How the key competencies evolved over time:
Insights from the research

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Contents

Introduction

This is one of two papers developed for a Ministry of Education (MOE)-funded project, Competencies in NZC. The first paper[1] draws on archived policy discussion papers to document the provenance of the NZC key competencies. This second paper analyses a series of research projects to describe how understandings about key competencies have developed over the decade since NZC was published.

The key competencies have attracted considerable research attention over the decade since *The New Zealand Curriculum* (*NZC*)[2] was introduced. In this paper we report on an inquiry into the contribution this research effort has made to understanding:

- what key competencies are (their nature)
- how they should be included in a local curriculum (their weaving together with other curriculum components)
- how they should impact the intended learning (their role).

We collected relevant research with an emphasis on larger, systemic studies, usually funded by the MOE.[3] This corpus of work was read and annotated to find emergent high-level themes. These were then used to define four phases in the ways that key competencies have been understood and enacted in the overall school curriculum. While each phase has some clear distinguishing features, there are no hard and fast divisions between them. Figure 1 on the following page gives an overview of these four phases and their main distinguishing features.

The sections that follow describe the main conceptual and practical shifts during each of the four phases. Assessment implications of these different ways of thinking about the nature and role of key competencies in the curriculum are also outlined.

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[1] Hipkins, R. (2018). *How the key competencies evolved over time: The evidence base*. Wellington: NZCER, available at www.nzcer.org.nz/research/publications/key-competencies-evidence-base

[2] Ministry of Education (2007). Wellington: Learning Media. Available at http://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum

[3] Many, but not all, of these projects were carried out by NZCER researchers, sometimes in partnership with other organisations.

Figure 1: Four phases in the evolving understanding of key competencies
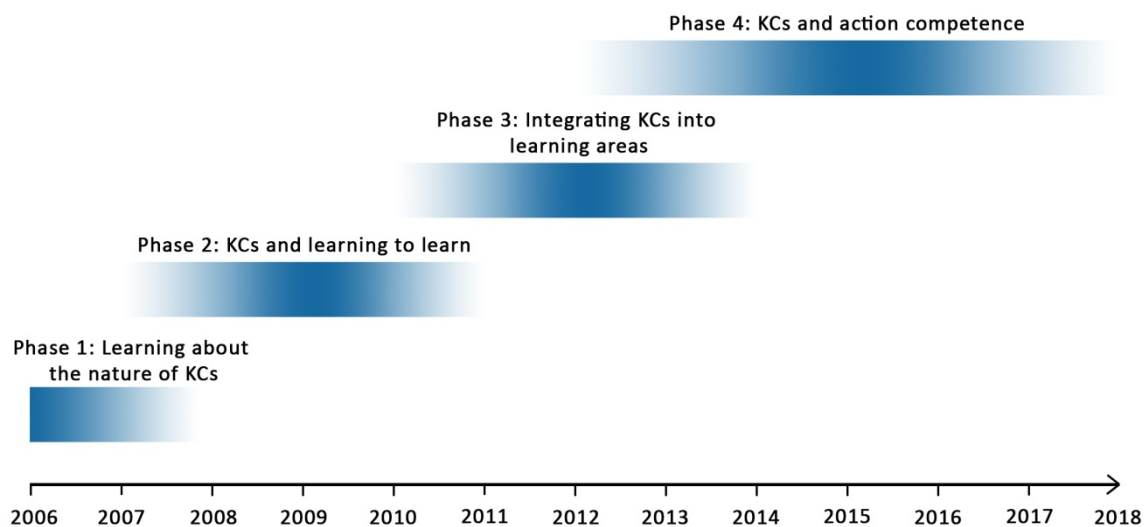
Overview of main trends

This overview looks across the four phases shown above. It outlines the overall trajectory of change for three main themes: the nature of key competencies; weaving key competencies into the curriculum; and understandings about the role that key competencies play in the curriculum. The overall dynamics of change in these three areas are then discussed in more detail for each of the four phases.

The nature of key competencies

The nature of key competencies was an early research focus. Researchers and practitioners alike were getting their heads around their scope and origins in the Organisation for Economic Cooperation and Development's (OECD's) DeSeCo project (see the first paper in this series). There was some research focus on theorising the nature of key competencies. However, most practitioners drew on their prior, everyday knowledge of *managing self*, *relating to others* and so on, to build generic profiles of each key competency. These generic profiles were then applied across the curriculum. They were seen as sitting alongside and enabling achievement of "content".[4] An important shift occurred in phase 3 when the multi-faceted nature of each key competency began to be more widely recognised, and researchers documented the possibility that different aspects might assume relatively more importance in some learning areas than in others. In phase 4, this more complex understanding of the key competencies came together with ideas about weaving different parts of the curriculum together in rich tasks. This consolidated a focus on the contribution key competencies make to achieving the overarching vision of *NZC*.

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[4] In this paper the term "content" is used as shorthand for the knowledge and skills combinations signalled in the achievement objectives of the different learning areas of *NZC*.

Weaving key competencies into the curriculum

The idea that key competencies should be taught *through the learning areas* was first raised by Professor Ian Reid, an international guest at NZCER's conference on the key competencies, held during phase 1. However, this idea was not taken up in a more systematic way until at least phase 3. There were early indications of its importance in phase 2, particularly in the Lifelong Literacy research that explored the integration of a key competencies focus into reading programmes. The idea of weaving different curriculum components together—via rich tasks designed to help students achieve some bigger-picture purpose—became apparent in all the phase 3 projects we examined. The Key Competencies and Effective Pedagogy project opened up this way of thinking, creating the foundation on which one of three interrelated projects with a focus on science education was able to build. Projects in this phase began to apply the term "capabilities"[5] to conversations about the role key competencies should play in the curriculum. During phase 4 the weaving idea consolidated. It also became more complex, as simultaneous weaving between different facets of each key competency and different aspects of intended content learning were being explored.

The role that key competencies play in the curriculum

During phases 1 and 2, key competencies were largely seen as playing a supporting role in enabling content learning. An important shift occurred in phase 3 when the weaving idea began to encompass signals in *NZC* about the contribution each learning area makes to a whole-of-school-level education.[6] This bigger picture looked out to wider community contexts and to imagined futures, anticipating what learners might be able to **do** with their learning. The use of the term "capabilities" captured this shift. The idea that there could be more specificity about what each student "needs to become capable of" consolidated during research in phase 4 but was not yet widely familiar to practitioners.

Looking ahead

It is important to note that we are still in phase 4. Given the scope of the shifts just outlined, it is fair to say we don't know what might be still to come. What is clear is that ideas that begin as theoretical insights emerge, they are tested in practice, and elaborated as both researchers and practitioners see their value—or not.

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[5]   From the *NZC* definition of key competencies as "capabilities for living and lifelong learning" (p. 12).
[6]   The Learning Area Statements in the front half of *NZC* make an important contribution to these signals.

Phase 1: The nature of the key competencies

Research projects during this busy phase can be characterised as exploratory. Researchers were interested in exploring and documenting teachers' thinking about what key competencies were and how their inclusion in *NZC* was being demonstrated in practice. So-called "early adopter" schools were involved in the active exploration documented in the research projects.

Projects associated with this phase

The following brief descriptions illustrate the exploratory nature of the projects that informed our thinking about this phase.

Key competencies in Normal Schools: Six Normal Schools and several NZCER researchers collaborated to explore ways these schools might build key competencies into the curriculum.[7] The project was partly funded by the Normal Schools and partly by the MOE.

Key competencies case studies: Five MOE-funded case studies in early adopter schools were summarised in seven pamphlets that covered topics such as: the nature of key competencies; how schools might develop their own approaches; and what the key competencies might mean for curriculum, teaching, learning, and assessment. These pamphlets are no longer in print.

Key Learning Competencies Across Place and Time: This Teaching and Learning Research Initiative (TLRI)-funded project set in early childhood and in the first years of school, explored children's demonstrations of key competencies, what teachers did to support their development, and how this was assessed and reported.[8]

The nature of key competencies: This background paper was commissioned by the MOE, and unpacked each key competency separately. A sociocultural framing was used to draw attention to the importance of pedagogy in opening up opportunities for students to develop their key competencies.[9]

Key competencies: Repackaging the old or creating the new? NZCER hosted this conference in April 2006. Alan Reid, an emeritus professor from South Australia, was the invited international keynote speaker. He introduced the idea of teaching through the learning areas for competency development, an idea that took some years to really take hold.[10]

Documenting learning of key competencies: What are the issues? This exploratory paper began to scope challenges for assessing key competencies, by looking at assessment practice in other similar initiatives. Some broad approaches were recommended but it raised more questions than answers.[11]

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[7] www.nzcer.org.nz/category/research-project/key-competencies-normal-schools

[8] www.tlri.org.nz/tlri-research/research-completed/ece-sector/key-learning-competencies-across-place-and-time

[9] www.nzcer.org.nz/research/publications/nature-key-competencies-background-paper

[10] The conference proceedings are no longer in print. This talk was subsequently published as: Reid, A. (2006). Key competencies: A new way forward or more of the same? *Curriculum Matters*, *2*, 43–62.

[11] http://www.nzcer.org.nz/research/publications/documenting-learning-key-competencies-what-are-issues-discussion-paper. See, also, the first paper in this series, *How the key competencies evolved over time: The ecvidence base* available at www.nzcer.org.nz/research/publications/key-competencies-evidence-base

Characteristics of phase 1

Key competencies provided a vehicle to develop a shared vision and language within a school. There was a focus on what each key competency looked like in the school environment, and what it contributed to the school vision. Schools typically developed a visual metaphor, or some other visual symbolism, to convey their vision and how key competencies fitted within it.

In some schools key competencies were treated as generic. Each one was seen through one predominant frame of reference. For example, *managing self* was about being ready for learning and well behaved in class. *Managing self*, *relating to others*, and *participating and contributing* were likely to be framed as social skills. *Using language, symbols and texts* was often seen as "the literacy and numeracy competency".

Some schools were interested in "unpacking" each key competency, breaking them into component parts to illustrate what they meant. Such schools might take one focus key competency per term, to explore its nature and what they might "do" with it in class and in the wider school environment. Sometimes there was a focus on teaching *about* them as content. The aim was to ensure that students would understand what they meant. A common misunderstanding, probably associated with this focus, began to cause controversy. This misunderstanding was that key competencies replace the learning of substantive knowledge and hence lead to a watering down of the enacted curriculum.

Key competencies were often seen as being infused into everything schools already did, or were trying to do. This framing was associated with a tendency to see and use the aspects of the key competencies that were a logical fit with what the school was already trying to achieve. For example, the normal schools were already exploring pedagogical ideas associated with curriculum integration, inquiry, student-centred learning, and action competence. They saw key competencies as a good fit with, and providing support for, pedagogies they were already exploring.

Some schools had already begun to use the key competencies to create better learning conditions and opportunities to learn. However, they were less likely to be thinking about how strengthening individual students' key competencies might support them to become more agentic learners. This was a missed opportunity because of the seeming misunderstanding that a student-centred curriculum means that key learning decisions must be devolved to students.

Some schools were considering how they might assess the key competencies. The development of simple rubrics—one for each key competency—was associated with a generic understanding of the nature of each key competency.

At this time, some researchers were attempting to introduce more theoretical ideas to the way in which key competencies were understood by practitioners. There was a specific emphasis on the importance of a sociocultural framing for key competencies (see paper 1 in this series). Ideas that might help deepen understandings of individual key competencies were also introduced—for example, drawing on semiotics to expand ideas about the meaning-making emphasis of *using language, symbols and texts*.

Phase 2: Key competencies and lifelong learning/learning to learn

In many ways this phase continued the trends described for phase 1. However, more schools were beginning to ask what the inclusion of key competencies in *NZC* might mean for the different learning areas. This question was typically addressed by looking for associations between the learning already on offer and the generic unpacking of the key competencies. This constituted a sort of retro-fitting which asked where teachers could already identify opportunities to do things such as having students more actively participating in groups. Some schools—a minority at this stage—had begun to question whether there might be more to the key competencies than they were currently seeing, because they were not experiencing strong impacts from sticking with the safety of the familiar. An emergent emphasis on relationships between key competencies and ideas about learning to learn (an *NZC* principle) and lifelong learning (a part of the *NZC* vision) is what distinguishes this phase from phase 1.

Projects associated with this phase

The following brief summaries indicate a period of more systematic evaluative research. There was a desire to understand how *NZC* in general, including key competencies, was being enacted across a range of schools, and where potential barriers to implementation might suggest a need for additional support. The third project placed in this phase is different in nature, although that was not necessarily apparent at the time. With hindsight, the Lifelong Literacy project can be seen as standing on the threshold of opening up much more expansive ways of thinking about the role key competencies might play in the curriculum.

Monitoring and evaluating curriculum implementation (MECI): Funded by the MOE, this research used surveys and focus groups to "to establish a national picture of implementation progress in English-medium schools in the first two years following the curriculum's launch in November 2007".[12] Key competencies were an important focus but the project was about all of *NZC*.

Curriculum Implementation Exploratory Studies (CIES): This MOE-funded research complemented MECI by taking a more in-depth look at implementation dynamics. The researchers documented practice in a range of case study schools, returning to these several times in two phases of research. Again, key competencies were an important focus but the project was about all of *NZC*.[13]

Lifelong literacy: This project explored ways of integrating a focus on key competencies into reading programmes. Over an extended period of time, researchers worked with Years 3–6 teachers in five primary schools. All were nominated on the strength of their current practice in teaching reading. The project was funded by the Cognition Institute.[14]

Characteristics of phase 2

During this phase, schools working at the cutting edge of curriculum implementation began making stronger connections between key competencies and ways in which students experienced learning. Other ideas being aligned with key competencies included: lifelong learning; self-regulated learning; 21st century learning; learning power; inquiry; student goal setting; self-management; formative

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[12]   www.educationcounts.govt.nz/publications/curriculum/monitoring-and-evaluating-curriculum-implementation-final-evaluation-report-on-the-implementation-of-the-new-zealand-curriculum-20082009/executive-summary

[13]   www.educationcounts.govt.nz/publications/curriculum/curriculum-implementation-exploratory-studies-2

[14]   www.nzcer.org.nz/research/publications/lifelong-literacy-integration-key-competencies-and-reading

assessment; and learning to learn, or metacognition. Essentially, key competencies provided the vehicle to bring about new practices and pedagogies associated with new views of learning.

Relationships between key competencies and the learning areas were now being explored in new ways. There was a shift from seeing the content of learning areas as a learning end in itself to seeing this content as a means for teaching learning how to learn and for fostering lifelong learning. Consequently, there was an upsurge of interest in student-led inquiry. Some schools were using big ideas or questions (for example: sustainability; who am I?) as rich contexts for developing the key competencies within a more integrated curriculum. In the primary schools there was a tendency to incorporate the teaching of key competencies into integrated inquiry topics involving science, social sciences, health, and the arts, while teaching literacy and numeracy separately.

Inquiry pedagogies provided more opportunities for students to drive the direction of their learning, along with greater student choice about what and how to carry out the planned learning. The learning to learn focus translated into an increase in opportunities to reflect on learning. There was also increased recognition that opportunities to practise and strengthen key competencies could happen both in and out of the classroom.

At this stage key competencies were still seen as generic in nature. When framed in this way, they were expected to play out in the same ways regardless of the learning area. For example, time management drew on readily identified (common sense) aspects of *managing self*. The teacher's task was to find opportunities in every learning area for students to practise these generic key competencies. However, some teachers were beginning to see problems with this approach as they tried to integrate key competencies into different learning areas. In their experience, different learning areas provided discipline-specific opportunities to develop key competencies.

Early in phase 2, approaches to assessment were predominantly summative. Some schools developed rubrics and progressions for each competency, but many quickly recognised the limitations of this approach. Experimentation with formative approaches followed because these were seen to be more in keeping with ideas around "learning to learn" (for example: student goal setting; and self and peer assessment).

With generic ideas still prevalent, a fledgling shift to a subject-specific focus took place near the end of phase 2. Working with the researchers, the expert teachers in the Lifelong Literacy project began to see how interpretive space was opened up when key competencies were integrated into their reading programmes. This enabled students to bring their own experiences and contexts to their reading of a text. However, opening up this sort of interpretive space required teachers to hold a much deeper understanding of how texts work to make meaning (that is, they needed to know how to explicitly use the language, symbols, and texts *of English.*

Phase 3: Integration of key competencies and learning areas

Towards the end of phase 2 the Lifelong Literacy project opened up new subject-specific avenues for exploring the relationship between key competencies and the content of the learning areas. These possibilities became a focus for research attention in phase 3. Seeing the key competencies as multi-faceted and complex both emerged from, and further enabled, this type of curriculum thinking. For the first time, the term "capabilities" began to be used to describe new types of learning outcomes that result when the different pieces of NZC are woven more purposefully together.

Projects associated with this phase

Two of the three projects outlined below have an exploratory focus on the weaving of key competencies and learning area content. The third project included both cross-curricular and extracurricular elements and was also distinguished by an explicit focus on possibilities for assessment.

Key competencies and effective pedagogy: This MOE-funded project explored ideas and practice for effective integration of key competencies and content. Researchers and innovative teachers worked together to develop rich stories about the learning that can unfold from a purposeful weaving of both elements. Looking across these stories it became apparent that students' opportunities to develop their key competencies were closely tied to the pedagogy used by the teacher.[15]

Science Capabilities: The idea of science capabilities emerged from a programme of research that involved three interrelated projects in science education.[16] The researchers explored new ways of thinking about the relationship between the key competencies and the Nature of Science strand of the science learning area. They described an initial set of five science capabilities that all students would need to develop to become the critical, informed, responsible citizens envisaged by the science learning area statement and by the *NZC* vision.[17]

International Capabilities: This exploratory study considered the feasibility of measuring New Zealand senior secondary students' international capabilities. These were described as the international and intercultural expression of the key competencies. They were seen to help elucidate what the key competencies look like when they are applied in intercultural or international situations. The researchers recommended that assessment should include a focus on self-awareness and deliberate, strategic use of students' current capabilities. "All of the key findings to date support the idea of a measurement approach that engages and involves students in gathering and reflecting on the evidence of their learning and growth."[18]

[15] http://nzcurriculum.tki.org.nz/Key-competencies/Key-competencies-and-effective-pedagogy
[16] www.nzcer.org.nz/research/science-curriculum
[17] http://scienceonline.tki.org.nz/Science-capabilities-for-citizenship
[18] www.educationcounts.govt.nz/publications/international/144533

Characteristics of phase 3

During this phase innovative teachers were finding more ways to meaningfully weave key competencies and learning area content together. The strong association between their curriculum thinking and their use of effective pedagogies has already been noted. Pedagogies associated with this phase included those that enabled students to take meaningful action in real-world contexts. Teaching in context; action learning; experimental learning; curriculum integration; learning for transfer; personalised learning; critical inquiry; and curriculum/disciplinary literacies were some of the pedagogical approaches that were seen to be aligned with fostering students' key competency development.

Researchers who had been working with the key competencies for some time could see that a generic description of each key competency was no longer adequate. They were beginning to unpack and describe their many different aspects. The teachers they worked with also perceived that it was not possible to derive one generic meaning for any given key competency. The possibility that different aspects of different key competencies might interact with each other to enable learning was also beginning to be exemplified.

The rich examples of practice that emerged during this phase illustrated many ways in which key competencies might play out differently in different learning areas. Building on from an emergent emphasis in the Lifelong Literacy project, attention was now directed to discipline-specific processes for building knowledge (that is, the *nature* of each subject was now seen as an important consideration when integrating key competencies and content). This was the predominant focus in the Science Capabilities research.

Deeper exploration of relationships between the competencies and learning areas directed attention to the contribution that each learning area makes to an overall education (that is, its purpose). When students tackled rich learning tasks, key competencies would be needed to strengthen subject learning, and would themselves be strengthened and developed in the process. In other words, the reciprocal benefits of weaving content and competencies were starting to be acknowledged. Students showed learning gains in both key competencies and content when purposes for learning were richly conceived and skilful pedagogies deployed to help students achieve these purposes.[19]

Assessment thinking was also evolving. Weaving approaches did not fit with the generic rubrics of the early implementation phases. Researchers and teachers were beginning to explore new possibilities for demonstrating progression in students' capabilities in specific learning areas.[20]

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[19] The Lifelong Literacy project was the first to clearly show this reciprocal relationship—see fn 14. This relationship was also clear in the Key Competencies and Effective Pedagogy project—see fn 15.

[20] For example, this small project explored possible indicators of progression in developing the newly described science capabilities:
www.nzcer.org.nz/system/files/Capabilities%20for%20living%20and%20lifelong%20learning%28v2%29.pdf

Phase 4—Key competencies and action competence

The discussion of phase 4 switches to the present tense because this phase is ongoing. It overlaps with phase 3 but is distinguished in two important ways. Inquiry projects are becoming more open-ended and complex compared to the comparatively traditional inquiry projects of earlier phases. Students are now being supported to explore complex world problems in cross-disciplinary ways, drawing together different combinations of learning areas and key competencies. Reflecting this real-world emphasis, there is an explicit interest in how and when students demonstrate complex combinations of key competencies and curriculum content in action (that is, their action competence, although this term is not being widely used). The other difference is that assessment strategies are a more explicit and systematic focus in some research projects. These projects are actually or potentially ongoing at the time of writing this paper.

Projects associated with this phase include

Key competencies for the future: This project took the form of a future-focused inquiry into capabilities students might need to be "future-builders" rather than "future-copers".[21] The inquiry anticipated the current focus of the OECD's 2030 curriculum thinking. The researchers described different ways of thinking about the role of the key competencies in the curriculum, supporting their analysis with examples from teacher innovators in New Zealand schools.[22]

Key competencies in the National Monitoring Study of Student Achievement (NMSSA): This research began near the end of the first cycle of NMSSA assessments, with a retrospective analysis of a range of rich assessment tasks used in different learning areas. The ways in which different aspects of key competencies and learning area content came together, allowing students to complete each task, were described. Capabilities that students would need to complete the tasks were identified (each one of these remixes aspects of the key competencies). A small set of capabilities was identified as applicable all across the learning areas. Ongoing research is focused on how and when students demonstrate increasing strengths in using these capabilities.

Describing progress for students who remain longer term within one curriculum level: This project is at a preliminary stage. In some early projects, key competencies were essentially positioned as a *substitute* for reporting on academic learning gains for students with special learning needs.[23] By contrast, this project is predicated in the belief that all students have a right to access all the learning areas of *NZC*, as they are able. Taking a capabilities approach, the intention is to develop fine-grained indicators of progress within NZC level 1 in mathematical and communications capabilities.

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[21] These terms came from a future-focused UK-based curriculum inquiry called Learning Futures: www.amazon.com/Learning-Futures-Education-Technology-Social/dp/0415581435

[22] www.nzcer.org.nz/nzcerpress/key-competencies-future

[23] See Section 3 of the report: www.throughdifferenteyes.org.nz/__data/assets/pdf_file/0010/57925/Narrative-Assessment_a-guide-for-teachers.pdf

Characteristics of phase 4

In this phase, the key competencies are making a contribution to transforming learning in ways that have only gradually become apparent over the decade since *NZC* was introduced. More teachers are coming to understand the key competencies as complex and multi-faceted. More of them are exploring ways to weave key competencies and content into rich tasks.

Ideas about pedagogy associated with phase 4 include:

- Students should actively use and build knowledge, as opposed to just being consumers of knowledge produced by others. The learning of concepts and ideas remains important, but there is also a critical focus on how knowledge is created within the different disciplines.[24]
- There should be opportunities for students to collaborate in more demanding ways than simply doing group work. Tasks are designed in ways that require students to bring different experiences, perspectives, ideas, and insights to the work they do "in the spaces between" the members of the collaborating team.
- The diverse life experiences and ways of being that students bring to learning are seen as a resource for learning rather than a problem to be managed.

Teachers who are adept at weaving key competencies with learning area content are likely to draw on rich learning contexts and challenges that have genuine saliency for local and wider communities. Students engage in critical inquiries that require problem solving, creativity, critical thinking, and collaborative ways of working. Their teachers support them by drawing on their own deep disciplinary knowledge and deep knowledge of the key competencies. They have the capacity to support students to draw on and combine different parts of the curriculum in new ways.

Some assessment research in this phase is also exploring how students make progress in developing capabilities (these draw on a weaving of content and aspects of the key competencies). NMSSA analysis of rich learning tasks has identified a small set of capabilities on which to focus assessment attention. These have been named: *critical inquiry*; *perspective-taking*; and *disciplinary meaning-making*. The latter has focused in the first instance on indicators of progress in scientific, literary, and mathematical meaning making. The foregrounded key competency is *using language, symbols and texts*, but facets of all the others are also in play.

Other research-related activity has identified *taking action* as an important type of capability not assessed by NMSSA but centrally important in NZC learning areas when weaving the key competencies with other elements of *NZC* (content, essence statements, vision, values, etc.). Many other important capabilities can be similarly shown to draw on a rich mix of key competences and curriculum content. The value of remixing the key competencies and other curriculum content is that new ways of thinking about teaching and learning are opened up.

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[24] In both PISA and the 2030 work, the OECD uses the term "epistemic knowledge" to describe this focus on knowledge construction. Some researchers in New Zealand are using this term—particularly in relation to the capability of disciplinary meaning making—but it is not in common use and there is some resistance.