitive functioning in the classroom—that is, language that organizes, foreshadows, summarizes, or connects classroom activities and content This type of talk may also be useful in marking for students what type of message is about to come up in the conversational arena and what they, the students, might have to do with the message. This type of talk can, and often is, attached to the ideas and expressions of students where teachers seek to echo or elaborate on student conversations. (Leinhardt & Steele, 2005, p. 92)

Leinhardt & Steele (2005) argue that metatalk connects classroom activities and content in various ways. Good teachers routinely make connections to previous learning (e.g., “Where have we seen this before?”) and to the ongoing flow of work (e.g., “Once we’ve got this sorted we’ll be able to ...”). Such examples of metatalk do not necessarily imply learning-to-learn opportunities. However, it is impossible to reflect on acts of learning, as a class group, without using metatalk. Thus indications of opportunities for metatalk—even when the explicit focus might lie elsewhere—provide a strong foundation for weaving the *learning to learn* principle into teachers’ pedagogical repertoire.

Table 2 elaborates on the learning-to-learn metatalk potential in the individual items in Figure 1. A focus on learning to learn is explicit in the first two items in this table and could be readily developed in the other items, as outlined. All these items imply that metatalk is taking place to orient students to the intended learning. What is less clear is that acts of learning *per se* will be in scope—but they could easily be.

Since teachers responded to these items with a strong degree of internal consistency (the alpha values are 0.78 for valuing and 0.80 for practice), we could infer that those who value thinking and talking about how students are learning, and different ways they understand their learning, and who cue conversations about these aspects of learning reasonably often, are also more likely to value and offer the other types of learning-to-learn metatalk opportunities described in the table.

Table 2 **The metatalk opportunities implied by the factor items**

Item	Metatalk opportunities
<i>Think and talk about how they are learning</i>	Directly implicates metatalk about acts of learning (e.g., “Now we’re going to hear about the strategies that different groups used to work that out”.)
<i>Explore and challenge their current understanding</i>	Implies metatalk about how students are currently making meaning (e.g., “So we’ve seen two ways to explain this. How could we decide which of them might be a better fit with the evidence we currently have?”)
<i>Make connections with things in their own culture and life outside school</i>	Cues metatalk that links learning to life beyond school. The intent could be to establish relevance, to build on previous experiences, or to link current learning to possible future uses.
<i>Make explicit connections to learning from other subjects / learning areas</i>	Cues metatalk about elements of learning that might be shared—or similar enough to compare (e.g., “Where else have you learned about making inferences?” and “What is the same and what is different to the way we are doing this?”)
<i>Discuss different ways of looking at things, different interpretations</i>	Cues an epistemic conversation about how meaning is made in specific discipline areas, or an explicit conversation about how different world views or different cultural values influence how a specific event or phenomenon is understood ¹²
<i>Hear about your assessment decision making</i>	Metatalk opportunity is to help students build awareness of themselves as knowers and the fit between their current demonstrations of achievement and what the teacher is looking for as evidence of learning (e.g., “What I was hoping to see was …”)
<i>Integrate literacy components where possible</i>	Metatalk opportunity is to draw students’ attention to the purposeful dual intent (e.g., “Now we’re going to look at how descriptions are structured and why science accounts use the sorts of language they do”).

How important are these metatalk opportunities to teachers?

The left-hand side of Figure 1 suggests that almost all the teachers valued metatalk opportunities about different learning challenges and connections in principle. Many of them afforded real weight to some of these conversation topics: close to two-thirds thought it was very important for students to explore and challenge their current understanding and to make connections with things in their own culture or life outside school. Around half thought it was very important for students to think and talk about how they are learning, to discuss different ways of looking at things, and to integrate literacy components where possible.

Note, however, that a smaller proportion of teachers thought it was very important for students to hear about their assessment decision making, and 10 percent thought it was not

¹² One of the stories developed for the Key Competencies and Effective Pedagogy resource illustrates what this might look like in a social studies class: <http://nzcurriculum.tki.org.nz/Key-competencies/Key-competencies-and-effective-pedagogy/Engaging-examples-of-practice/Waitangi-Day>

important. Similarly only a third of teachers thought it was very important to make explicit connections to learning in other subjects, and 11 percent said this was not important.

How often do teachers cue these types of metatalk opportunities?

The right-hand side of Figure 1 shows teachers' estimates of how often students actually experienced the opportunities described when in their class. This graph tells a somewhat different story to that on the left-hand side. Despite the value that teachers placed on the practices described, actually establishing these types of metatalk opportunities as *routine* (i.e., happening most of the time) was clearly not the norm for many teachers. A third of the teachers estimated that their students would be able to routinely explore and challenge their current understanding. This proportion rose to 83 percent when these opportunities were offered at least quite often. Note that 97 percent of the teachers had rated this type of metatalk as important or very important.

In some cases the practices were not happening much, if at all. For example, almost half the teachers (48 percent) said that students never / almost never or only sometimes experienced opportunities in their classes to make connections to other learning areas. This contrasts with the 88 percent of respondents who said this was important or very important. Similarly, 39 percent of the teachers thought their students never / almost never, or only sometimes, had opportunities to think and talk about how they are learning.

These gaps between strongly valuing a specific metatalk opportunity and regularly putting it into practice were largest for:

- making connections with things in students' own culture and life outside school
- thinking and talking about how learning is happening
- helping students explore and challenge their current understanding.

It would seem that a number of teachers who highly value the described practices are unable to translate this sense of importance into regularly experienced learning opportunities. All three items require teachers to take a strong lead in learning-focused metatalk. A clear sense of the wider value of learning (e.g., the dual sense of learning for now and the future, discussed in section 2) is needed to support students to link their learning to their lives beyond school, to think about learning *per se*, or to take the time to look at how students are constructing meaning for the intended learning. Another likely reason for the large gap between valuing and including opportunities for metatalk about *learning itself* is that good-practice pedagogy in this area is less familiar.

The value/practice gaps were only somewhat narrower for:

- making explicit connections to learning from other subject areas
- discussing different ways of looking at things
- integrating literacy, where possible.

Two of these items imply a need to build insights into how meaning is made in a subject area (ways to interpret meanings, specific literacy practices of a discipline), and the third requires teachers to be well connected with the curriculum thinking and planning of their peers across the

school. Note that the value/practice gap is smallest for hearing about a teacher's assessment decision making. I will come back to possible reasons for this shortly.

Does context make a difference?

Do different aspects of teachers' work and their lived experience of practice have an impact on the value they place on learning-to-learn conversations and activities, or how often they facilitate such things in their classrooms? To explore this question I investigated cross-tabulations between the individual items in the factors and other variables that are routinely included in our national surveys.¹³ A number of these variables (e.g., years of teaching experience, role in the school, school size) did not show clear patterns of association with the learning-to-learn items and so are not discussed here, or in subsequent sections. Two variables did show some associations: school socioeconomic decile¹⁴ and teachers' main subject teaching areas.

School socioeconomic decile

For the purposes of this analysis, the schools in which the teachers taught were divided into three socioeconomic decile groups:

- decile 1 or 2 schools (11 percent of teachers)
- decile 3–8 schools (64 percent of teachers)
- decile 9 or 10 schools (19 percent of teachers).

Six percent of teachers did not give their school decile rating. Table 3 shows the three items where there were notable differences in the percentage of teachers who said the described action was very important. A higher proportion of teachers from decile 1 and 2 schools rated these three practices as very important. It wasn't that teachers in higher decile schools thought these things were unimportant, but they were less likely to say they were very important.

¹³ These variables include school decile, school type (state, state integrated), school size, school location (major urban, minor urban, rural), teacher role in school, years of teaching experience, main teaching subjects, gender. Some of these variables are confounded (e.g., years of teaching experience and role in school; school size and location—the largest schools tend to be in major urban areas and many are also high decile), so care is needed when interpreting associations between them and with other items.

¹⁴ New Zealand schools are categorised into socioeconomic deciles for funding purposes. Decile 1 schools are those with the highest proportion of low socioeconomic students and decile 10 students those with the lowest proportion of low socioeconomic students.

Table 3 **School socioeconomic decile-related differences in highly valued practices**
(*n*=1,266)

Practice	% saying practice is very important		
	Decile 1–2	Decile 3–8	Decile 9–10
Think and talk about how they are learning	64	49	53
Make explicit connections to learning from other subjects/learning areas	47	34	29
Hear about your assessment decision making	46	40	34

Table 4 shows decile-related differences in percentages of teachers who said two of the metatalk opportunities happened most of the time; i.e., they were routine in their classes. Again, teachers in low-decile schools were more likely to say these practices occurred.

Table 4 **Decile-related differences in routine practices** (*n*=1,266)

Practice	% saying practice happens most of the time		
	Decile 1–2	Decile 3–8	Decile 9–10
Integrate literacy components where possible	42	27	29
Make connections with things in their own culture or life outside school	38	26	24

Lifting the overall achievement of Māori and Pasifika students has been a specific policy target in recent years. Since many of these ‘priority learners’ are in low-decile schools, these schools have been the recipients of professional learning with an emphasis on aspects of pedagogy related to motivating students and better tracking of achievement to ensure students do not fall by the wayside. These pedagogies also potentially convey benefits for learning to learn. Hence it is likely that the practices that feature in Tables 6 and 7 have been a focus for professional learning and implementation in low-decile schools. Even so, it is interesting to note that the patterns of difference for valuing are for different sets of items than the patterns of difference for actual practice.

Subject area

For the purposes of the analysis, main teaching subjects were clustered into four groups of similar subjects. Doing this divided the teachers into reasonably evenly sized groups, perhaps at the cost of concealing differences between teaching subjects within each group:

- English and languages (26 percent)
- mathematics and science (and computing—a very few teachers) (29 percent)

- social sciences, arts and commerce (22 percent)
- technology, health, physical education and vocational courses, etc. (21 percent).

There were no subject-related differences for valuing or conducting conversations that allowed students to “think and talk about how they are learning”. There were a number of other differences however. These are illustrated in the next two tables.

Table 5 shows associations between four of the metatalk items and being a teacher of English or languages. Two of the items are also associated with being a teacher of social sciences, arts, or commerce subjects. In all these cases a higher proportion of teachers of these subjects thought the described metatalk opportunities were very important.

Table 5 **Differences in highly valued metatalk opportunities according to subject taught**
(*n*=1,266)

Metatalk item	% saying practice is very important			
	English, languages	Maths, science	Social sciences, arts	Technology, PE, health, vocational
Make connections with things in their own culture or life outside school	76	53	65	50
Integrate literacy components where possible	71	42	43	38
Discuss different ways of looking at things / different interpretations	61	41	59	44
Hear about your assessment decision making	48	34	37	36

Some of these differences make intuitive sense in terms of traditional purposes for learning and associated ways of teaching these subjects. For example, teachers of English will typically choose novels that make some sort of connection to students’ lives, and teachers of subjects such as visual art or drama will encourage students to draw on their own life experiences when creating new art works. Discussing novels or poems in English readily lends itself to the exploration of different ways of looking at things. Depending on the context chosen, such discussions might well encompass different cultures, or different aspects of students’ lives. Learning about cultures also comes with the territory in learning other languages, and in the social sciences.

Most obviously, literacy practices are readily conceived as integral to English and languages. (Presumably the 29 percent of teachers of English and languages who did *not* see the integration of these components as very important were more focused on other aspects of their learning areas.) However, in the introduction to this section I noted that the actual integration of literacy practices needs to be supplemented by metatalk that draws attention to the intended literacy learning in addition to the subject-based learning.

Frequently occurring practices show similar patterns of responses when considered in relation to subject clusters. Table 6 shows the notable differences in the proportions of teachers

reporting that students could take part in the described practices most of the time in their classes. What stands out here is the lower proportion of mathematics and science teachers reporting that students in their classes can routinely make connections to things in their own culture/life outside school, or discuss different ways of looking at things or different interpretations. This pattern is consistent with a traditional focus on acquisition of correct understanding or ways of doing things in these areas. Metatalk about learning challenges *per se* would probably seem out of place in the context of a very traditional mathematics or science classroom, so it is encouraging that some teachers of these subjects are valuing and practising these sorts of learning-to-learn connections and conversations.

Table 6 **Differences in frequently occurring metatalk opportunities according to subject taught ($n=1,266$)**

Metatalk	% saying practice happens most of the time			
	English, languages	Maths, science	Social sciences, arts	Technology, PE, health, vocational
Integrate literacy components where possible	53	19	24	21
Make connections with things in their own culture or life outside school	40	13	32	25
Explore and challenge their current understanding	38	26	34	32
Discuss different ways of looking at things / different interpretations	37	15	38	24
Hear about your assessment decision making	36	22	25	26

The important question these data raise is what it might take to support a wider range of teachers to see practices with learning-to-learn potential as very important, develop these practices in ways that are appropriate to the subject(s) they teach, and do these things more often.

Explicit professional learning experiences as a contextual variable

It was apparent in the NCEA-related part of the 2012 survey that teachers had gained a great deal from the best practice workshops conducted by NZQA, which 62 percent said they had attended (see Hipkins, 2013b). When asked about the benefits of these workshops, 57 percent of those who had attended them agreed or strongly agreed that the workshop(s) had “resulted in me having more explicit achievement-focused conversations with students”. Given the evident similarity between this item and the metatalk item “hear about your assessment decision making”, responses were cross-tabulated to check for patterns of association.

Almost two-thirds of the group who strongly agreed that the best practice workshops had led to more explicit, achievement-focused conversations with students (62 percent) also strongly agreed that it was very important for students to hear about their assessment decision making. Just

under half (43 percent) of the teachers who strongly agreed that the best practice workshops had resulted in more explicit achievement-focused conversations also said that they held such conversations routinely, and a further 42 percent said they did so quite often.

These patterns raise the classic chicken-and-egg question: did some teachers get more out of NZQA's best practice workshops because they valued assessment-focused conversations and already practised these, at least to some extent? Or did the workshops open some teachers' eyes to the potential value of such conversations, thereby making them more likely to happen? Both explanations seem plausible, and no doubt some combination of these influences was at play. I will come back to the relationship between assessment thinking and learning-to-learn conversations in section 4.

Signals that *NZC* is still bedding in

The existence of clear factors linking items that describe aspects of learning-to-learn conversations is noteworthy in itself.

- The strong alpha value ($\alpha = 0.78$) for 'importance of opportunities for metatalk' suggests that secondary teachers who value these described practices value all or most of them. Conversely, where the practices are not as highly valued, this judgement is also likely to apply to all or most of the areas identified in the individual items.
- The strong alpha value ($\alpha = 0.80$) for 'activating opportunities for metatalk' suggests that secondary teachers who give students opportunities to take part in the conversations cued by metatalk do so across a range of the areas described. Conversely, if they don't cue such conversations, this is likely to apply to all or most of the described areas.

There is a correlation between the two factors, but it is not very strong ($r = 0.35$).¹⁵ As the gap analysis showed, some teachers do not appear to be providing metatalk opportunities that could support learning to learn, even when they think these opportunities are important. This is not surprising. Learning to learn is a profound change in focus and it has not been the subject of any systematic programme of professional learning for *NZC* implementation of which I am aware. The CIES study showed that insightful leaders among the early adopters of *NZC* found ways to draw links between learning to learn and earlier professional learning, such as the AToL¹⁶ programme (Hipkins et al., 2011). Some teachers will have had chances to develop such links, but many others will not. The analysis of decile-related differences supports the suggestion that strategic professional learning could help reduce the value/practice gap. Considerable effort is being put into lower-decile schools to support teachers to lift the achievement of 'priority learners'. Some of the practices on which their professional support has focused can be readily linked to learning-to-learn metatalk.

¹⁵ Using Pearson's correlation coefficient.

¹⁶ Assess To Learn.

NZC is a complex document, and it has taken considerable time for schools and individual teachers to appreciate some of the deeper changes it implies. In 2009 many secondary schools were still deliberating on what *NZC* might mean for their traditional practice. Three years on there were some indications that aspects of pedagogy had shifted in ways that are at least congruent with *NZC*'s messages about learning to learn, if not yet explicitly linked to this principle.¹⁷ It will be interesting to see if there are further shifts when we survey secondary schools again, later in 2015.

Curriculum implementation actions across 2009 to 2012 were almost certainly not confined to any slow-burning influence of *NZC* itself. In this same period a very large exercise was undertaken to more tightly align the NCEA's achievement standards across subjects in terms of level of academic demand, and with *NZC* in terms of purposes for learning and the types of outcomes assessed. For example, section 2 noted the shift in history to an emphasis on historical thinking and its underpinning 'big six' concepts. Both teachers and students have needed to learn about changed expectations such as these in history, and about the nature of evidence of learning that will need to be demonstrated.

Getting to grips with these shifts in the substantive learning expectations opens up a space where supportive metatalk could be modelled and valued by teachers and students alike. The association between the best practice workshop outcome of drawing students in to more explicit conversations about assessment and the similar item in the two learning-to-learn factors certainly supports this interpretation of NCEA as an influence on the pedagogical changes documented. The ongoing series of secondary national surveys has demonstrated that NCEA has a strong influence on secondary teachers' curriculum thinking (Hipkins, 2013b). NCEA assessment arguably provides a context for learning-to-learn conversations that would be motivating for, and valued by, busy teachers. However, shifts in curriculum thinking, including pedagogy, are not the primary focus for best practice workshops as these are currently conceived. They would need to be adapted, and probably funded differently, since the learning focus would move beyond efficient and appropriate administration of NCEA assessment *per se*.¹⁸

¹⁷ A change from a five-point to a four-point scale, together with tweaks to item wording to match the primary national survey, meant that these could be nothing more than indications.

¹⁸ NZQA funds the implementation of NCEA assessments, but the Ministry of Education is responsible for activities associated with *NZC*.

4. Assessment-capable students

This section documents teachers' responses to a set of 12 items that describe ways students might take greater responsibility for their own learning progress. Teachers were asked how often these practices took place for the majority of their students, but not how much they valued them. The scale is the same as that used for indicating the frequency of learning-to-learn practices discussed in the previous section (most of the time, quite often, sometimes, almost never/never).

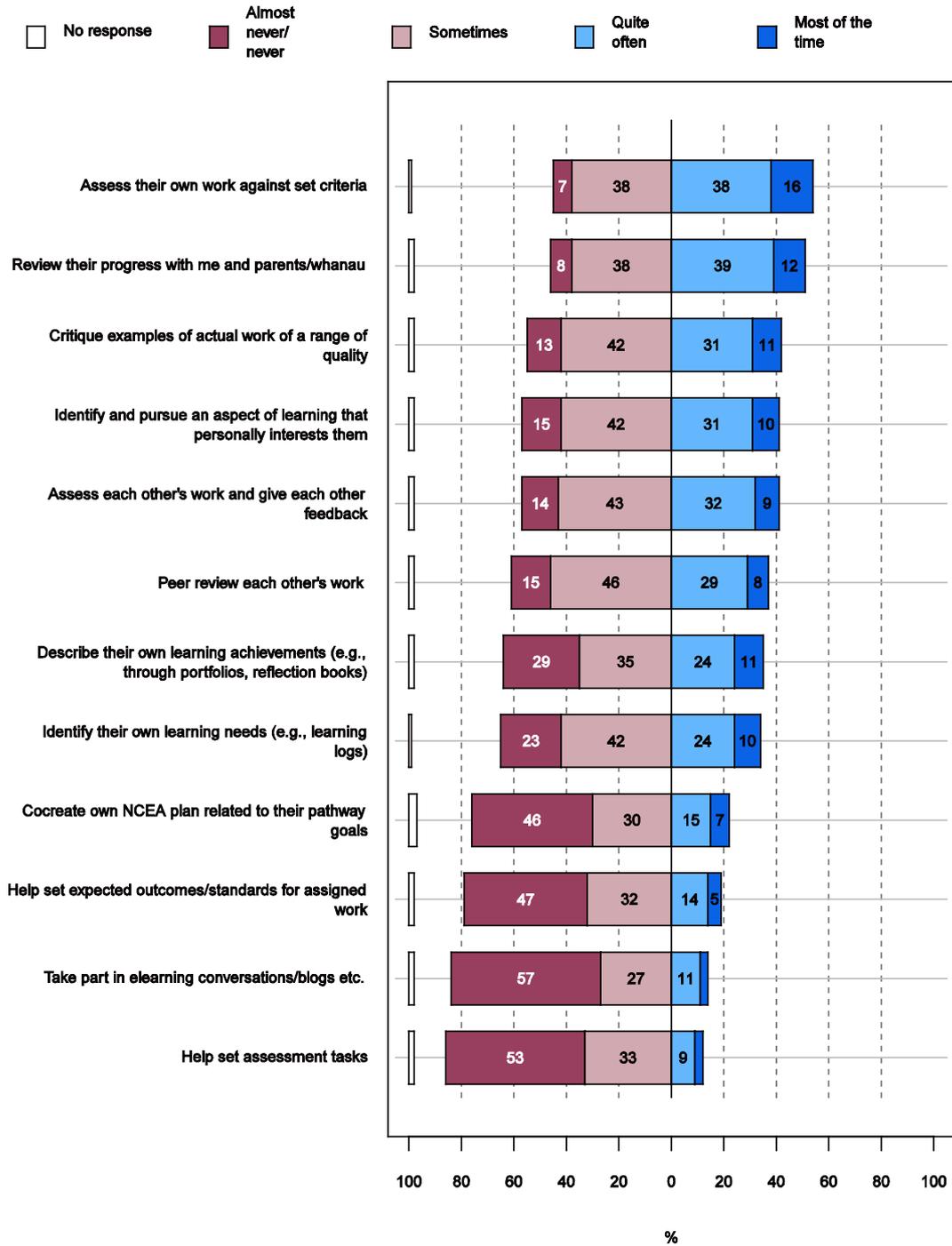
Whereas the focus in section 3 was on what teachers do to support learning-to-learn approaches within a framework of the taught curriculum, this section directs attention to ways teachers support students to take more active control of their learning, particularly in relation to assessment of their own progress; i.e., to build students' assessment capabilities. Teachers use their knowledge and skills to support students as the latter focus on how, and how successfully, they are learning, in addition to the more familiar 'what' of their learning.

Learning to learn has strong identity dimensions. Every student has a personal private narrative about how they 'are' as a learner. This narrative is endorsed—or can be contradicted and changed—by the interactions each student has with others, and the feedback about their learning they get from those interactions (Deakin-Crick, 2014; Sfard & Prusak, 2005). The teacher will have this type of influence on students' views of themselves as learners in school settings, whether they are aware of this or not. So what sorts of opportunities are they orchestrating for students to think and talk about the *meaning* of their assessment experiences? Are they supporting students to take a more active role in making assessment decisions and determining appropriate actions in response to assessment feedback?

How the teachers responded

Figure 2 on the next page displays the secondary teachers' responses to the full item set in the 2012 survey. Patterns of responses are discussed in two thematic subsections: involving students in assessing their work, and giving students more say in determining learning directions. Both types of opportunities have the potential to have an impact on each student's sense of self as a successful learner and on their growing assessment capabilities. Obviously the nature of this impact will depend on the nature of any discussion between the teacher and the student(s) as the opportunity unfolds in action.

Figure 2 **How students are involved in taking greater responsibility for their learning in secondary classrooms, 2012 (n=1,266 teachers)**



Involving students in assessing their work

Around half the teachers (54 percent) said their students could “assess their own work against set criteria” quite often or most of the time. Having students “assess each other’s work and give feedback” happened less frequently: 41 percent said they did this quite often or most of the time. The similar item “peer review each other’s work” had a similar occurrence: 37 percent said the students did this quite often or most of the time.

Just under half (42 percent) of the teachers said students had the opportunity to “critique examples of actual work across a range of quality” quite often or most of the time. Another item took essentially the same type of activity, but this time the critique was focused on the student’s own work, and in particular their successes: 35 percent said that students could “describe their own learning achievements” quite often or most of the time.

Just over half the teachers (51 percent) said that students would “review their progress with me and parents/whānau” quite often or most of the time. Note that an active role for students is implied but not specifically spelled out here. Similarly, an active role in reflecting on learning could be inferred for “take part in e-learning conversations/blogs etc.”: just 14 percent said students could do this most of the time or quite often. This much lower occurrence could relate to the state of e-learning provision or to the relative unfamiliarity of blogging and similar activities that share conversations about learning between the students themselves, and potentially with any other interested parties.

Giving students more say in determining learning directions

Forty-one percent of secondary teachers said students had the opportunity to “identify and pursue an aspect of learning that interests them” most of the time or quite often. A third of the teachers (34 percent) said students had the opportunity to “identify their own learning needs” quite often or most of the time. Fewer said students had the opportunity to “co-create own NCEA plan related to their pathway goals”: 22 percent of teachers said students had the opportunity to do this most of the time or quite often.

Two items that described ways to give students a more active say in determining the achievement levels to which they might aspire also had lower occurrence:

- “help set expected outcomes/standards for assigned work” (19 percent most of the time or quite often)
- “help set assessment tasks” (12 percent most of the time or quite often).

Compared to assessing work against teacher-set criteria, or reflecting on learning (by implication in a context where the teacher has set the goals), these ways of co-creating learning goals and standards were not happening very often. Around half the teachers said students would almost never or never do these things. Sharing responsibility with students for the substance of their learning seems to be a bridge too far for many secondary teachers and schools as yet. The part played by contextual factors in whether or not teachers do these things will be discussed shortly.

Differences related to context

The previous section showed how some aspects of teachers' work and their lived experience of practice can have an impact on how often they facilitate learning-to-learn experiences in their classrooms. Cross-tabulations between the individual items discussed in this section and the other variables routinely included in our national surveys again revealed some interesting patterns of differences.

School socioeconomic decile

Teachers in decile 1 and 2 secondary schools were over-represented among those who routinely or often:

- involved students in setting expected outcomes/standards for work
- co-created an NCEA plan and pathway goals with students (half the teachers in decile 9 or 10 schools said they never or almost never did this).
- involved students in identifying and carrying out a personal interest project (half the teachers in decile 9 or 10 schools said they did this sometimes or never/almost never).

Table 7 shows differences in the extent to which these practices were routine (i.e., perceived to be happening most of the time). Note that frequencies are not high, but a somewhat larger proportion of teachers perceive these things to be happening most of the time in low-decile school classrooms.

Table 7 **Decile-related differences in routine practices ($n=1,266$)**

Practice	% saying practice happens most of the time		
	Deciles 1–2	Deciles 3–8	Deciles 9–10
Students identify and pursue an aspect of learning that personally interests them	17	10	7
Students co-create own NCEA plan related to their pathway goals	13	6	5
Students help set expected outcomes/standards for assigned work	9	5	4

Subject area

Teachers of mathematics or science were less likely to give students opportunities to be involved in assessing their work or determining learning directions. This pattern applied to all but three of the twelve items in Figure 2. The exceptions were: “take part in e-learning conversations”, “co-create their own NCEA plan”, and “review their progress with me and parents/whānau”. The pattern of difference was strongest for the following three items:

- “help set assessment tasks”: 70 percent of science or mathematics teachers said students in their classes never or almost never did this, compared to just under 50 percent of teachers in other subjects
- “help set expected outcomes/standards for assigned work”: 60 percent of science or mathematics teachers said their students never or almost never did this, compared to just under 40 percent of teachers in other subjects
- “describe their own learning achievements”: 46 percent of science or mathematics teachers said their students never or almost never did this, compared to around 20 percent of teachers in other subjects.

The strongest differences between mathematics and science teachers and teachers of other subjects are interesting. The three bullet-pointed items have in common a sense of co-constructing outcomes of learning and making judgements about how well these have been achieved. It would seem that many maths and science teachers are not yet ready to do this.

Results of the factor analysis

The set of items about students taking some responsibility for their own learning progress revealed two distinct factors. Only those items that made a strong contribution to the overall factors are included in each factor.

- Growing student assessment capability ($\alpha = 0.82$) included the following five items: “help set expected outcomes/standards for assigned work”, “identify their own learning needs”, “help set assessment tasks”, “identify and pursue an aspect of learning that personally interests them”, and “co-create own NCEA plan related to their pathway goals”.
- In peer assessment ($\alpha = 0.76$), three items made a strong contribution to this factor: “assess each other’s work and give feedback”, “peer review each other’s work”, and “critique examples of actual work across a range of quality”.

There was a strong correlation between these two factors ($r = 0.73$). It would seem that secondary teachers responded in a similar way to the items in both factors. This makes sense, because both factors group items that potentially have a strong assessment-for-learning focus. However, the differences are also telling. The opportunities described in the peer assessment factor do not necessarily imply active student involvement in determining learning directions, nor—necessarily—in reflecting on how the expected learning might relate to their personal learning strengths and needs. Thus, while the peer assessment factor describes strong assessment-for-learning pedagogy, the difference between the two factors might relate to how strongly a traditional framing of student and teacher roles determines curriculum directions and expectations.

The five items in the growing student assessment capability factor do convey a sense of active student involvement in curriculum and assessment sense making and decision making. The title for this factor was chosen to reflect this sense that what teachers do is important for supporting

students to build knowledge of themselves as learners; i.e., it strongly implies aspects of learning to learn, as outlined in section 2.

Correlations with the metatalk opportunities factors

There were low to moderate correlations between the growing student assessment capability factor and secondary teachers' responses to the metatalk factors discussed in section 3 ($r = 0.37$ for importance of opportunities for metatalk and $r = 0.31$ for activating opportunities for metatalk). This pattern suggests that teachers do not necessarily coherently and strategically relate involving students in assessment and learning decisions with valuing and offering opportunities to talk about learning; i.e., metacognitive talk that raises students' awareness of how they 'are' as learners. Yet this is precisely the sort of self-awareness that needs to be built as part of growing students' assessment capabilities.

Is there an opportunity here to use the idea of learning to learn to explore ideas about the active role that students should play in their own learning? Cueing and leading metatalk requires deep subject expertise, so approaching the idea of assessment capability from this angle might help to dispel a common impression that sharing learning and assessment decisions with students means the teacher abdicates some or most of the responsibility for actual achievement.

Other opportunities to build on existing practice

The two most frequently occurring practices in Figure 2 ("assess their own work against set criteria" and "review their progress with me and parents/whānau") arguably describe more traditional actions than some of the less frequently occurring practices, albeit with the potential for a learning-to-learn focus to be explored. For example, teachers have long reported to parents on students' learning progress, but directly involving students in these conversations, and doing so on a more regular basis than set-piece 'parent nights', are both recent developments. We cannot say if doing so at least quite often has increased since 2009, because this item was added in 2012. But since just half the teachers said they were doing so at least quite often in 2012, there is clearly room for this practice to provide another potential entry point for learning-to-learn conversations. The comments and attitudes of important adults in their lives will have an impact on each student's learning identity, so this would seem to be a good opportunity to build a learning-to-learn focus into conversations with families about achievement and progress.

Similar comments could be made about supporting students to assess their work against set criteria, which is another more frequently occurring practice. In this case the learning to learn 'twist' would come via the initiation of conversations with an assessment for learning focus.¹⁹ In contrast to simply using criteria to make summative judgements, such conversations would

¹⁹ There is a large body of research that discusses assessment for learning. Interestingly, researchers in this field have found the same sorts of value/practice gaps that were discussed in section 3 (Pedder & Opfer, 2013). I'll return to why this might be so in the final section.

support students to see ways to overcome identified learning obstacles and, given the necessary effort, use this feedback to make achievement gains. Again, there is a clear link to supporting each student to develop an identity as a successful and ongoing learner; i.e., to build connections between learning to learn now and lifelong learning as a disposition for the future (Deakin-Crick, 2014).

It is also noteworthy that almost half the teachers said that their students at least quite often critiqued actual examples of work of a range of quality. Support materials for NCEA have given many secondary teachers access to such examples, and perhaps sparked ideas for using them in conversations with strong learning-to-learn potential. Section 3 noted the professional learning opportunities in best practice workshops that have successfully encouraged teachers to use these materials. Again, there is potential here to amplify the learning-to-learn potential in conversations when these materials are used in the classroom.

5. Indications of associations with other aspects of teachers' work

This section discusses indications of relationships between teachers' average responses to the factors and their responses to other parts of the national survey. This exploratory work was undertaken to identify potential opportunities to build on what teachers already do well, and to build their knowledge of the scope of learning to learn and ways in which it might become a more routine part of their practice.

A brief outline of the exploratory process

Each teacher's overall response to the set of items included in each factor was calculated by averaging their responses to the individual items making up the factor. Those in level 4 tended to give the strongest overall combination of responses (e.g., more items were rated "very important" or "happens most of the time"). Those in level 1 tended to give the lowest combination of responses (e.g., comparatively more items were rated "not at all important" or "almost never/never"). Tables 8 and 9 show the results.

Table 8 Overall averages for the 'importance' factor (n = 1,266)

Factor	% of teachers in each average grouping			
	4	3	2	1
Importance of opportunities for metatalk	46	52	2	–

Table 8 shows the skew that can also be seen in the left-hand side of Figures 1 and 2. Note that just 2 percent of teachers, on average, thought that aspects of metatalk were not very important. No teachers' answers were, on average, 'not at all important' for this factor.

Table 9 Overall averages for the ‘how often’ factors

Factor	% of teachers in each average grouping			
	4	3	2	1
Activating opportunities for metatalk	11	64	24	1
Growing student assessment capability	1	17	56	25

NB: Rows may not sum to 100 because of rounding

Table 9 shows the opposite direction of skew. Just 1 percent of teachers’ averaged responses suggested that they routinely offered the types of opportunities described by the items in ‘growing student assessment capability’. For a clear majority of teachers these opportunities were likely to be offered only sometimes, if at all. This is congruent with the assertion that the pedagogical implications inherent in the idea of ‘assessment capability’ are not yet widely understood (Booth et al., 2014). The ‘activating opportunities for metatalk’ factor showed a similar but less pronounced skew.

Categories 1–4 for the averaged factor responses were cross-tabulated with all other items from the 2012 national survey. This allowed us to look for indications of possible relationships between teachers’ practice in relation to learning to learn and other aspects of their work and thinking. The discussion that follows is based on relationships that had a p value of < .0001 (i.e., this result could be expected to occur by chance less than 1 in 10,000 times) between the averaged factor groupings and the most emphatic responses to the cross-tabulated items (e.g., strongly agree, very important, happens most of the time).²⁰ This focus on the most emphatic responses was considered appropriate given that the purpose of the exploratory analysis was to search for opportunities to highlight existing relationships between teachers’ current thinking and actions and the learning-to-learn opportunities they were already using in their classrooms.

Views of ‘big picture’ NZC implementation

All three learning-to-learn factors were derived from two sets of items that described in-class responses that individual teachers might make to NZC. However, NZC also provides strong signals about practices that might be expected to change/evolve at the school-wide level in order to better support the provision of a strong local curriculum that meets the needs of every learner. These NZC signals were distilled into a set of 16 items that describe actions such as:

- ways to involve different groups in curriculum decision making (students, parents, Māori community, Pasifika community)
- cross-curriculum initiatives (integration of literacy and numeracy, a greater emphasis on future-focused issues, systematic review of opportunities for students to learn te reo and tikanga Māori)

²⁰ Because there were so few level 4 averaged responses for the ‘growing student assessment capability’ factor, the level 3 group was considered to be the highest-level group for analytical purposes.

- strengthened structures and practices to support the learning success of all students (clear course pathways, new types of courses, use of school data to inform decisions, review of coherence across year levels, provision of more leadership opportunities for students)
- a school-wide focus on specific pedagogies (integration of key competencies into learning areas, culturally responsive teaching, teacher inquiries into their own practice).

Teachers responded to these 16 items twice: first they were asked to indicate the importance of each described action, then they were asked to indicate what was happening in their school (already happened / happening now, in school plan to happen, no plans to do this).

Importance of big-picture curriculum implementation

There were strong indications of relationships between all three learning-to-learn factors and seeing the items in this wider *NZC* set as very important. Strong agreement about the importance of the actions described by all 16 items was associated with being in the highest-level group for the two metatalk factors. For the ‘growing student assessment capability’ factor, 15 of the 16 items showed the same pattern of relationships. This suggests a strong coherence between a teacher’s views about the importance of school-wide implementation of *NZC* and their classroom-based beliefs and actions related to learning to learn.

The strongest indications of a relationship with all three factors were for the same two items: “students given a say in curriculum planning” and “parent input into the school curriculum sought and acted upon”. However, note that just 13 percent of teachers thought that it was very important to give students a say in curriculum planning. Illustrating what the strongest relationships look like, three-quarters of this group also gave an average response of “very important” for the factor ‘importance of opportunities for metatalk’. The third- and fourth-strongest patterns, again for all three factors, were for the items “Māori community input sought and informs practice” and “Pasifika community input sought and informs practice”.

This analysis suggests that highly valuing / regularly taking up learning-to-learn opportunities in the classroom is likely to be associated with being supportive of including the wider school community, including students themselves, in curriculum planning. We cannot tell whether these teachers were making a conscious connection between these aspects of their practice, or if tacit curriculum thinking and values were driving what they did. This connection seems worth exploring more explicitly given its potential for opening up learning-to-learn practices for a greater proportion of secondary teachers.

School-wide curriculum implementation in practice

The pattern of potential relationships had a different feel when we looked at teachers’ perceptions of what was actually happening with curriculum implementation at the school-wide level. For 10 of the 16 items, those in the lowest-level group (i.e., level 1) for ‘growing student assessment capability’ were also more likely than other teachers to say the school had “no plans to do this”. This was the only instance where we found stronger indications of a possible relationship between

the lowest-rating level for a specific factor and another item set. There were no associations at all for ‘importance of opportunities for metatalk’ and only one for ‘activating opportunities for metatalk’. Teachers who routinely activated opportunities for metatalk were more likely than other teachers to say that the school had already implemented processes that gave students a greater say in curriculum planning.

Items that showed this pattern included all those that described involving different groups in curriculum decision making and all those that described cross-curriculum initiatives (see bullet points on previous page). By contrast, items that described a school-wide focus on specific pedagogies or strengthened structures and practices did *not* show this pattern of relationships with the ‘growing student assessment capability factor’. (Exceptions were the provision of more leadership opportunities for students, and culturally responsive teaching.)

In many ways this pattern is the inverse of the pattern of associations for importance of school-wide curriculum implementation. What might explain this difference? Were certain types of wider curriculum initiatives seemingly invisible to the teachers who were least likely to use assessment practices with the potential to build students’ own assessment capabilities? Or were these teachers working in schools where the relevant curriculum initiatives had not been a focus for professional learning, or for making supported changes in practice? Probably the answer would be ‘a bit of both’. This finding points to the complex nature of the mix of individual and collective change factors that might have an impact on practice.

Potential professional learning opportunities

It is interesting that three of the school-wide initiatives *not* related to being in level 1 for the ‘growing student assessment capability’ factor could be broadly seen as making things better for students without necessarily implying personal pedagogical changes for an individual teacher. These items describe creating new types of courses to cater for diverse student needs, reviewing expectations at each year level to ensure coherence throughout the school, and creating clear course pathways and processes to help students make sound academic choices. A teacher could support such initiatives in principle without necessarily recognising or acting on their personal share of the overall responsibility to make them happen. The obvious opportunity here is to build the collective sense that fostering learning-to-learn capabilities is *everyone’s* responsibility, underpinned by a firmly held expectation that all students can make progress given appropriate learning opportunities.

The other three items not clearly related to being in level 1 for the ‘growing student assessment capability’ factor are: “all teachers carry out inquiries into the quality/effectiveness of their practice”, “school data used to further develop and review programmes to meet the needs of particular student groups”, and “key competencies consciously incorporated into teaching”. A teaching inquiry could potentially draw attention to learning-to-learn challenges, but this opportunity is entirely dependent on the sort of inquiry question a teacher pursues. Similarly, a review of achievement data could draw attention to the need to change teaching and learning within a teacher’s class—or the course might be changed, or the mix of subjects for certain

students adjusted. As section 2 outlined, incorporating key competencies into teaching could lead to the development of learning-to-learn approaches, but only if that possibility is perceived and valued. In other words, the learning-to-learn potential in all three items *could* be perceived and acted on. Alternatively, it could be overlooked, or seen as someone else's responsibility. The type of individual teacher response made could depend on the provision of opportunities for relevant professional learning conversations and the quality of support for implementation of these types of initiatives across the wider school collective.

The mix of items just discussed creates the impression that individual teachers in the level 1 group for the 'growing student assessment capability' factor were either in schools that have not moved away from traditional practice, or they were unaware of practices that move the teaching and learning away from a traditional focus where their own knowledge and authority provide the predominant basis of the learning programme they offer. In their discussion about building students' assessment capabilities Booth and her colleagues are generous in locating the heart of the challenge implied here: "experienced teachers often have good teaching reputations, based on tried and tested methodologies, which are underpinned by deeply held beliefs" (Booth et al., 2014, p. 149). This could well be the case for many of this group of teachers who, viewed through a learning-to-learn practice lens, seem somewhat 'left behind'.

The previous section suggested that teachers with strong traditional practice might see the sharing of curriculum and assessment decisions with students as an abdication of their responsibility: either they decide, or students and parents do. But this either/or binary is strongly challenged by the learning-to-learn literature. Adding explicit reflective metatalk and discussing next steps and possible ways to move forward with learning suggests that, if anything, teachers need deeper and stronger expertise when they co-create next learning opportunities with their students. In other words, learning to learn is not an 'either' to the 'or' of traditional learning. A deeper grasp of concepts is called for when teachers interact responsively with students' experiences, ideas and reflections about their learning.

Another possible counter to change is that student success in traditional assessments continues to reinforce some teachers' identity based in strong pedagogical authority positions. In a discussion of epistemic thinking in science education, Jonathon Osborne notes an urgent need for high-stakes assessments that reflect the shift in priorities for science education:

a recent meta-analysis of 18 studies grouped learning activities into three major categories: Those that are interactive and require collaborative discourse and argumentation (either with a peer or an expert tutor); those that are constructive and require individuals to produce a product such as an essay or a lab report; or those which are active, such as conducting an experiment (Chi, 2009). Comparing the learning gains achieved when using each of these three approaches, the work shows conclusively that a hierarchical schema of learning activities exists from interactive (the most effective), to constructive, to active (the least effective). *How then can assessment help promote a pedagogy which is interactive and which requires higher-order thinking and reasoning?* (Osborne, 2013, p. 268, emphasis in final sentence added)

The opportunity here is to ensure that high-stakes assessments send a message that something other than strong, traditional, content-based teaching is now needed. I return to the implied challenges for assessment thinking and practice later in this section.

Teachers' perceptions of their professional successes

The 2012 national survey invited secondary teachers to identify their main teaching achievements in the last 3 years. Nineteen possibilities were provided, and teachers could select as many of these as they wanted, using tick boxes. These items describe potential successes that are broadly similar to the school-wide curriculum implementation actions discussed above.

Cross-tabulations between these responses and the three learning-to-learn factors showed similar patterns of relationships in every case. Teachers in the highest-level group for all three factors were also more likely to name a number of achievements as personal successes in the last 3 years. The flavour of this pattern can be seen in the differential between the overall response and the responses for the item “improvements in student achievement”. Overall, 58 percent of teachers selected this as a personal professional achievement in the last 3 years. By contrast, this achievement was selected by:

- 72 percent of the teachers in the highest-level group for ‘activating opportunities for metatalk’
- 70 percent of the teachers in the highest-level group for ‘growing student assessment capability’
- 65 percent of the teachers in the highest-level group for ‘importance of opportunities for metatalk’.

This seems a very important gain to highlight if reluctance to change is indeed related to traditional practice, reinforced by traditional assessments.

Other personal professional achievements more likely to be named by the highest-level group for all three learning-to-learn factors were:

- “further developed students’ competencies such as leadership, self-management or independent learning”
- “used new pedagogical approaches / teaching practices”
- “better meeting the needs of Māori students”
- “made more connections between the class programme and the local or national contexts, history, events, concerns or issues”
- “improved student assessment for learning”.

‘Growing student assessment capability’ was the only one of the three factors associated with naming “more involvement of parents with students’ learning” as a personal professional success in the last 3 years. A quarter of the teachers in the highest-level group for this factor (in this case level 3) named this as a success, compared with 16 percent of the whole sample.

This analysis suggests that the fruits of pedagogical change are likely to apply across a range of outcomes. Perhaps the ‘carrot’ of such successes could attract the attention of some

teachers or schools who have not, as yet, shown any inclination to engage with learning-to-learn ideas and practices?

Views of NCEA

Traditionally, summative assessments in the final years of secondary school have acted as a sorting mechanism, enabling students bound for tertiary education to gain qualifications while those with different work/life goals ‘fail’ (Bolstad & Gilbert, 2008). As Bolstad and Gilbert note, a specific reason for moving away from this traditional approach is that messages about being a learning failure run counter to the intention to foster every student’s perception that they can be a successful learner, able to go on learning life-long. In this way, there is a direct link between the intent of NCEA and ideas about learning-to-learn and lifelong learning.

Can we detect this link when we look for indications of relationships between the three factors and teachers’ assessment beliefs and practices? Several statements about NCEA in the 2012 national survey reflect the design intent that all students should experience and be credentialed for their learning successes. Cross-tabulations between responses to these statements and the averaged factor responses suggest there could indeed be a link between how teachers think about NCEA and how they think about and practise pedagogies related to learning to learn. Of the NCEA set of statements in the 2012 survey, arguably the most contentious was that “NCEA helps the inclusion of students with special learning needs”. In the past, many such students would not have been considered capable of gaining a national qualification of any sort, let alone the former equivalents of NCEA (e.g., School Certificate). Not surprisingly, then, just 6 percent of teachers strongly agreed with this statement in 2012.²¹ However, almost three-quarters of this small group also gave level 4 averaged responses for the ‘importance of opportunities for metatalk’ factor. This pattern was repeated across the other two learning-to-learn factors.

Other NCEA statements where strong agreement with an item indicated a possible relationship with being in the highest-level group for all three learning-to-learn factors were:

- “NCEA motivates underachieving students to do their best”
- “the range of NCEA standards available allows us to design courses that meet most students’ learning needs”
- “NCEA is a credible qualification in the wider community”.

Being in the highest-level group for the two metatalk factors (but not the ‘growing student assessment capability’ factor), also showed a relationships with strong agreement that:

- “I am supportive of the changes to the literacy and numeracy requirements”
- “course endorsement has been a positive change to the overall NCEA structure”.

These patterns suggest that teachers who understand the design intent of NCEA, and who support this intent, are also the teachers who are more frequently offering experiences with the potential to build students’ learning-to-learn capabilities. Again, it could be fruitful to explore these

²¹ For analysis of the full set of responses to the 2012 NCEA statements, see Hipkins, 2013b.

possibilities more explicitly, given the potential for inter-related positive change in two important areas of teachers' work.

Links between NCEA and NZC

One of the NCEA statements was “in my main subject area the realigned standards successfully capture the intent of NZC”. There were indications of a relationship between strong agreement with this statement and being in the highest-level group for the ‘growing student assessment capability’ factor. We did not find equivalent patterns for the two metatalk factors. What might explain this difference? Given that “the intent of NZC” includes a focus on learning to learn (see section 2), we might have expected to see this association hold for all three factors. But the statement cues specific subjects rather than the high-level signals in the front part of NZC. Is this where the critical response difference lies?

In some subjects the realigned standards have shifted the focus of assessment in line with a substantive shift in the learning area statement in NZC itself. Social sciences teachers were more likely than teachers of other subjects to strongly agree that the recent alignment of NCEA with NZC reflected the intent of the latter (Hipkins, 2013b). Changes in the history achievement standards illustrate why this might be: their focus has shifted away from recalling the narrative of historical events *per se* to assessment of students' grasp of the manner in which historical thinking constructs such narratives in the first place (Davison, Enright, & Sheehan, 2014; Harcourt & Sheehan, 2012). Students are positioned as active meaning makers by this type of shift. Teachers who have understood this see the intent of NZC as being to position students as active participants in learning that meaningfully engages their lives beyond the classroom. It seems logical that they would also want students to be more active in making decisions about the progress of that learning. Again, this is a possibility that those with the necessary disciplinary expertise might want to explicitly investigate.

By contrast, mathematics and sciences teachers were less likely than teachers of other subjects to strongly agree that the recent alignment of NCEA with NZC reflected the intent of the latter (Hipkins, 2013b.). Recall that teachers in these subjects were also less likely to say that they valued, and frequently offered, learning-to-learn opportunities in their classes. Is a continued focus on more traditional assessments in these subjects working against some teachers' pedagogical innovation, including introducing learning-to-learn approaches, in these learning areas? A small set of moderation items provided an opportunity to explore this question from a different tangent.

Moderation of NCEA assessment activities

The 2012 national survey included a small bank of statements that canvassed teachers' views about: the time taken for moderation; the usefulness of feedback from NZQA's moderators; changes made in response to this feedback; and whether or not the teachers' learning area team had voluntarily submitted optional teacher selected evidence when they wanted clarification from

the national moderator. Here is how the NCEA report, using national survey results, described subject-related differences in responses:

Mathematics and science teachers were more likely than all other teachers to disagree, or strongly disagree, that feedback from NZQA has helped clarify the intent of the new achievement standards, that they agree with feedback from NZQA, and that national moderator reports for their subject are helpful. However, there was some evidence that they are being proactive about meeting the implied challenges: they were more likely to *strongly* agree they have voluntarily sent teacher-selected evidence to NZQA for clarification. (Hipkins, 2013b, p. 52)

This pattern of responses suggests conflicted thinking as some mathematics and science teachers get to grips with the realigned NCEA achievement standards. Such tensions are likely to soak up emotional energy that might otherwise be deployed in making curriculum and pedagogical changes. Tensions and conflicted thinking can cause teachers to retreat to the safe ground of familiar practice (Pedder & Opfer, 2013). Such reactions are also likely to reinforce the experience of moderation as being compliance-focused. This is understandable, but unfortunate, because collegial discussion of *evidence of learning* during moderation conversations has the potential to prompt new thinking about different (from traditional) types of learning outcomes and innovative ways of gathering evidence that such outcomes have been achieved (Hipkins, 2010a).

The pattern of relationships between the learning-to-learn factor groupings and the moderation responses tends to support this rather pessimistic analysis. It would seem that moderation processes are not (yet) providing widespread opportunities for collegial conversations that put learning to learn in the spotlight, with the possible exception of instances where teachers' curriculum thinking is already comfortably aligned with that of their national moderator:

- 'importance of opportunities for metatalk' showed no clear indications of relationships with any of the five moderation items.
- 'activating opportunities for metatalk' showed indications of a relationship with two items—those teachers who were in the highest-level group for this factor were also more likely to strongly agree that “Generally, my learning area team agrees with feedback we receive from NZQA” and that “I find the national moderator’s reports for my subject very helpful”
- 'growing student assessment capability' showed a similar pattern for “I find the national moderator’s reports for my subject very helpful”.

Views of best practice workshops and learning to learn

Best practice workshops organised and conducted by NZQA’s subject moderation team had been attended by 62 percent of teachers who responded to the 2012 national survey. We asked these participants to respond to seven descriptors of outcomes NZQA hoped the workshops would achieve. For all three learning-to-learn factors, teachers who were in the highest-level group were also more likely to strongly agree that the best practice workshop they attended:

- “has resulted in me having more explicit achievement-focused conversations with students”
- “has led to discussion of exemplar tasks with other teachers”.

For the two metatalk factors, teachers who were in the highest-level group were also more likely to strongly agree that the best practice workshop they attended “gave me a better understanding of holistic judgments made on quality, not quantity”.

It seems that getting high-value learning from the best practice workshops could have a relationship with teachers’ learning-to-learn beliefs and practices. Did some teachers get more out of the workshops because of this personal orientation to pedagogies associated with learning to learn? Or did they bring a more expansive view of the purposes for learning to the workshops, so that they were open to conversations about more holistic judgements of learning outcomes, and dealing with direct student questions and the what, how and why of intended learning? Either way, possible entry points for professional learning conversations are suggested by these findings.

In summary, the analysis of relationships between the three factors and NCEA-related items suggests there is a dynamic interplay between how purposes for learning are understood and reflected in assessment practices, and teachers’ views of students as learners. Section 2 outlined a range of ways in which a metacognitive focus on learning to learn strongly challenge views about ability and who can be a successful learner. Might specific professional learning with a focus on learning to learn also shift views of NCEA for teachers who do not yet understand its design intent? Conversely, might professional learning that revisits the intent of NCEA encourage some teachers to become more convinced of the benefits of an explicit focus on learning to learn, with associated shifts in the learning experiences they offer?

Teachers’ professional learning and growth

Best practice workshops constitute a highly specific form of professional learning. The 2012 national survey also asked teachers to respond to a large set of items (21 statements) that canvassed their opinions about the overall mix of professional learning/development initiatives they had been involved in during the past 2–3 years. We found an interesting range of relationships between strong agreement²² with these items and being in the highest-level group for the three learning-to-learn factors.

Fourteen of the 21 items showed indications of a relationship with ‘importance of opportunities for metatalk’. For all three learning-to-learn factors, the strongest indication of a relationship was for the item “My professional learning has provided practical help with engaging Pasifika students in my classes”. All three factors also showed a relationship with the similar item “My professional learning has provided practical help with engaging Māori students in my classes”, and two of the three with “My professional learning has provided practical help with engaging students with special needs in my classes”. These patterns resonate with those already reported for NCEA views, reinforcing the suggested link between an *inclusive* view of learners’ potential (i.e., all can learn with adequate support) and valuing and deploying learning-to-learn practices.

²² Or strong disagreement for the more negatively worded reverse items.

The reversed item, “There is too much emphasis on ‘student voice’ and similar ideas nowadays”, also showed a relationship with the three learning-to-learn factors. Teachers in the highest-level group for the factors were more likely to strongly disagree with this statement about student voice (i.e., they supported the idea of student voice—this was a negatively worded item). Teachers’ broad pedagogical values no doubt influence how they understand the very idea of student voice, so this finding could be seen as somewhat predictable. However, this analysis does suggest an opportunity to stimulate dissonance in teachers’ thinking by using professional learning to explore the scope and intent of student voice as an *idea*. Reinforcing this point, being in the highest-level group for all three factors showed a relationship with strong agreement that “we have good opportunities to explore deeper ideas and theory that underpin new approaches”.

Exploring new ideas is only part of the challenge, of course. Finding ways to put them into workable practice is also necessary if change is to be initially entertained, experimented with, and then sustained. Here aspects of collegiality have been shown to be one variable that makes a critical difference to enacting and sustaining new practices (Pedder & Opfer, 2013; Wylie, 2010). Being in the highest-level group for all three factors was related to strong agreement that “I have good opportunities to see and discuss the work of teachers in this school when I want to do things differently”.

Seeing relevance for your own subject area is also likely to have an impact on uptake of ideas. Considerable effort is put into school-wide professional learning, and one reverse item tested views about the relevance of doing this: “My professional learning has not been sufficiently focused on implications for my own learning area”. Strong *disagreement* with this item showed a relationship with all three learning-to-learn factors. Are teachers who are open to new ideas such as those associated with learning to learn more likely to see the value in school-wide learning than those who might discount such learning as not being sufficiently subject-specific? Conversely, are some teachers being convinced to try new things by experiencing professional learning that enables them to make strong links between their subject and specific learning-to-learn practices? The data cannot determine which way the influence runs: both seem possible in different contexts. The important point is that teachers do need opportunities to try out learning-to-learn ideas in the context of subject-specific learning challenges.

Finally, let’s return to the potential influence of NCEA. All three learning-to-learn factors showed a relationship with the statement “professional activities beyond the school have stimulated my professional growth (e.g., moderation or curriculum alignment review panels)”. It seems that teachers who are at the cutting edge of NCEA and curriculum review work are also more likely to value and use a range of learning-to-learn practices. This is important to note, given that NCEA is sometimes seen as a conservative force that holds back change: indeed, evidence of this influence in mathematics and science has been discussed above.

Aspects of school culture that support professional growth

While the values and experiences of individual teachers have an impact on their pedagogical thinking, it is important to acknowledge the large body of research that demonstrates the

importance of the overall school ethos. Strongly led schools can help otherwise average teachers to lift their performance, but even very talented teachers can struggle in a dysfunctional school climate (Hargreaves & Fullan, 2012). Appropriate and stimulating collaborative professional learning opportunities are one important indicator of strong school leadership.

In the 2012 national survey teachers responded to a bank of 15 items that described aspects of the school culture with the potential to support collective and collaborative professional learning. The scale was: very good/generally happens; good; satisfactory; poor; very poor/non-existent. Again, a number of indications of relationships with the learning-to-learn factors were found. Those who thought the following practices were very good / generally happened in their school were also more likely to be in the highest-level group for all three factors:

- “developing leadership skills among teachers”
- “setting useful targets for student achievement”
- “analysis of student achievement to improve teaching and learning”
- “support for taking risks in teaching”
- “discussion of assessment results with other teachers to help students improve their performance”
- “sharing of ideas among teachers for how to help students improve their performance”.

Collectively these statements convey a sense of learning together, with a real focus on learning approaches that lift student achievement and a sense that risk taking will be supported in the process of pursuing these new approaches. This analysis underscores the importance of school-wide leadership and support if learning-to-learn practices are to spread more widely.

More about school ways of working that support professional growth

A set of 20 items asked teachers how strongly they agreed or disagreed with statements about “school ways of working”. These statements canvassed diverse opportunities for collaborative learning, and for receiving feedback focused on making ongoing improvements in teaching and learning. Examples included processes for self-review and opportunities for peer observation. Some items probed consistency across the wider learning culture, such as how well teaching time is protected from interruptions, whether the school goals really do drive practice, and how the school works to motivate and engage students.²³ Seven of these statements showed a relationship with all three learning-to-learn factors:

- “the school goals really do guide our day-to-day work”
- “I have regular meetings with my manager about my work that support my work / give me new insights”
- “we use reflection and self-review to check what we’re doing and keep developing our practice”
- “staff have good processes for making group decisions and/or solving problems”

²³ The full data set is shown in the overview report (Wylie, 2013).

- “I can get useful feedback on student engagement in my class by inviting a colleague to observe”
- “this school has a real focus on the ongoing learning of teachers as adult professionals”
- “teachers can discuss any problem with a knowledgeable colleague”.

Collectively these items convey a very clear sense that teachers who are valuing and enacting learning-to-learn practices are aware of, and feel attuned to, the wider vision, values and collaborative professional learning practices of the school. This is how *NZC* should be infused into school life, so this analysis is not necessarily surprising, but it is one piece of the overall picture of what might be needed to shift practice on a wider scale.

Creating safe conditions for innovation

The need to manage challenging student behaviour has the potential to sap teachers’ energy and act as an inhibitor to pedagogical innovation. With this in mind I checked for any indications of a relationship between the learning-to-learn factors and one question that probed school-wide approaches to behaviour management. Teachers were asked which of the following described the behaviour management processes used in their school:

all focused on teacher- and school management-decided consequences (e.g., detention, suspension); mostly teacher- and school-decided consequences; an even mix of school-decided consequences and problem-solving; mostly problem solving; all problem solving—with the focus on dialogue and the construction of solutions with students (e.g., restorative conversations).

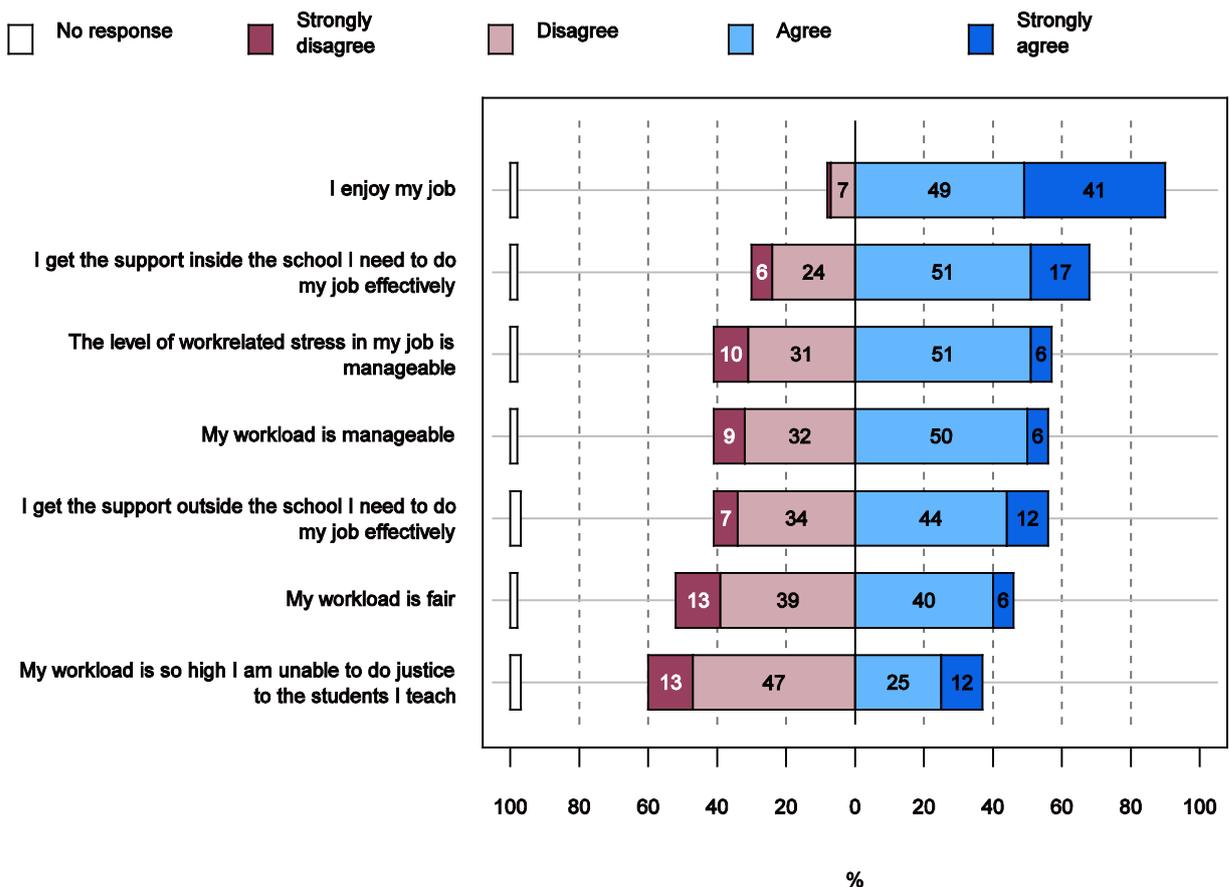
There was no clear relationship between this question and the two metatalk factors, but there was a relationship with the ‘growing student assessment capability’ factor. Overall, 21 percent of teachers said that the school approach to behaviour management was “all problem solving—with the focus on dialogue and the construction of solutions with students (e.g., restorative conversations)”. For the teachers in the highest-level group for the factor, this figure rose to 57 percent.

It is interesting that this was the only indication of a relationship found for these behavioural items, and that it was at the *school-wide level* rather than the classroom level. It is possible to trace interesting parallels between practices such as restorative conversations for addressing behavioural issues and co-constructed approaches to tackling learning and assessment challenges. We cannot know whether the behaviour management culture of the school has rubbed off to some extent on the teachers who were most actively supporting students to grow their assessment capability, but it is an intriguing possibility worth exploring further.

Relationships with personal feelings

A few items near the end of the survey sought indications of teachers' personal feelings about their work. They responded on a four-point scale (strongly agree, agree, disagree, strongly disagree) to seven statements about their job. Figure 3 shows a summary of the responses given.

Figure 3. Teachers' work-related attitudes ($n=1,266$)



Notice that the majority of teachers said they enjoyed their job. Strongly agreeing with this statement showed a relationship with being in the highest-level group for the two factors that described actual classroom learning opportunities: 'activating opportunities for metatalk' and 'growing student assessment capabilities'. (There was no clear relationship with 'importance of opportunities for metatalk'.)

The same pattern held for the item "I get the support outside school I need to do my job effectively": just 12 percent of teachers strongly agreed with this item. Those who did were likely to be in the highest-level group for 'cuing metatalk' and 'growing student assessment capability', but there was no relationship with 'importance of metatalk'. Support for teachers outside school is obviously not something the school can influence, but it is something for leaders to be aware of. There was no clear pattern of relationship between any of the learning-to-learn factors and "I get the support inside school I need to do my job effectively".

Notice that half the teachers (52 percent) disagreed that their workload was fair and 41 percent disagreed that their workload was manageable, or that stress levels were manageable. A third (37 percent) thought their workload was so high that they could not do justice to their work. There was, however, no clear relationship between any of these responses and the learning-to-learn factor groupings. Workload and stress are clearly vexed issues, but they do not appear to be having a direct impact on whether or not teachers are employing pedagogies that support learning to learn.

Teachers were also asked to estimate their overall morale. Again there was no indication of a relationship with the ‘importance of opportunities for metatalk’ factor. However, there was a pattern for ‘activating opportunities for metatalk’. Overall, 21 percent of teachers estimated that their morale was “very good”, but this figure rose to 35 percent of those in the highest-level group for this factor. The pattern was similar for ‘growing student assessment capability’: teachers who said their morale was very good or good were more likely to be in the highest or second-highest-level groups for the factor. Conversely, those who said their morale was poor or very poor were likely to be in the lowest or second-lowest-level groups for the factor.

Overall, then, there are some indications that teachers’ personal feelings are related to the *doing* aspects of learning-to-learn pedagogies, but not necessarily with how much they value these practices. This makes sense given that innovation takes a certain amount of emotional energy and hence demands some resilience on the part of the teacher. When contrasted with the range of diverse school-wide influences outlined above, however, it does appear that collegial support has a greater impact on the use of learning-to-learn pedagogies than does a teacher’s personal feelings about the job.

Drawing the disparate threads together

The sets of items just discussed add a very important dimension to any consideration of the contexts in which teachers work and (ideally) go on learning and evolving their practice across the span of their teaching lives. Individual teachers’ dispositions, experiences and values are important, but opportunities for collaboration and learning together would seem to play a key role in supporting and sustaining change.

The mix of influences on whether or not professional learning actually changes practice was clearly highlighted in research by Pedder and Opfer (2013), already cited in several parts of this report. Over 1,000 teachers in the UK (both primary and secondary) responded to their survey with a focus on the types of professional learning that each teacher valued and how they actually acted on that learning. Pedder and Opfer found similar value/practice gaps to those reported in section 3. They also identified four factors related to each teacher’s personal orientation to their professional learning, which they characterised as:

- internal orientation (e.g., ‘reflective practice’ and changes made in the privacy of one’s own classroom)
- research orientation (whether and how teachers read and respond to published research)

- collaborative orientation (working together to improve practice)
- external orientation (seeking ideas beyond one's own direct experience; e.g., from other schools, the Internet, or from peer feedback).

The teachers characterised by Pedder and Opfer as the most engaged with professional learning had relatively higher average scores for all four of the above orientations. They noted that these highly engaged teachers (about a third of their sample) had found ways to *balance* actions related to all four learning orientations.

There are parallels between Pedder and Opfer's analysis and the data presented in this section. However, the analysis in this report more directly highlights the critical importance of the contextual dimension of collaborative professional learning and support within the school. Engaging with new pedagogies does not only rest with teachers as individuals. Teachers in the most positive group for the learning-to-learn factors (i.e., those already using learning-to-learn practices or practices that could readily evolve in this direction) appear to engage widely with new ideas and to value and practise collegial learning, proactively engaging with feedback about their practice.

The many indications of relationships between the factors and other aspects of teachers' work also suggest that some teachers are reaping rich rewards from their own learning and professional success in offering learning-to-learn support for their students. This 'virtuous cycle' must surely help motivate them to continue experimenting with learning-to-learn approaches in their classrooms.

6. Opportunities for next conversations about learning to learn

Unlike many fields, teaching is one experience that everyone has some knowledge of—even if only from having been on the receiving end. Members of the community, teachers as well as politicians and educational administrators all have a view of what education is and how it does or ‘should’ work. As the primary reference for what a school ‘is’ or ‘should be’ is based on most (non-student) stakeholders’ personal experience, this can act as a significant conservative force to the extent that those stakeholders find it difficult to imagine alternatives to those that they experienced. (Goldspink & Foster, 2014, p. 151)

Section 2 highlighted the complex nature of learning to learn, which is largely underdeveloped in policy documents such as the national curriculum and the national assessment guidelines. Section 3 showed that teachers value a range of learning opportunities for students that could be readily aligned with learning-to-learn goals, but their practice does not necessarily reflect this valuing. Section 4 reported that opportunities to develop students’ assessment capabilities are not yet being widely adopted. There appear to be barriers that prevent teachers from making the sorts of pedagogical changes that would better align their values with their practices.

Research in South Australia that explored the introduction of a learning-to-learn initiative at a whole-system level has some pertinent messages about why it might be so hard to make these changes in practice, even when teachers say they value them (Goldspink & Foster, 2014). Goldspink and Foster note that all teachers want to do their best by their students, but for many this means doing their best within existing systems and practices (see the quote above). They argue that this deeply embedded sense of ‘doing better for students’ acts as an abstract value that drives teachers’ sense of self-worth (p. 151). By implication, suggestions that strong traditional practice is no longer sufficient to meet students’ needs may be experienced as deeply unsettling. This could help explain a reluctance to change current practice in the senior secondary school when high-stakes assessments continue to focus on more traditional learning goals (see sections 4 and 5).

Barriers can, however, become enablers when they are reframed. Learning-to-learn practices have the potential to let students in on the ‘hidden games’ of learning in ways that help lift their engagement and achievement (Perkins, 2009). According to Perkins, these hidden aspects include: finding out how meaning is made in the world and what gives knowledge its power; and discovering more about yourself as a learner, problem solver and meaning maker. If ‘doing better for students’ was perceived as encompassing coaching them in these hidden aspects, perhaps we would see more widespread change. It is important to acknowledge the positive shifts in pedagogy

that did take place between 2009 and 2012, when the most recent survey was completed. However, Goldspink and Foster's commentary suggests that parents and others in the community would need to understand and value learning to learn so that they could support any positive pedagogical shifts that teachers make.

The rich rewards of learning-to-learn approaches

Pedder and Opfer (2013) reported that almost half the teachers in their sample had low mean factor scores for their research orientation and wide gaps between their valuing of ideas and actually putting these ideas into practice. Encouraging active exploration of learning-to-learn ideas and research could prove challenging unless teachers can readily discern tangible benefits for changing their practice. Fortuitously, there is a growing body of research that shows that learning-to-learn approaches can lift both achievement and engagement, with the greatest benefits for lower-achieving students. For example, international research with an explicit focus on building metacognitive knowledge and skills has shown just how powerful it can be to bring metatalk and active learning together to build students' meta-strategic awareness of their own thinking in relation to specific learning tasks (Zohar & Ben David, 2008). Zohar and Ben David worked with classroom teachers of four groups of 13–14-year-old students chosen to represent four combinations:

- high ability—content-focused learning and traditional science investigations
- high ability—metatalk about investigative strategies added to investigations
- low ability—content-focused learning and traditional science investigations
- low ability—metatalk about investigative strategies added to investigations.

Metatalk²⁴ in the 'experimental' classrooms included: knowing the name of the strategy (in this case, control of variables); recognising why this strategy is important; knowing how to use the strategy and things that should not be done (e.g., not changing more than one variable at a time); and knowing when to use it (the types of tasks that call for this strategy) and when the strategy might not be appropriate and why. The teachers were coached in the use of this metatalk. Furthermore, the series of tasks they used were designed to provide rich opportunities for relevant meta-strategic challenges to arise. In this way, the 'experimental' classrooms brought together aspects of active learning and metatalk. The students in the 'control' classrooms experienced the active learning but without the additional metatalk focus.

Pre- and post-testing, followed by a delayed test some time later, revealed that the lower-ability students in the control classroom made very little progress in building their investigative skills. Higher-ability students in the equivalent control classroom made some progress, but not as much as their higher-ability peers who took part in metatalk. However, the really dramatic gains were made by the lower-ability students who experienced opportunities to build their personal meta-strategic awareness. Zohar and Ben David note that many teachers think that lower-

²⁴ I chose to use this term to create links between their work and this report; they used 'metacognitive talk'.

achieving students are not capable of higher-order thinking and therefore should not be required to do it. They say this reasoning is self-fulfilling because higher-achieving students often develop at least some level of higher-order thinking without any specific in-class support. Their work makes the strong case that lower-achieving students can also make strong learning gains when they experience explicit support to build their meta-strategic awareness in rich, active learning contexts.

Exploring ideas about learning to learn

A well-developed understanding of the implications of research into teachers' professional learning about learning-to-learn pedagogies, as in the projects cited above, also requires opportunities for deep engagement with some challenging ideas about learning *per se*, which are now briefly revisited with a view to their professional learning potential.

Metacognition/epistemic thinking

Most teachers would at least be aware of the concept of metacognition, but the idea of epistemic thinking will probably be new to many. Section 2 documented the complex nature of the relationships between metacognition and epistemic thinking. There I indicated that there is much to explore and many potential ways to extend teachers' existing repertoires of metatalk.

Reflective teachers continue to hone the metatalk they already use. At the very least their classrooms run smoothly because experience has helped them fine tune the clarity and precision of their classroom talk that orients students to actions, intended emphases, connections and transitions (Leinhardt & Steele, 2005). However, they are unlikely to arrive at ideas about epistemic metatalk intuitively. Opportunities to explore learning-to-learn ideas, *as ideas*, are important initial steps on the journey to pedagogical change in the types of metatalk routinely employed. Of course teachers would also need to value learning to learn as an outcome of learning, alongside other challenging learning goals that open the space for conversations about meaning making, how the intended learning connects to life beyond school, and so on (see section 3).

Recently I had the opportunity to listen to an advisory group discussion where highly engaged science teachers emphasised the considerable length of time (up to 2 years) it takes for a substantive pedagogical change to become a comfortable part of one's repertoire. During this time, support and encouragement from colleagues are vital. This helps explain why the teachers who showed the strongest signs of valuing and using learning-to-learn metatalk were also more likely to identify their working contexts as collaborative, with opportunities for getting good professional feedback as they tried out new ideas (section 5).

Equity and inclusion

Research such as that of Zohar and Ben David, outlined above, demonstrates the comparatively bigger difference that strong learning-to-learn practices can make for lower-achieving students. They emphasise that it is important that teachers not write off these students as being academically too weak to cope with higher-order thinking. Since epistemic thinking is by definition higher order, challenging ability-based beliefs about the limitations of weaker students is another strong contender for effective professional learning. Indeed, the patterns of relationships discussed in section 5 suggest that teachers with strong learning-to-learn orientations already hold more inclusive views about all students' potential to learn.

Students and their families as active partners in learning

This report has suggested that teachers' beliefs about the role of students in learning are related to their beliefs about equity and the extent of their current commitment to learning-to-learn conversations. These relationships point to the importance of professional learning conversations about how and why students should and can be supported to take greater ownership of their learning. A critical insight to be fostered is that greater learner involvement does *not* mean an abdication of teacher responsibility. This is not an either/or situation. However, learning-to-learn conversations with students do require a change in the way teachers use their expertise to guide the unfolding learning action. By implication, enacting aspects of learning to learn requires real changes in what teachers see as the main purpose(s) of teaching and learning in their subject areas.

Sections 4 and 5 described some indications that teachers who already see the potential for greater student collaboration, and who are already opening up learning-to-learn opportunities, also recognise the importance of drawing parents into more open conversations about learning and about curriculum decision making. Serendipitously, doing this has the potential to build stronger community understanding of how and why learning needs to change from the type of learning parents themselves experienced at school. However, better *communication* is not the only goal here, or even the main goal. As the discussion of lifelong learning showed (section 2), building students' potential to be proactive learners in any context begins with building strong learning-to-learn connections between their school life and their life beyond school. Parents will ideally become active collaborators in this venture, but teachers will often need to lead the way.

Other opportunities for collaboration

The aspects of collaboration just outlined could apply to traditional curriculum practice, or equally to innovative practice, with benefits for students either way. To round out the possible opportunities for professional conversations about learning to learn, I will now introduce another area of collaboration where strong pedagogical gains might be waiting.

Table 1 in section 2 (based on Hipkins & Cowie, 2014) highlighted making stronger connections between learning in different parts of the curriculum as an important dimension of learning-to-learn pedagogies. This sense of the importance of weaving connections can be found in Eastern (Confucian) as well as Western learning-to-learn traditions (Ren, 2014). Yet section 3 reported a 34 percentage point difference between highly valuing such links and actually helping students make them routinely. No other value/practice gap was as large. This is a clear instance where collaboration is needed to achieve the desired goal. How can teachers know about the breadth of students' learning unless they share their programmes across departmental teams? This is one of the areas where the wider school culture, supported by the senior leadership team, becomes vitally important (see section 5).

Many schools are attempting to create greater coherence within overall learning programmes, not least because it is one of the eight *NZC* principles. But making such connections is not self-evidently linked to the concept of learning-to-learn *per se*. Adding the learning-to-learn dimension would need to be a specific, additional professional learning focus, bringing research and school-wide collaborative orientations together (see section 5).

External input

Some of the positive views and practices documented in sections 3 and 4 were associated with changes to NCEA and professional learning that supported these changes (section 5). Here another kind of opportunity for further strengthening practice should be evident, since NCEA assessment and moderation conversations and practices are continuing to evolve. One specific opportunity might be to involve the NCEA subject moderators and examiners in deep explorations of ideas about learning to learn and the implications for the work they do to support teachers.

What it *means* to learn in the context of specific subject areas continues to evolve, at least in the case of subjects that underwent significant changes in the recent alignment with *NZC*. Such evolution opens up possibilities for new conversations about *purposes* for learning. This is important because having a clear sense of one's own learning purposes lies at the heart of an identity as an ongoing and successful learner (Deakin-Crick, 2014).

Teachers as resilient learners

Finally, in the context of rapidly evolving ideas about how school 'ought' to be, teachers need to be resilient learners themselves. The types of support for learning to learn that pertain in the classroom should be seen as analogous to those that pertain for teachers' professional learning opportunities. At the very least, teachers need opportunities to 'join the dots' between the many pedagogical initiatives currently in play. Learning to learn is a potentially powerful connector of other ideas, but this very openness and flexibility also make it vulnerable to a wide range of interpretations (Stringher, 2014). Nevertheless, any indications of positive shifts in pedagogy

could provide a stepping-off point for further positive changes in practice with the potential to support learning to learn. Now is the time to more explicitly 'join the dots' between strong classroom practice and the learning-to-learn imperative.

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